

“ENVIRONMENTAL MANAGEMENT PLAN REPORT

FOR

“MANUFACTURING AND DISTRIBUTION OF VARIOUS TYPES OF JELLIES”

Plot No. 467/A, Ka Naung Min Thar Gyi Street, Shwe Lin Pan Industrial Zone,
Hlaing Thar Yar Township, Yangon Region, Myanmar



PROPONENT

Thai Faster Products & M.K Co., Ltd.

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Industrial Zone, Hlaing Thar Yar Township, Yangon Region,
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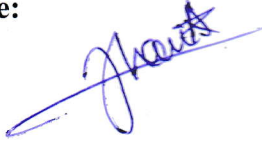
ENVIRONMENTAL MANAGEMENT PLAN (EMP) REPORT

FOR

**“MANUFACTURING AND DISTRIBUTION OF VARIOUS
TYPES OF JELLIES”**

Report Review Form

Report Title: Environmental Management Plan (EMP) Report for “Manufacturing and Distribution of Various Types of Jellies”	
Report Version: 01 Version	
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ရန်ကုန်တိုင်းဒေသကြီး၊ လှိုင်သာယာမြို့နယ်၊ ရွှေလင်ပန်းစက်မှုရန်၊ ကနောင်မင်းသားကြီးလမ်း၊ မြေကွက်အမှတ် ၄၆၇ (က) ရှိ Thai Faster Products and MK Co., Ltd. ၏
ဂျပန်လီစက်ရုံအတွက် ပတ်ဝန်းကျင်စီမံခန့်ခွဲမှုအစီအစဉ် (Environmental Management Plan – EMP) အပေါ် စိစစ်တွေ့ရှိချက်နှင့် အစီရင်ခံစာတွင် ပြင်ဆင်
ဖြည့်စွက်ရန်လိုအပ်သည့်အချက်များ အပေါ် လိုက်နာဆောင်ရွက်ချက်များ

စဉ်	စိစစ်တွေ့ရှိချက်	ပြင်ဆင်ဖြည့်စွက်ရန်လိုအပ်သည့်အချက်များ	လိုက်နာဆောင်ရွက်ချက်များ
၁။	ကတိကဝတ်		
	ပတ်ဝန်းကျင်စီမံခန့်ခွဲမှုအစီအစဉ်အား အကောင်အထည်ဖော်ဆောင်ရွက်သွားမည် ဖြစ်ကြောင်း စီမံကိန်းအဆိုပြုသူမှ လက်မှတ်ရေးထိုး ဖော်ပြထားသော်လည်း ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်းဆိုင်ရာလုပ်ထုံးလုပ်နည်း အပိုဒ် (၇၇) အရ ပတ်ဝန်းကျင်စီမံခန့်ခွဲမှု အစီအစဉ်ပါ ကတိကဝတ်၊ ပတ်ဝန်းကျင်ထိခိုက်မှုလျော့ချရေး လုပ်ငန်းများနှင့် အစီအစဉ်များကို အပြည့်အဝအစဉ်အမြဲ လိုက်နာ ဆောင်ရွက်သွားမည် ဖြစ်ကြောင်း အစီရင်ခံစာ၌ ထည့်သွင်းဖော်ပြရန်	ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်းဆိုင်ရာလုပ်ထုံးလုပ်နည်း အပိုဒ် (၇၇) အရ ပတ်ဝန်းကျင်စီမံခန့်ခွဲမှု အစီအစဉ်ပါ ကတိကဝတ်၊ ပတ်ဝန်းကျင်ထိခိုက်မှုလျော့ချရေး လုပ်ငန်းများနှင့် အစီအစဉ်များကို အပြည့်အဝအစဉ်အမြဲ လိုက်နာ ဆောင်ရွက်သွားမည် ဖြစ်ကြောင်း အစီရင်ခံစာ၌ ထည့်သွင်းဖော်ပြရန်	အစီရင်ခံစာ၏ စာမျက်နှာ (၉)၊ Document Certification and Declaration တွင် ဖော်ပြထားပါသည်။
၂။	နိဒါန်း		
	အစီရင်ခံစာ စာမျက်နှာ (၁) တွင် ရင်းနှီးမြှုပ်နှံမှုလုပ်ငန်းအမျိုးအစားမှာ အကျိုးတူ ပူးပေါင်းဆောင်ရွက်လုပ်ကိုင်လျှက်ရှိသည့် လုပ်ငန်းဖြစ်ကြောင်း ဖော်ပြထားသော်လည်း လုပ်ငန်း၏နောက်ခံအကြောင်းအရာ ဖော်ပြချက်အား ဖော်ပြထားခြင်း မရှိ ကြောင်း စိစစ်တွေ့ရှိရပါသည်။	လုပ်ငန်း၏ နောက်ခံအကြောင်းအရာ (အသစ်တည်ဆောက်ခြင်း/ လက်လွှဲရယူခြင်း/ တည်ဆောက်ခြင်း) ဆိုင်ရာအချက်အလက်များအား ထည့်သွင်းဖော်ပြရန်	- လုပ်ငန်း၏ နောက်ခံအကြောင်းအရာကို အစီရင်ခံစာ၏ အခန်း (၁)၊ ခေါင်းစဉ်ခွဲ (၁.၁) စာမျက်နှာ (၉၈) တွင် ဖော်ပြထားပါသည်။ - လုပ်ငန်း၏ လက်လွှဲရယူခြင်းကို ခေါင်းစဉ်ခွဲ (၁.၆)၊ စာမျက်နှာ (၁၀၁)နှင့် နောက်ဆက်တွဲ (၂၇) တွင် ဖော်ပြထားပါသည်။
၃။	မူဝါဒ၊ ဥပဒေနှင့်အဖွဲ့အစည်းဆိုင်ရာမူဘောင်		
	အစီရင်ခံစာ စာမျက်နှာ (၄၁-၄၅) ထိ စီမံကိန်းနှင့် သက်ဆိုင်သော ဥပဒေများ၊ နည်းဥပဒေများကို ဖော်ပြထားသော်လည်း ဘွိုင်လာဥပဒေအား ထည့်သွင်းဖော်ပြထားခြင်း မရှိကြောင်း စိစစ်တွေ့ရှိရပါသည်။	အစီရင်ခံစာတွင် ဘွိုင်လာအား ထည့်သွင်းဖော်ပြရန် လုပ်ငန်းမှ လိုက်နာမည့် ဥပဒေ၊ နည်းဥပဒေများထဲမှ Update မဖြစ်သည့် ဥပဒေများ၊ နည်းဥပဒေများ Upgrade ပြင်ဆင် ဖော်ပြရန်	- ဘွိုင်လာဥပဒေကို အစီရင်ခံစာ၏ အခန်း (၂) ခေါင်းစဉ်ခွဲ (၂.၅)၊ ဇယား ၂.၃ ရှိ စာမျက်နှာ - ၁၁၃ တွင် ဖော်ပြထားပါသည်။ - အစီရင်ခံစာ၏ အခန်း(၂)၊ စာမျက်နှာ ၁၀၄ မှ ၁၂၁

			အထိ ပြန်လည်ဖော်ပြထားပါသည်။
၄။	စီမံကိန်းအကြောင်းအရာဖော်ပြချက်		
	အစီရင်ခံစာ စာမျက်နှာ (၁၉-၂၁) တွင် လုပ်ငန်း၌ အသုံးပြုသည့် ဓာတုပစ္စည်းအမျိုးအစားများအား ဖော်ပြထားသော်လည်း အဆိုပါဓာတုပစ္စည်းအမျိုးအစား တစ်ခုချင်းစီ၏ အသုံးပြုမှုပမာဏ၊ သိုလှောင်ထားရှိမှုအခြေအနေ၊ ရယူသည့် အရင်းအမြစ်နေရာ၊ MSDS တို့ကို ဖော်ပြ ထားခြင်း မရှိကြောင်း စိစစ် တွေ့ရှိရ ပါသည်။	လုပ်ငန်း၌ အသုံးပြုသည့် ဓာတုပစ္စည်းအမျိုးအစား တစ်ခု ချင်းစီ၏ အသုံးပြုမှုပမာဏ၊ သိုလှောင်ထားရှိမှု အခြေအနေ၊ အရင်းအမြစ်နေရာ (ပြည်တွင်း/ တင်သွင်းသည့် နိုင်ငံ) နှင့် Chemical တစ်ခုချင်းစီ၏ Material Safety Data Sheet (MSDS) တို့ကို ထည့်သွင်း ဖော်ပြရန် (နောက်ဆက်တွဲတွင် ဖော်ပြလျှင် လည်းရသည်။)	<ul style="list-style-type: none"> - လုပ်ငန်း၌ အသုံးပြုသည့် ဓာတုပစ္စည်းအမျိုးအစား တစ်ခုချင်းစီ၏ အသုံးပြုမှုပမာဏ၊ သိုလှောင်ထားရှိမှုအခြေအနေ၊ အရင်းမြစ်နေရာတို့ကို အစီရင်ခံစာ ၏ အခန်း(၃)၊ ခေါင်းစဉ်ခွဲ (၃.၉)၊ ဇယား ၃.၇၊ စာမျက်နှာ ၁၄၄ နှင့် စာမျက်နှာ ၁၄၈ ၏ ဇယား ၃.၉ တို့တွင် ဖော်ပြထားပါသည်။ - Chemical တစ်ခုချင်းစီ၏ Material Safety Data Sheet (MSDS) တို့ကို အစီရင်ခံစာ၏ နောက်ဆက် တွဲ (၂၉) တွင် ဖော်ပြထား ပါသည်။
	စာမျက်နှာ (၂၁) မှ စာအပိုဒ် (၂.၁၀) တွင် တစ်နှစ်လျှင် အသုံးပြုသော လျှပ်စစ်ပမာဏနှင့် လျှပ်စစ်စွမ်းအင်အား 315 KVA ရှိသော ထရန်စဖော်မာမှ ရယူကြောင်း ဖော်ပြ ထားသော်လည်း ရယူသည့် နေရာအား ဖော်ပြထားခြင်း မရှိ ကြောင်း စိစစ်တွေ့ရှိရပါသည်။	လျှပ်စစ်စွမ်းအင်ရယူသည့် အရင်းအမြစ်နေရာ (မဟာ ဓာတ်အားလိုင်း သို့မဟုတ် ဂျင်နရေတာ) အား ထည့်သွင်း ဖော်ပြရန်	လျှပ်စစ်စွမ်းအင်ရယူသည့် အရင်းအမြစ်နေရာကို အစီရင်ခံ စာ၏ အခန်း (၃)၊ ခေါင်းစဉ်ခွဲ (၃.၁၁.၁)နှင့် (၃.၁၁.၂) ရှိ စာမျက်နှာ (၁၅၇) တွင် ဖော်ပြထား ပါသည်။
	စာမျက်နှာ (၂၁ - ၂၂) တွင် လုပ်ငန်း၌ ဒီဇယ်လောင်စာနှင့် စပါးခွံလောင်စာတို့အား အသုံးပြုကြောင်းနှင့် နှစ်စဉ် အသုံးပြုမှုပမာဏအား ဖော်ပြထားသော်လည်း အဆိုပါ လောင်စာများကို သိုလှောင်ထားရှိမှု အခြေအနေအား ဖော်ပြထားခြင်းမရှိ ကြောင်း စိစစ်တွေ့ရှိရပါသည်။	ဒီဇယ်လောင်စာနှင့် စပါးခွံလောင်စာတို့အား သိုလှောင် ထားရှိမှုအခြေအနေနှင့် သိုလှောင်ထား ရှိမည့် ကာလတို့ အား ထည့်သွင်း ဖော်ပြရန်	<ul style="list-style-type: none"> - စပါးခွံလောင်စာသိုလှောင်မှုနှင့်ကာလကို အစီရင်ခံ စာ၏ အခန်း(၃)၊ ခေါင်းစဉ်ခွဲ (၃.၁၁.၃)၊ စာမျက်နှာ (၁၅၈) တွင် ဖော်ပြထားပါသည်။ - ဒီဇယ်လောင်စာသိုလှောင်ထားရှိမှုနှင့်ကာလကို အစီရင်ခံစာ စာမျက်နှာ(၁၅၇) ရှိ ဇယား ၃.၁၂ တွင် ဖော်ပြထားပါသည်။
	စာမျက်နှာ (၁၅-၁၈) မှ စာအပိုဒ်ခွဲ (၂.၈) တွင် ကုန်ကြမ်း ပစ္စည်း အသုံးပြုမှု ပမာဏ၊ ရယူသည့်အရင်းအမြစ်တို့ကို ဖော်ပြထားသော်လည်း သိုလှောင်ထားရှိမှု အခြေအနေ အား ဖော်ပြထားခြင်း မရှိကြောင်း စိစစ်တွေ့ရှိရပါသည်။	ကုန်ကြမ်းပစ္စည်းများ သိုလှောင်ထားရှိမှု အခြေအနေ အား ဓာတ်ပုံမှတ်တမ်းများဖြင့် ထည့်သွင်း ဖော်ပြရန်	- ကုန်ကြမ်းပစ္စည်းများသိုလှောင်ထားရှိမှုကို စာမျက်နှာ (၁၄၅) ရှိ ပုံ ၃.၁၁ နှင့် စာမျက်နှာ (၁၄၉) ရှိ ပုံ ၃.၁၂ တို့တွင်ဖော်ပြထားပါသည်။
	ထုတ်လုပ်မှုလုပ်ငန်းစဉ်အား ဖော်ပြထားခြင်း မရှိကြောင်း	လုပ်ငန်းဆောင်ရွက်ပုံအဆင့်ဆင့်ကို စာသားဖြင့်	- လုပ်ငန်းအဆင့်ဆင့်ဆောင်ရွက်ပုံကို အစီရင်ခံစာ၏

	စိစစ် တွေ့ရှိရပါသည်။	သာမက Process Flow Chart၊ Design Layout Plan ဖြင့်ပါ ရှင်းလင်းစွာ ဖော်ပြရန်	အခန်း (၃)၊ ခေါင်းစဉ်ခွဲ (၃.၁၃.၁) ရှိ စာမျက်နှာ (၁၆၀)ရှိ ပုံ ၃.၂၁ နှင့် စာမျက်နှာ (၁၆၁) ရှိ ပုံ ၃.၂၂ တို့တွင် ဖော်ပြထား ပါသည်။
	လုပ်ငန်းမှ စွန့်ပစ်ပစ္စည်းထွက်ရှိမှု ပမာဏအား ဖော်ပြ ထားခြင်း မရှိကြောင်း စိစစ်တွေ့ရှိရပါသည်။	လုပ်ငန်းမှ တစ်ရက်လျှင် စွန့်ပစ်အစိုင်အခဲ ထွက်ရှိမှု ပမာဏကို ထည့်သွင်း ဖော်ပြရန်	- လုပ်ငန်းမှစွန့်ပစ်အစိုင်အခဲ ထွက်ရှိမှုပမာဏကို အစီရင်ခံစာ ၏ အခန်း(၃)၊ ခေါင်းစဉ်ခွဲ (၃.၁၅.၂)၊ ဇယား ၃.၁၇၊ စာမျက်နှာ ၁၆၅ တွင် ဖော်ပြထားပါသည်။
	လုပ်ငန်းမှစွန့်ပစ်ရေထွက်ရှိမှုပမာဏနှင့်နောက်ဆုံးစွန့်ပစ် သည့် နေရာအား ဖော်ပြထားခြင်းမရှိကြောင်း စိစစ်တွေ့ရှိရ ပါသည်။	လုပ်ငန်းမှ တစ်ရက်လျှင် စွန့်ပစ်ရေ ထွက်ရှိမှု ပမာဏနှင့် နောက်ဆုံးစွန့်ပစ်သည့်နေရာတို့ အား ထည့်သွင်း ဖော်ပြရန်	- လုပ်ငန်းမှ စွန့်ပစ်ရေထွက်ရှိမှုပမာဏကို အစီရင်ခံစာ ၏ စာမျက်နှာ (၁၆၃) ရှိ ဇယား ၃.၁၆နှင့် ပုံ ၃.၂၃ တွင် ဖော်ပြထားပါသည်။ - နောက်ဆုံးစွန့်ပစ်သည့်နေရာကို စာမျက်နှာ (၁၆၄)ရှိ ပုံ ၃.၂၄ တွင် ဖော်ပြထားပါသည်။
၅။	လက်ရှိပတ်ဝန်းကျင်အခြေအနေ		
	အစီရင်ခံစာ စာမျက်နှာ (၃၄-၃၅) ထိ ဇယား (၂.၁၇)၊ (၂.၁၈) တို့တွင် စွန့်ပစ်ရေအရည်အသွေးအား တိုင်းတာ ထားပြီး တိုင်းတာမှုရလဒ်များအား NEQEG လမ်းညွှန် တန်ဖိုးဖြင့် လိုက်နာမည်ဖြစ်ကြောင်း ဖော်ပြထားရာ Boiler Section ရှိ pH၊ TSS၊ Cooling Section ရှိ COD BOD TSS နှင့် Drain COD၊ BOD၊ TSS တန်ဖိုးတို့မှာ သတ်မှတ် လမ်းညွှန်ချက် တန်ဖိုးထက် ကျော်လွန်နေကြောင်း ဖော်ပြ ထားသော်လည်းကျော်လွန်ရသည့် အကြောင်း အရင်းအား ဖော်ပြထားခြင်း မရှိကြောင်း စိစစ်တွေ့ရှိရ ပါသည်။	Boiler Section ရှိ pH၊ TSS၊ Cooling Section ရှိ COD၊ BOD၊ TSS နှင့် Drain ရှိ COD၊ BOD၊ TSS တန်ဖိုးများ သတ်မှတ်လမ်းညွှန်ထက် ကျော်လွန် နေမှုအပေါ် ကျော်လွန်ရသည့် အကြောင်းအရင်း အား ထည့်သွင်း ဖော်ပြရန်	Boiler section ရှိ စွန့်ပစ်ရည်တန်ဖိုးများကို အစီရင်ခံစာ၏ စာမျက်နှာ (၁၈၄) ရှိ ဇယား ၄.၁၄ အောက်တွင် ဖော်ပြ ထားပါသည်။
	အစီရင်ခံစာ စာမျက်နှာ (၃၅-၃၈) မှ စာပိုဒ်ခွဲ (၂.၁၄.၂.၂) တွင် လေအရည်အသွေးအား တိုင်းတာထားပြီး တိုင်းတာမှု ရလဒ် များအား NEQEG လမ်းညွှန်ချက် တန်ဖိုးဖြင့် လိုက်နာမည် ဖြစ်ကြောင်း ဖော်ပြထားသော်လည်း Averaging Period အတိုင်း တိုင်းတာထားခြင်း မရှိ ကြောင်း စိစစ်တွေ့ရှိရပါသည်။	လေအရည်အသွေးအား လုပ်ငန်းမှ လိုက်နာရမည့် လိုက်နာမည့် လမ်းညွှန်တန်ဖိုးပါ Averaging Period အတိုင်း တိုင်းတာဖော်ပြရန်နှင့် တိုင်းတာမှုရလဒ်များ မှာ သတ်မှတ်လမ်းညွှန်တန်ဖိုးထက် ကျော်လွန်မှု ရှိ/မရှိနှင့် ကျော်လွန်နေပါက ကျော်လွန်နေရသည့် အကြောင်း အရင်း ထည့်သွင်းဖော်ပြရန်	လေအရည်အသွေးအား အစီရင်ခံစာ၏ စာမျက်နှာ (၁၈၀) ရှိ ဇယား ၄.၈ နှင့်အောက်တွင် ဖော်ပြထားပါသည်။

၆။	ပတ်ဝန်းကျင်အပေါ်ထိခိုက်နိုင်မှုများနှင့်လျော့နည်းစေရေးဆောင်ရွက်မည့် နည်းလမ်းများ		
	<p>အစီရင်ခံစာ စာမျက်နှာ (၃၄-၃၅) ထိ ဇယား (၂.၁၇)၊ (၂.၁၈) တို့ရှိ Boiler Section ရှိ pH၊ TSS၊ Cooling Section ရှိ COD၊ BOD၊ TSS တန်ဖိုးတို့မှာ သတ်မှတ်လမ်းညွှန်တန်ဖိုးထက် ကျော်လွန်နေကြောင်း အစီရင်ခံစာ စာမျက်နှာ(၆၁)မှ စာအပိုဒ်ခွဲ (၆.၁) တွင် လုပ်ငန်းမှ စွန့်ပစ်ရေထွက်ရှိကြောင်း၊ စွန့်ပစ်ရေများကို ရေမြောင်းများ ခွဲခြား၍ စွန့်ပစ်ကြောင်းနှင့် စွန့်ပစ်ရေများ ကို Treatment ပြုလုပ်၍ စွန့်ပစ်ကြောင်း ယေဘုယျဖော်ပြ ထားသော်လည်း စွန့်ပစ်ရေများကို Treatment ပြုလုပ်သည့် နည်းလမ်းအား ဖော်ပြထားခြင်း မရှိကြောင်း စိစစ်တွေ့ရှိရပါသည်။</p>	<p>Boiler Section ရှိ pH၊ TSS၊ Cooling Section ရှိ COD၊ BOD၊ TSS တန်ဖိုးတို့မှာ သတ်မှတ်လမ်းညွှန် တန်ဖိုး ထက် ကျော်လွန်နေမှုအပေါ် အသုံးပြုမည့် Treatment System (Method) အား ထည့်သွင်းဖော်ပြရန်</p>	<ul style="list-style-type: none"> - အသုံးပြုမည့် Treatment System (Method) အား အစီရင်ခံစာ၏ စာမျက်နှာ (၁၆၃) ရှိ ဇယား ၃.၁၆ နှင့် ပုံ ၃.၂၃ တွင်ဖော်ပြထားပါသည်။ - စွန့်ပစ်ရည်တိုင်းတာမှုများကို အစီရင်ခံစာ၏ စာမျက်နှာ (၁၈၆) ရှိ ဇယား ၄.၁၇ နှင့်အောက်တွင်လည်းကောင်း၊ စာမျက်နှာ (၁၈၇) ရှိ ဇယား ၄.၁၈ နှင့်အောက်တွင်လည်းကောင်း ပြန်လည်တိုင်းတာ ဖော်ပြထားပါသည်။
	<p>အစီရင်ခံစာစာမျက်နှာ (၆၁) မှ စာအပိုဒ်ခွဲ (၆.၁) တွင် စွန့်ပစ် အစိုင်အခဲများအားခွဲခြား၍ စွန့်ပစ်ကြောင်းနှင့် စွန့်ပစ်အစိုင်အခဲများကို ရောင်းချကြောင်း ဖော်ပြ ထားသော်လည်း စွန့်ပစ်အစိုင်အခဲများကို ရောင်းချ သည့်နေရာ၊ အိမ်သုံးစွန့်ပစ်အမှိုက် များနှင့်ဘိုလ်လာမှ ထွက်ရှိသောပြာများအားစွန့်ပစ်သည့် နည်းလမ်းကို ဖော်ပြထားခြင်းမရှိကြောင်း စိစစ်တွေ့ရှိရပါသည်။</p>	<p>စွန့်ပစ်အစိုင်အခဲများကို ရောင်းချသည့်နေရာ၊ အိမ်သုံး စွန့်ပစ်အမှိုက်များနှင့် ဘိုလ်လာမှ ထွက်ရှိသော ပြာများအား စွန့်ပစ်သည့် နည်းလမ်း တို့အား ထည့်သွင်း ဖော်ပြရန်</p>	<p>စွန့်ပစ်အစိုင်အခဲများနှင့်ပတ်သက်၍ အစီရင်ခံစာ၏ စာမျက်နှာ (၁၆၅)ရှိ အခန်း(၃)၊ ခေါင်းစဉ်ခွဲ (၃.၁၅.၂)နှင့် ဇယား ၃.၁၇ တွင်လည်းကောင်း၊ စာမျက်နှာ (၁၆၆) တွင် ပုံ ၃.၂၇ နှင့် ၃.၂၈ ဖြင့်လည်းကောင်း ဖော်ပြထားပါသည်။</p>
၇။	ပတ်ဝန်းကျင်စီမံခန့်ခွဲမှုအစီအစဉ်		
	<p>အစီရင်ခံစာ စာမျက်နှာ (၈၉) မှ စာအပိုဒ်ခွဲ (၁၂.၂) တွင် ပတ်ဝန်းကျင်စီမံခန့်ခွဲမှုအစီအစဉ်အတွက် ရံပုံငွေလျာထား ချက် အားဖော်ပြထားသော်လည်း စွန့်ပစ်ရေ အရည် အသွေး၊ စွန့်ပစ်အစိုင်အခဲ၊ လေအရည်အသွေး၊ ဆူညံသံ၊ သဘာဝဘေး အန္တရာယ်တို့အား စီမံခန့်ခွဲမှု အစီအစဉ်အား ဖော်ပြထားခြင်း မရှိကြောင်း စိစစ်တွေ့ရှိရ ပါသည်။</p>	<p>စီမံကိန်းလည်ပတ်သည့်ကာလ အောက်ဖော်ပြပါ အချက် များမှ ပတ်ဝန်းကျင်အပေါ် ထိခိုက်နိုင်မှုအား စီမံခန့်ခွဲမည့် လုပ်ငန်းများအား ထည့်သွင်း ဖော်ပြရန်</p> <ul style="list-style-type: none"> - စွန့်ပစ်ရေအရည်အသွေး - စွန့်ပစ်အစိုင်အခဲ - လေအရည်အသွေး - ဆူညံသံ 	<ul style="list-style-type: none"> - စီမံကိန်းလည်ပတ်သည့်ကာလ ပတ်ဝန်းကျင်အပေါ် ထိခိုက်နိုင်မှု (စွန့်ပစ်ရေအရည်အသွေး၊ စွန့်ပစ်အစိုင်အခဲ၊ လေအရည်အသွေး၊ ဆူညံသံ)အား စီမံခန့်ခွဲမည့် လုပ်ငန်း များအား အစီရင်ခံစာ၏ အခန်း (၆)၊ ခေါင်းစဉ်ခွဲ (၆.၂)၊ ဇယား ၆.၁ တို့တွင် စာမျက်နှာ (၁၉၉ မှ ၂၀၂) အထိ ဖော်ပြထားပါသည်။ - စီမံကိန်းလည်ပတ်သည့်ကာလ ပတ်ဝန်းကျင်အပေါ်

		<p>- သဘာဝဘေးအန္တရာယ်ဖြစ်ပွားနိုင်ခြင်း</p>	<p>ထိခိုက်နိုင်မှု (သဘာဝဘေးအန္တရာယ်)အား စီမံခန့်ခွဲမှု အစီအစဉ်ကို အစီရင်ခံစာ အခန်း(၆)၊ ခေါင်းစဉ်ခွဲ ၆.၅ စာမျက်နှာ (၂၀၅ မှ ၂၀၉) အထိတွင် ဖော်ပြထားပါသည်။</p>
	<p>အစီရင်ခံစာ စာမျက်နှာ (၉၀-၉၁) မှ စာအပိုဒ် (၁၂.၃) တွင် လုပ်ငန်းခွင်ကျန်းမာရေးနှင့် ဘေးအန္တရာယ်ကင်းရှင်းရေးတွက် အလုပ်သမားများအား သင်တန်းများပေးထားကြောင်းနှင့် မတော်တဆဖြစ်ပွားမှုများအား မှတ်တမ်းများ ထားရှိကြောင်း ယေဘုယျဖော်ပြထားသော်လည်း အလုပ်သမားများအတွက် သန့်ရှင်းသောရေ၊ သန့်ရှင်းသောအစားအစာများထောက်ပံ့ ပေးထားမှုအစီအစဉ်၊ ကျန်းမာရေးစောင့်ရှောက်ပေးမှုအစီအစဉ်များနှင့်လုပ်ငန်းခွင် ဘေးအန္တရာယ် ကင်းရှင်းရေးအတွက် ကာကွယ်ရေး ပစ္စည်းများ ထောက်ပံ့ပေးမှု အစီအစဉ်တို့အား ဖော်ပြခြင်း မရှိကြောင်း စိစစ်တွေ့ရှိ ရပါသည်။</p>	<p>အလုပ်သမားများအတွက် သန့်ရှင်းသောရေ၊ သန့်ရှင်းသော အစားအစာများ ထောက်ပံ့ပေးထားမှု အစီအစဉ် ကျန်းမာရေးစောင့်ရှောက်ပေးမှု အစီအစဉ်များနှင့်လုပ်ငန်းခွင်ဘေးအန္တရာယ် ကင်းရှင်းရေးအတွက် ကာကွယ်ရေး ပစ္စည်းများ ထောက်ပံ့ပေးမှု အစီအစဉ်တို့အား ထည့်သွင်း ဖော်ပြရန်</p>	<p>အလုပ်သမားများအတွက် ထောက်ပံ့ပေးမှု အစီအစဉ်တို့အား အစီရင်ခံစာ၏ အခန်း (၃)၊ ခေါင်းစဉ်ခွဲ (၃.၁၇.၁)၊ (၃.၁၇.၂)၊ (၃.၁၇.၃)၊ (၃.၁၈) တွင် စာမျက်နှာ (၁၆၈ မှ ၁၇၀) အထိ ဖော်ပြထားပါသည်။</p>
<p>၈။</p>	<p>စောင့်ကြပ်ကြည့်ရှုမည့်အစီအစဉ်</p>		
	<p>အစီရင်ခံစာ စာမျက်နှာ (၆၆) တွင် လေအရည်အသွေးအား စောင့်ကြပ်ကြည့်ရှုမည့်နေရာ၊ အကြိမ်အရေအတွက် တို့ကိုဖော်ပြထားသော်လည်း စောင့်ကြပ်ကြည့်ရှုမည့် ပါရာမီတာများအား ဖော်ပြထားခြင်းမရှိကြောင်း စိစစ်တွေ့ရှိရပါသည်။</p>	<p>လေအရည်အသွေးအားစောင့်ကြပ်ကြည့်ရှုမည့်အစီအစဉ် နှင့်ပတ်သက်၍ စောင့်ကြပ်ကြည့်ရှုမည့် ပါရာမီတာများ အား ထည့်သွင်းဖော်ပြရန်</p>	<p>လေအရည်အသွေးအားစောင့်ကြပ်ကြည့်ရှုမည့်အစီအစဉ် နှင့်ပတ်သက်၍ စောင့်ကြပ်ကြည့်ရှုမည့် ပါရာမီတာများအား အစီရင်ခံစာ၏ အခန်း (၆)၊ ခေါင်းစဉ်ခွဲ (၆.၈)၊ ဇယား (၆.၄) တို့တွင် စာမျက်နှာ(၂၂၆ မှ ၂၂၉)အထိ ဖော်ပြထားပါသည်။</p>
	<p>အစီရင်ခံစာ စာမျက်နှာ (၆၇) တွင် ဆူညံသံအား စောင့်ကြပ်ကြည့်ရှုမည့် အကြိမ်အရေအတွက်ကို ဖော်ပြ ထားသော်လည်း စောင့်ကြပ်ကြည့်ရှုမည့် နေရာကို ဖော်ပြ ထားခြင်း မရှိကြောင်း စိစစ်တွေ့ရှိ ရပါသည်။</p>	<p>ဆူညံသံစောင့်ကြပ်ကြည့်ရှုမည့်အစီအစဉ်နှင့် ပတ်သက်၍ စောင့်ကြပ်ကြည့်ရှုမည့် နေရာအား ထည့်သွင်း ဖော်ပြရန်</p>	<p>ဆူညံသံစောင့်ကြပ်ကြည့်ရှုမည့်အစီအစဉ်နှင့် ပတ်သက်၍ အစီရင်ခံစာ၏ ဇယား (၆.၄) ရှိ စာမျက်နှာ(၂၂၈)တွင် Noise Quality တွင် ဖော်ပြထားပါသည်။</p>
	<p>အစီရင်ခံစာတွင် စွန့်ပစ်ရေအရည်အသွေးအား စောင့်ကြပ် ကြည့်ရှုမည့်အစီအစဉ်အား ဖော်ပြထားခြင်း မရှိကြောင်း စိစစ်တွေ့ရှိ ရပါသည်။</p>	<p>စွန့်ပစ်ရေအရည်အသွေးအား စောင့်ကြပ်ကြည့်ရှု မည့် အစီအစဉ်နှင့်ပတ်သက်၍ စောင့်ကြပ်ကြည့်ရှု မည့်နေရာ၊ အကြိမ်အရေအတွက်၊ ပါရာမီတာ</p>	<p>စွန့်ပစ်ရေအရည်အသွေးအား စောင့်ကြပ်ကြည့်ရှုမည့် အစီအစဉ်နှင့်ပတ်သက်၍ အစီရင်ခံစာ၏ ဇယား (၆.၄) စာမျက်နှာ (၂၂၇) ရှိ Water Quality, Waste water</p>

		ထည့်သွင်းဖော်ပြရန်	Quality တို့တွင် ဖော်ပြထားပါသည်။
	စောင့်ကြပ်ကြည့်ရှုမည့် အစီအစဉ်အား EMT Member နှင့် Manager တို့မှ တာဝန်ယူဆောင်ရွက်မည်ဟု ဖော်ပြထားသော်လည်း EMT Member ဝင်များနှင့် တစ်ဦးချင်းစီ တာဝန်ယူဆောင်ရွက်မည့်အပိုင်းနှင့် ရံပုံငွေလျာထားချက် တို့အား ဖော်ပြထားခြင်း မရှိကြောင်း စိစစ်တွေ့ရှိရပါသည်။	EMT Member ဝင်များနှင့် တစ်ဦးချင်းစီတာဝန်ယူ ဆောင်ရွက်မည့် အပိုင်းနှင့် ရံပုံငွေလျာထားချက်တို့ အား ထည့်သွင်းဖော်ပြရန်	<ul style="list-style-type: none"> - EMT Member ဝင်များနှင့် တစ်ဦးချင်းစီတာဝန်ယူ ဆောင်ရွက်မည့် အပိုင်းကို အစီရင်ခံစာ၏ အခန်း(၆)၊ ခေါင်းစဉ်ခွဲ (၆.၇)၊ ဇယား ၆.၃၊ ပုံ (၆.၆) တို့တွင် စာမျက်နှာ (၂၂၄ မှ ၂၂၆) အထိ ဖော်ပြထားပါသည်။ - ရံပုံငွေလျာထားချက်ကို အစီရင်ခံစာ၏ အခန်း (၆)၊ ခေါင်းစဉ်ခွဲ (၆.၁၀)၊ ဇယား (၆.၅)၊ စာမျက်နှာ (၂၃၀) တွင် ဖော်ပြထားပါသည်။
၉။	List of Commitment		
	စီမံကိန်းအဆိုပြုသူမှ အစီရင်ခံစာပါ အခန်းတစ်ခန်းချင်းမှ ဆောင်ရွက်မည့် အချက်များနှင့်စပ်လျဉ်း၍ ကတိကဝတ် ပြုချက်များကို ဖော်ပြထားခြင်းမရှိကြောင်း စိစစ်တွေ့ရှိရပါသည်။	စီမံကိန်းအဆိုပြုသူမှ အစီရင်ခံစာပါ အခန်း တစ်ခန်းချင်းမှ ဆောင်ရွက်မည့်အချက်များနှင့် စပ်လျဉ်း၍ ကတိကဝတ် ပြုချက်များကို ဇယားဖြင့် ဖော်ပြရန်	စီမံကိန်းအဆိုပြုသူမှ အစီရင်ခံစာပါ အခန်း တစ်ခန်းချင်းမှ ဆောင်ရွက်မည့်အချက်များနှင့် စပ်လျဉ်း၍ အစီရင်ခံစာ၏ အခန်း (၂)၊ ခေါင်းစဉ်ခွဲ (၂.၈)၊ ဇယား ၂.၄ တွင် စာမျက်နှာ ၁၂၈ မှ ၁၃၁ အထိ ဖော်ပြထားပါသည်။
၁၀)	အထွေထွေ		
	ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်းဆိုင်ရာ လုပ်ထုံးလုပ်နည်း အပိုဒ် ၇၇ အရ ပတ်ဝန်းကျင်စီမံခန့်ခွဲမှုအစီအစဉ် (EMP) Soft Copy ကို ပူးတွဲ တင်ပြရန်၊ ပြန်လည်ရေးဆွဲမည့် EMP အစီရင်ခံစာတွင် ယခုပေးပို့သော အကြံပြုချက် တစ်ခုချင်းစီအလိုက် ဖြေရှင်းချက်များကို အစီရင်ခံစာ၏ မည့်သည့် အပိုင်းတွင် ရေးသားထားသည်ကို ဖော်ပြသည့် (Comment Response Table) ဌ် စာမျက်နှာ နံပါတ်နှင့်တကွ ဖော်ပြပေးရန်		

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DOCUMENT CERTIFICATION AND DECLARATION

This project report on Environmental Management Plan has been prepared by Green Myanmar Environmental Services Co., Ltd.

I, (authorize person of Thai Faster Products & M.K Co., Ltd.) as proponent of this project, do hereby solemnly affirm and declare that I fully understand and undertake to operate the project strictly in accordance with the following fact.

- Comply with all Myanmar laws, rules and regulations, including Special Economic Zone Law and Clauses 14 and 15 of the Environmental Conservation Law (2012).
- Ensure that legal and other obligations are incorporated in the designs, procedures and project controls, Communicate legal and other requirements to personnel and contractors accountable for compliance,
- Ensure all relevant legal and other requirements and associated documentation (e.g., licenses, permits, approval applications) are readily available on site to company personnel, contractors, subcontractors and consultants,
- Conduct a compliance audit at least annually and ensure there is a process in place to monitor on-going compliance with all legal and other requirements.
- According to the EIA Procedure section 77, we soundly follow the commitment of the Environmental Management Plan (EMP), mitigation measures of the EMP & Monitoring Plan of EMP.
- Submit monitoring report regularly according to the ECD instruction
- Implement CSR
- Shall be responsible for the protection as well as perseveration of environment in and around the factory.
- Shall be able to control of air, water and land, and not to cause environment degradation.
- Takes necessary measures in order to fulfill environmental protection such as installing of wastewater treatment plant and other treatment producer to keep the project site environmental, friendly.
- I, the undersigned, certify that the particulars in this report are correct and true to the best of my knowledge.
- I hereby declare to strictly comply with provisions of regulations provided by the Environmental Conservation Department (ECD).

Signature : _____

Name : U Kyaw Win

Designation : General Manager



Thai Faster Products & M.K Co., Ltd.

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Date: 18.10.2022

COMMITMENT AND ACKNOWLEDGEMENT

An Environmental Management Plan (EMP) describes the environmental condition of a project, including potential impact, formulation of mitigation measures, and preparation of institutional requirements and environmental monitoring. This EMP report was prepared using information from the following sources:

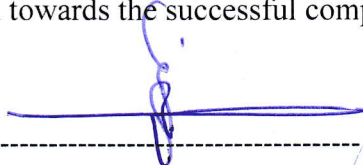
- Review of selected literature, reports, and advisors;
- Meetings with several interested parties;
- The experience of the Environmental Team: and
- Other information solicited from baseline data and stakeholders.

We strongly commit that this report was prepared in compliance with Myanmar Environmental Laws and Regulations.

The EMP team is grateful to the project proponent – *Thai Faster Products & M.K Co., Ltd.* for commissioning us to conduct this Environmental Management Plan (EMP) Report in respect of the proposed project. We would like to further acknowledge with great appreciation all those neighbors who participated in the public consultation meeting for their cooperation throughout the exercise.

We further acknowledge the support, either direct or indirect, from the various parties who assisted the EMP team towards the successful completion of this report.

Signature : -----



Name : U Kyaw Soe Win

Designation : Managing Director



Green Myanmar Environmental Services Co., Ltd.

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Date: -----

ABBREVIATIONS

°C	Degree Celsius
CO	Carbon Monoxide
CO ₂	Carbon Dioxide
CSR	Corporate Social Responsibility
dB (A)	Decibel (measured with A – weighted)
EMP	Environmental Management Plan
°F	Degree Fahrenheit
ft	feet
GMES	Green Myanmar Environmental Services
in.	Inch
IS	Indian Specifications
kg	kilogram
km	kilometer
kVA	kilo volt ampere
kWh	kilo Watt hour
l_{eq}	Equivalent sound level
LPG	Liquefied Petroleum Gas
mg/m ³	milligram per cubic meter
mg/Nm ³	milligram per normal cubic meter
µg/L	micro gram per liter
MIC	Myanmar Investment Commission
mm	millimeter
MONREC	Ministry of Natural Resource and Environmental Conservation
mph	miles per hour
m/s	meter per second
MTU	Mandalay Technological University
NE	North-East
NGOs	Non-Governmental Organization
NO ₂	Nitrogen Dioxide
NO _x	Nitrogen Oxides
NTU	Nephelometric Turbidity Unit
O ₂	Oxygen

OH&S	Occupational Health and Safety
Pcs	Pieces
PM	Particulate Matter
PM _{2.5}	Particulate Matter 2.5 micrometer or less in diameter
PM ₁₀	Particulate Matter 10 micrometer or less in diameter
ppm	parts per million
SO ₂	Sulfur Dioxide
SO _x	Sulfur Oxides
sq.ft.	square feet or
TDS	Total Dissolved Solids
TFFPMK	Thai Faster Products & M.K
TSP	Total Suspended Particulate
TVOC	Total Volatile Organic Compound
USA	United States of America
USOHS	United States Occupational Health and Safety
US \$ & USD	United States Dollar
WHO	World Health Organization
YTU	Yangon Technological University

EXECUTIVE SUMMARY

In March 2018, Green Myanmar Environmental Services Company limited (GMES) was requested by Thai Faster Products and M.K. Company Limited to assist the Jelly Production Factory in the submission of the Environmental Management Plan (EMP) to the Myanmar Investment Commission.

Thai Faster Products and M.K. Company Limited is located at Plot No. 467/A, Ka Naung Min Thar Gyi Street, Shwe Lin Pan Industrial Zone, Hlaing Thar Yar Township, Yangon Region, Myanmar. It is the joint venture company formed in accordance with the provision of Myanmar Company Act and the total investment is US \$ 2,000,000.

Thai Faster Products and M.K Co., Ltd. is a joint-venture company between Thai Faster Product Co., Ltd. (60 %), Mantakanok Co., Ltd. (30 %), and M.K Co., Ltd. (10 %).

Thai Faster Products Company Limited., a private company duly incorporated and organized under the laws of Thailand, Registration No. 0745555004749 having its registered address located at 99/99 Moo.7, Aom-Noy Sub-district, Kratumban District, Samutsakorn Province, Thailand.

Mantakanok Company Limited., a private company duly incorporated and organized under the laws of Thailand, Registration No. 0575541000136 having its registered address located at 106/2, Charoen-rad Road, Bangklo Sub-district, Bangkolam District, Bangkok, Thailand.

M.K Company., a private company duly incorporated and organized under the laws of Myanmar, Registration No. 644 having its registered address located at No.333, Pyay Road, Sanchaung Township, Yangon Region, Myanmar.

It aims to achieve economic, environmental and social sustainability throughout the business and supply chain, improving the use of raw materials and, in turn, increasing its efficiency and profitability.

Table (1) Salient feature of the project is tabulated in the following table.

Project Name	Manufacturing and Distribution of Various Types of Jellies
Company name	Thai Faster Products and M.K. Company Limited (TFPMK)
Company Registration No.	No. 855 FC, 2013 ~ 2014
Project Address	Plot No. 467/A, Ka Naung Min Thar Gyi Street, Shwe Lin Pan Industrial Zone, Hlaing Thar Yar Township, Yangon Region, Myanmar
Type of Land	Industrial Zone
Area of Land	2.036 Acres (87694.214 sq. ft.)
Duration of Investment	50 years and Extendable 10 years two times
Period of Land and Building Lease	5 years (initial) and extendable for a further period up to 70 years
Leaseholder	U Pyae Phyoo
Established	5.2.2014
Test Run	2.1.2015
Commercial Run	4.1.2017

Surrounding Environment	Right Side: Wet Ma Sut Wun Htauk Street Left Side: Garment Factory (Myanmar Yoo Ho Co., Ltd)
Nearest Residential Places	Alae Village
Nearest Water Bodies	Hlaing River
Topography	Flat and Mainly Alluvium Area
Contact Person Designation Contact Numbers	Daw Win Sanda Accountant Ph: 09455640300 E-mail: thai faster.mm@gmail.com
Company Investment	US \$ 2,000,000
Form of Investment	Thai Faster Products Co., Ltd from Thailand 60 % Mantakanok Co., Ltd from Thailand 30 % M.K Co., Ltd from Myanmar 10 %
Water Resources	2 unit of 2- inch Tube well, depth 100 ft
Water Consumption	60,000 liter/day
Energy Source Annual Electricity Consumption	Three-Phase Power Supply 912,000 kWh
Annual Fuel Consumption	Diesel 15,850 Gallon Paddy Husk 842.40 Ton
Finished Product	Various Types of Jellies Local Sales 90 % Export Sales 10 %
Estimated Employees (Year -1)	Local employees: 188 Foreign employees: 8
Operating Time	Working Hours Monday to Friday 07:00 to 16:00 and Saturday 07:00 to 11:00 No. of Working Days per Month : 26 days No. of Working Days per week : 6 days (Monday to Saturday) Shift : 1

Details of Environmental Team

Details of the EMP team are presented in the following Table.

Table (2) Details of the EMP Team

No	Title of Post	Term of Reference	Nominee, Organization, Transitional Consultant Registration Number
1	Chief Technical Manager	<ul style="list-style-type: none"> Advise on the design of EMP Technical meeting & Workshop Monitoring of EMP process Public consultation Quality Control and Check Data compilation & analysis 	Engr. U Kyaw Soe Win Green Myanmar Environmental Services Experience in IEE processing No.0019
2	Air Quality Management Consultant	<ul style="list-style-type: none"> Advise on Air Quality measuring Advise on Technical Advise on Air pollution analysis and mitigation measure Advise on Assessment and Calculation of base on air quality result Advise on preparation of report 	Engr. U Sein Thaug Oo Green Myanmar Environmental Services Professional Engineer No.0023
3	Environmental Consultant	<ul style="list-style-type: none"> Advise on the design of EMP Develop term of reference for duty & responsibility among EMP team Advise on the environmental baseline Advise on the field survey Facilitate technical analysis Streamline the Environmental Management Plan 	Engr. Daw Khin Swe Aye Former Lecturer. Department of Chemical Engineering, Rangoon Institute of Technology No.0021
4	Consultant on Environmental Baseline	<ul style="list-style-type: none"> Design of environmental baseline; methodology, sampling framework, field testing method, and analytical tool Training of field staff for baseline data collection Analysis and Report Preparation for Industrial Process, Potential Impact, Alternative Design, and Pollutant Control Brainstorming for Environmental Monitoring and Management 	Engr. Dr. Maung Maung Win, Retired Professor and Head, Chemical Engineering Dept. YTU and Consultant for Environmental Management in Myanmar, Thailand and USA No.0027
5	Consultant on Environmental Quality Management	<ul style="list-style-type: none"> Assist in preparation of guideline for environmental sampling of air and water quality Monitor the sample collection Register and inspect the sample 	Daw Khin Shwe Htay, Former Lecturer, Chemical Engineering Dept., YTU. Environmental Engineer

		<ul style="list-style-type: none"> collected Assist in report preparation for environmental baseline 	No.0022
6	Environmental and Social Operation and Field Coordinator	<ul style="list-style-type: none"> Develop operational checklist for Environmental Survey Facilitate technical meeting and record keeping Assist in data mining and secondary data collection Supervise field survey Coordinate with local authority and village level meeting 	U Khin Aung General Manager, Green Myanmar Environmental Services No.0025
7	Consultant for Laboratory Analysis	<ul style="list-style-type: none"> Advise on data processing and laboratory testing Prepare instruction for laboratory testing Check the result of environmental laboratory testing Compare the laboratory result and verification 	U Myo Myint Retired Factory Manager of Alcohol Distillery Beelin, Ministry of Industry (1) No.0026
8	Specialist on waste management	<ul style="list-style-type: none"> Collecting field data for industrial and municipal waste Assist in Laboratory Testing Data processing, computing, projection, modeling and analysis Assist in report preparation 	Engr. Daw Tin May Soe, Retired Professor & Head, Chemical Engineering Dept., MTU. No.0028
9	Environmental Consultant	<ul style="list-style-type: none"> Advise on the preparation of EMP Develop terms of reference for duty and responsibility among EMP team Advise on the environmental baseline and field survey 	Engr. U Maung Maung Aye Construction Coordinator Badamyar Topside Construction, Total E&P Myanmar)
10	Environmental Operation and Team Leader	<ul style="list-style-type: none"> Develop operational checklist for Environmental Study In charge for preliminary field visit Supervise field survey Checking to the final report 	U Kyi Han Bo Quality Engineer Green Myanmar Environmental Services
11	Technician	<ul style="list-style-type: none"> Environmental and Social Survey Data analysis Report preparing and formatting 	U Myo Thet Naung Team leader U Aung Kyaw Than Monitoring Technician U Myo Min Htun Assistant Monitoring Technician Green Myanmar Environmental Services Co., Ltd

POLICY, LEGAL AND INSTITUTIONAL FRAMEWORK

Policy, Legal and Institutional Framework

Existing Myanmar Laws Relevant to Project

A shortlist of existing Myanmar laws that CTM committed to follow for the proposed Development project are described below.

- The National Environmental Policy (1994)
- The Environmental Conservation Law (2012) and the Environmental Conservation Rules (2014)
- The Environmental Impact Assessment Procedure (2015)
- The National Environmental Quality (Emission) Guidelines (2015)
- The Port Authority Law (2015)
- The Prevention of Hazardous from Chemicals and Related Substances Law (2013) & The Prevention of Hazardous from Chemicals and Related Substances Rules (2016)
- The Export and Import Law (2012)
- Occupational Health and Safety (draft) Law, (2019)
- The Myanmar Special Economic Zone Law (2014)
- The Myanmar Special Economic Zone Rule (2015)
- Myanmar Investment Commission Notification No.1/2013 and No.1/2014 (Economic activities which require EIA)
- Ministry of National Planning and Economic Development: Notification No.81/
- The Worker's Compensation Act (1923)
- The Labor Organization Law (2012)
- The Labor Dispute Settlement Law (2012, Amendment in 2016)
- The Natural Disaster Management Law (2013)
- International Conventions, Treaties and Agreements

Project Location

The proposed project, "Manufacturing and Distribution of Various Types of Jellies", is implemented at Plot No. 467/A, Ka Naung Min Thar Gyi Street, Shwe Lin Pan Industrial Zone, Hlaing Thar Yar Township, Yangon Region, Myanmar and the location map is shown in the following Figure 2.3. It is bounded by Rice Mill (Shwe La Won Co., Ltd) in the east, Ka Naung Min Thar Gyi Street in the west, Garment Factory (Myanmar Yoo Ho CO., Ltd) in the south and Wet Ma Sut Wun Htauk Street in the north. The geographical coordinates of project site are as follows:

Latitude: 16° 54' 35.615" N

Longitude: 96° 04' 13.152" E



Figure (1) Location of the Factory

Site Boundaries and Access Road

It is bounded by:

Rice Mill (Shwe La Won Co., Ltd)	East direction
Ka Naung Min Thar Gyi Street	West direction
Garment Factory (Myanmar Yoo Ho CO., Ltd)	South direction
Wet Ma Sut Wun Htauk Street	North direction



Figure (2) Site Boundaries and Access Road of the Project

Infrastructure

The project site consists of four buildings:

1. Factory Building (155 ft. x 180 ft.),
2. Boiler Building (66 ft. x 72.5 ft.),
3. Houses for Employee (95 ft. x 25 ft.) and
4. Canteen (53 ft. x 23 ft.).

The layout and photos of existing buildings and infrastructures including raw materials storage area, production area, utility area, office area, greenbelt area and parking area etc. are shown in the following Figure (3).

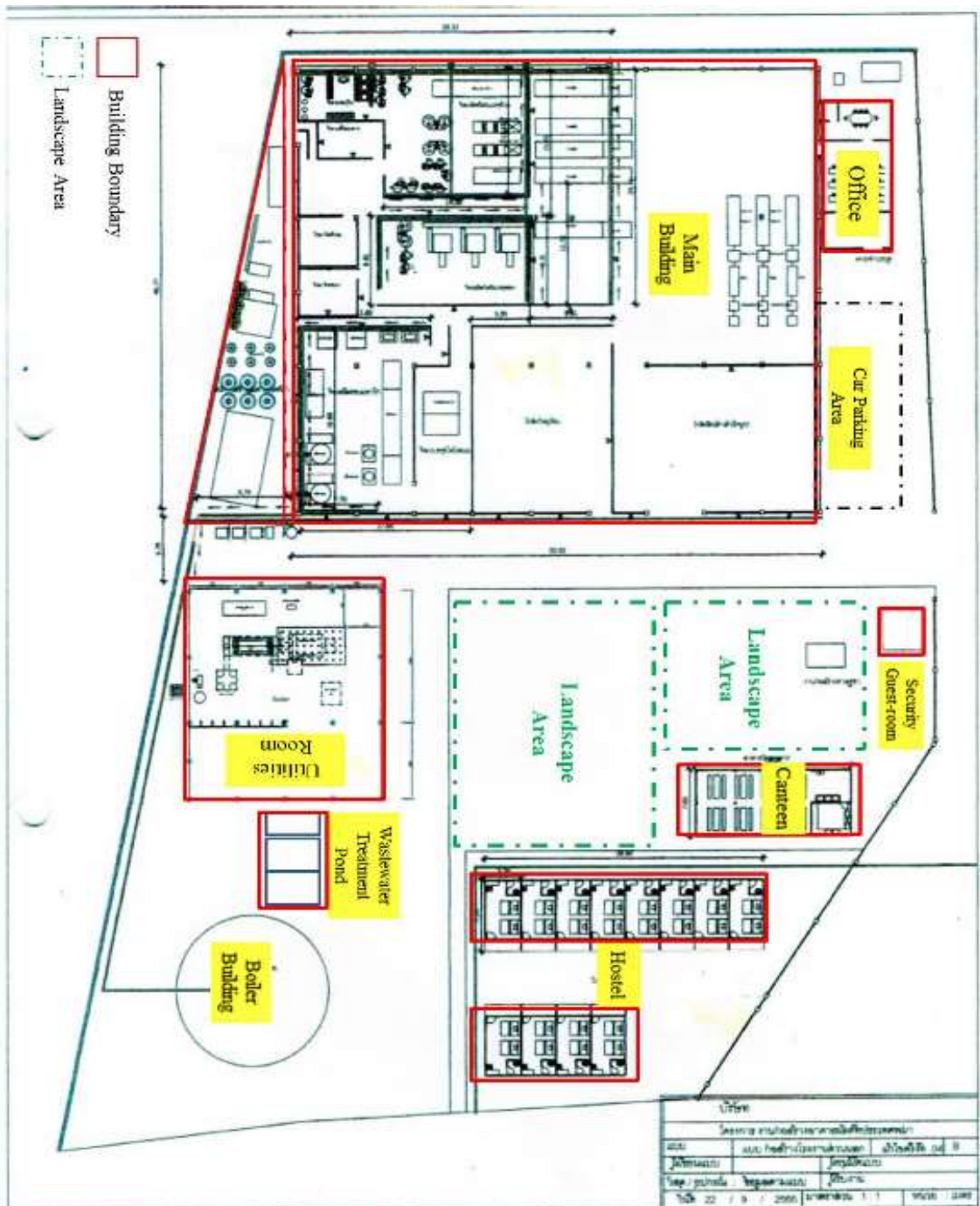


Figure (3) Factory Layout Plan

Product Profile

The proposed investment business is the operation of the business involving the manufacturing and distribution of various types of jellies. More specifically, the proposed investment will involve the manufacturing and distribution of the following products:

- (1) Hero Jelly Cup
- (2) Hero Plus Jelly
- (3) Daiyamoto Light Kit Jelly Cup
- (4) Daiyamoto Big Cup Jelly

The specification of product is shown in the following table.

Table (3) List of Product

No.	Particular	Weight (g)
1	Hero Jelly Cup	20
2	Hero Plus Jelly	120
3	Daiya Moto Light Kit Jelly Cup	55
4	Daiya Moto Big Cup Jelly	130



Figure (4) Photo of Product Sample

Production Capacity

The proposed project is to produce various types of jellies. For each type of jelly products, 90 % of total production capacity will be sold at local market and the remaining 10 % will be exported to foreign countries. The proposed production capacity for local and export are listed in Table -4 and 5. The production capacity is based on one shift a day and 26 working days per month.

Table (4) Annual Production Capacities of Various Types of Jellies (Local Sale)

No.	Product Name	Packing Per Carton	Estimate Annual Production Capacity (Carton)				
			Year				
			1	2	3	4	5-30
1	Hero Jelly Cup	20 g x 35 cups x 12 bags	216,000	368,280	432,000	432,000	475,200
2	Hero Plus Jelly	120 g x 6 bags x 16 packs	40,500	129,600	162,000	162,000	178,200
3	Daiyamoto Light Kit Jelly Cup	55 g x 15 cups x 12 packs	90,000	172,800	216,000	216,000	237,600
4	Daiyamoto Big Cup Jelly	130 g x 6 cups x 12 packs	27,000	259,200	324,000	324,000	356,400
Total Production Capacity			373,500	929,880	1,134,000	1,134,000	1,247,400

Table (5) Annual Production Capacities of Various Types of Jellies (Export Sale)

No.	Product Name	Packing Per Carton	Estimate Annual Production Capacity (Carton)				
			Year				
			1	2	3	4	5-30
1	Hero Jelly Cup	20 g x 35 cups x 12 bags	24,000	45,320	48,000	48,000	52,800
2	Hero Plus Jelly	120 g x 6 bags x 16 packs	4,500	18,000	18,000	18,000	19,800
3	Daiyamoto Light Kit Jelly Cup	55 g x 15 cups x 12 packs	10,000	24,000	24,000	24,000	26,400
4	Daiyamoto Big Cup Jelly	130 g x 6 cups x 12 packs	3,000	16,000	36,000	36,000	39,600
Total Production Capacity			41,500	103,320	126,000	126,000	138,600

Raw Materials

The ingredients/raw materials for jelly production are sugar, fructose syrup, carrageenan powder, lucustbeen gum, konjakku flour, artificial flavor and artificial color. Thai Faster Products and M.K. Company Limited have a plan to purchase sugar and paper cardboard (carton) from local market and other raw materials are imported from abroad. Required amounts of raw materials to be imported and to be purchased from local market are shown in Table (6) and (7) respectively. Food grade Chemical list is shown in table (8).

Table (6) Annual Requirements of Raw Materials

No.	Particulars	Unit	Quantity					Imported
			Year 1	Year 2	Year 3	Year 4	Year 5-30	
1	Carrageenan Powder	Kg	11,085	28,406.8	34,740	34,740	38,214	Thailand
2	Locust bean Gum	Kg	11,830	30,148.8	36,840	36,840	40,524	Thailand
3	Konjac Gum	Kg	4,984	12,706.96	15,528	15,528	17,080.8	Thailand
4	Artificial Flavor	Kg	3,856	9,965.44	12,192	12,192	13,411.2	Thailand
5	Artificial Color	Kg	1,114.5	2,895.72	3,546	3,546	3,900.6	Thailand
6	PP Cup							local
	- Hero Jelly	cup	100,800,000	173,712,000	201,600,000	201,600,000	221,760,000	
	Daiyamoto	cup	18,000,000	35,424,000	43,200,000	43,200,000	47,520,000	
	Light Kit							
- Daiyamot	cup	2,160,000	19,814,400	25,920,000	25,920,000	28,512,000		
	Big Cup							
7	Plastic Bag							local
	- Hero Jelly	bag	2,880,000	4,963,200	5,760,000	5,760,000	6,336,000	
	- Hero Plus	bag	4,320,000	14,169,600	17,280,000	17,280,000	19,008,000	
8	Plastic Film							Thailand
	- Hero Jelly	pcs	100,800,000	173,712,000	201,600,000	201,600,000	221,760,000	
	-Daiyamoto	pcs	18,000,000	35,424,000	43,200,000	43,200,000	47,520,000	
	Light Kit							
-Daiyamoto	pcs	2,160,000	19,814,400	25,920,000	25,920,000	28,512,000		
9	Paper Inner Box							local
	-Daiyamoto	box	1,200,000	2,361,600	2,880,000	2,880,000	3,168,000	
	Light Kit							
	-Daiyamoto	box	360,000	3,302,400	4,320,000	4,320,000	4,752,000	
	Big Cup							
10	Plastic Tape	pcs	415,000	1,033,200	1,260,000	1,260,000	1,386,000	local

Table (7) Annual Requirements of Raw Materials (Purchased from Local)

No	Particulars	Unit	Quantity				
			Year 1	Year 2	Year 3	Year 4	Year 5-30
1	Pure refined Sugar	Kg	485,800	1,239,408	1,514,400	1,514,400	1,665,840
2	Paper Cardboard						
	Hero Jelly Cup	ctn	240,000	413,600	480,000	480,000	528,000
	Hero Plus Jelly	ctn	45,000	147,600	180,000	180,000	198,000
	Daiyamoto Light Kit Jelly Cup	ctn	100,000	196,800	240,000	240,000	264,000
	Daiyamoto Big Cup Jelly	ctn	30,000	275,200	360,000	360,000	396,000

Table (8) Food grade Chemical Lists

Items	Storage state	Production for Hero Boys 30 Bath and Daiya 21 Bath jellies			Logistic	Imported
		Day (Kg)	Month (Kg)	Yearly (Kg)		
Tripotassium Citrate (P-PCT)	Bag	2.714	81.410	976.92	M.K Trading logistic	Thailand
Maltodextrin	Bag	8.832	264.960	3,179.52		Thailand
Citric Acid Monohydrate	Bag	3	90	1,080		Thailand
Grap Flavor Symrise (F-GRS)	Bin	0.83	2.478	29.74		Thailand
Orange Flavor(Symrise) (F-ORS)		0.022	0.662	7.95		Thailand
Lychee Flavor (VM) (F-LCV)		0.029	0.875	10.50		Thailand
Grap Flavor(MV/GRV/) (F-GRM)	Bin	0.067	2.016	24.19		Thailand
Grape Flavor(Sensient) (F-GRV)		0.198	5.950	71.40		Thailand
Stawberry Flavor TFF (F-STT)		0.060	1.800	21.60		Thailand
Orange Flavor (Thai Inter) (F-ORT)	Bin	0.227	6.806	81.67		Thailand
Salacider Flavor (Firmenich) (F-SLF)		0.218	6.528	78.34		Thailand
Pineapple Falvor (Thai Inter) (F-PAT)		0.110	3.311	39.74		Thailand
Aspartame Powder (P-APT)	Carton	0.226	6.775	81.30		Thailand
Acesul FAME-K (P-ACEF)		0.236	7.085	85.02		Thailand
Sunset Yellow FCF (P-SSY)	Pouch	0.250	7.500	90.00		Thailand
Dark Red Carmoisine (P-CMI)	Pouch	0.079	2.356	28.27	Thailand	
Tartrazine (P-TTZ)	Pouch	0.050	1.500	18.00	Local	
Probenz SG Sodium Benzoate (P-BZA)	Bag	0.916	27.492	329.90	Local	

Manufacturing Process

Jelly (Hero Boys and Daiya Moto) manufacturing process can be divided into: 1) Preparation of Raw Materials, 2) Mixing, 3) Filling, 4) Cooling and 5) Packaging.

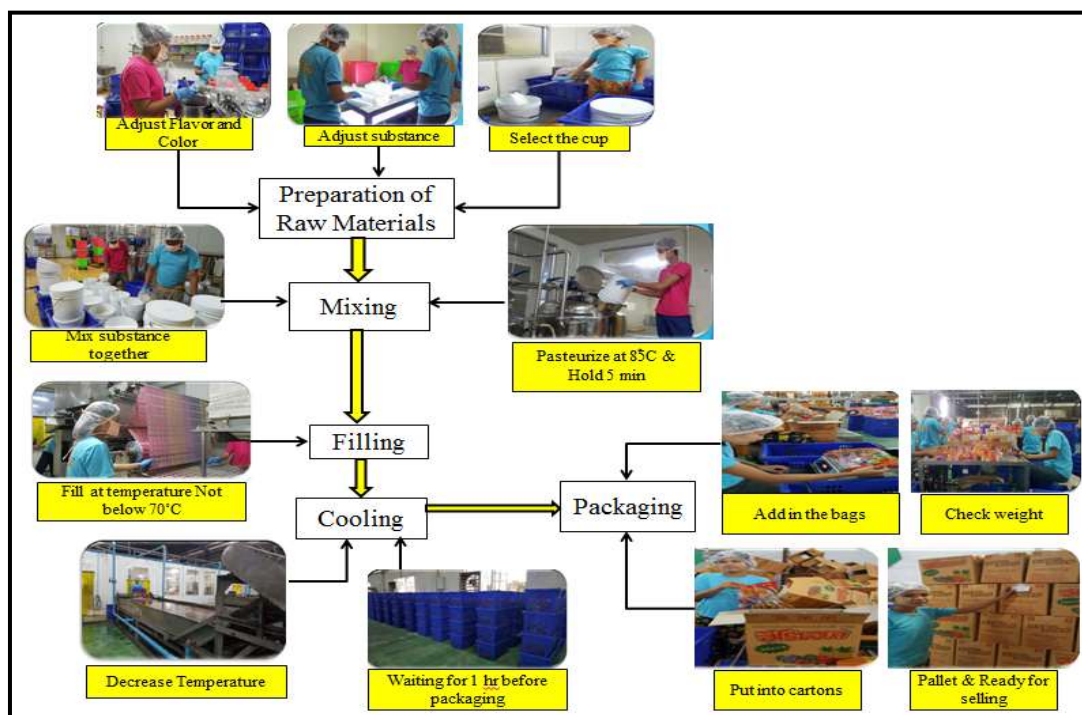


Figure (5) Process Flow Chart for Manufacturing of Hero Boys

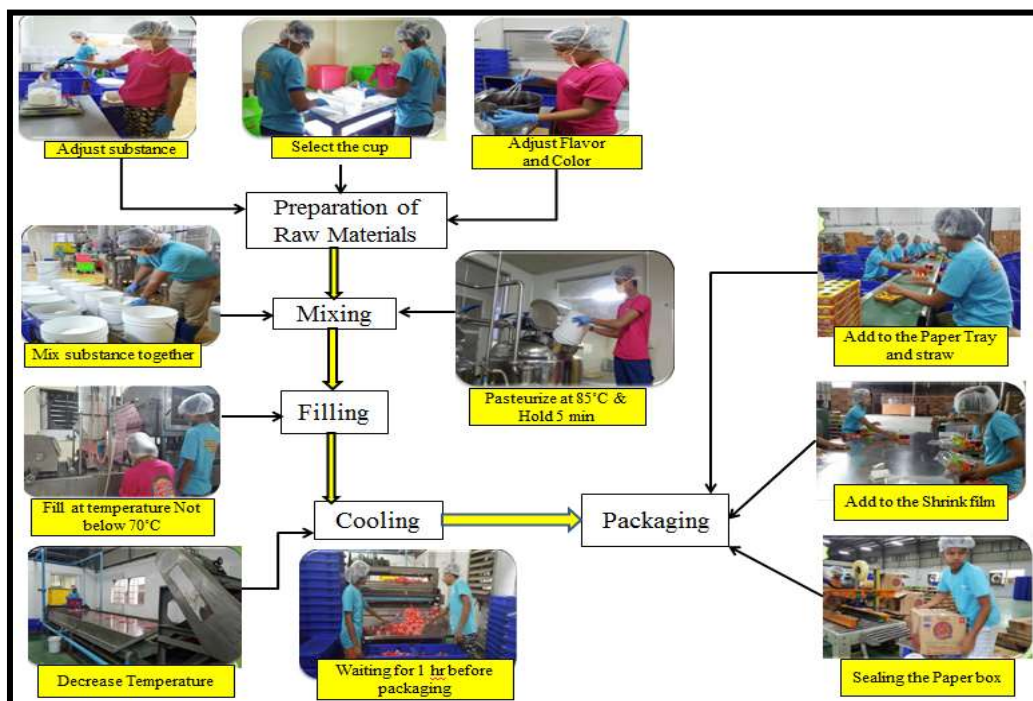


Figure (6) Process Flow Chart for Manufacturing of Daiya Moto

Employment Plan

Thai Faster Products and M.K. Company Limited have a plan to arrange the employment plan for the investment business as listed in the following table. But company has assigned initially only 196 persons of employment for the production of jelly products.

Table (9) Employment Plan

Type of Personnel	Department	No. of Persons				
		Year 1	Year 2	Year 3	Year 4	Year 5-30
Local Personnel Required						
Executive Level	Management	1	1	2	2	2
Expert Level	Production	3	3	3	3	3
Chief Officer	Quality Control	10	10	15	15	15
Secretary	Admin	4	4	6	6	6
Skill Employees	Production	20	25	30	30	30
Employees	Worker	150	250	300	300	300
Total		188	293	356	356	356
Foreign Experts and Technicians Personnel Required						
Executive Level	Management	3	2	1	1	1
Expert Level	Production	3	3	3	3	3
Chief Officer	Admin	2	2	2	2	2
Total		8	7	6	6	6

Working hour and days

Working hours for the production process are:

7:00 am to 4:00 pm (Monday to Friday) and 5:30 pm (overtime)

7:00 am to 11:00 am (Saturday).

Sunday is the holiday.

Annual Working day: 300 day/yr

Thai Faster Products and M.K. Company Limited provide proper leave scheme, over-time allowance and yearly bonus which shall be satisfactory for the workers. Moreover, there will provide First Aid and Health Care Program to the workers.

Wastewater Discharge and Treatment system

Wastewater Discharge

There is wastewater from the production and domestic wastewater will be discharged. Process waste water may be discharged from the floor washing, tanks washing and cooling process. Domestic wastewater from canteen, office and toilet flushing shall be collected in septic tanks for treatment. Storm water are discharged directly flow to the municipal drain. Wastewater discharging and Disposal Detail is described the following Table (10).

Table (10) Wastewater discharging and Disposal Detail

No	Source	Amount (liter)			System
		Day	Month	Year	
1	Process wastewater	10,000	260,000	3,000,000	Waste water Treatment Plant
2	Domestic wastewater	200	5,200	60,000	

Wastewater Treatment System

The process wastewater will be treated with wastewater treatment plant (WWTP) that is installed in the factory. The process flow chart and wastewater treatment pond is as shown in the following Figure (7).

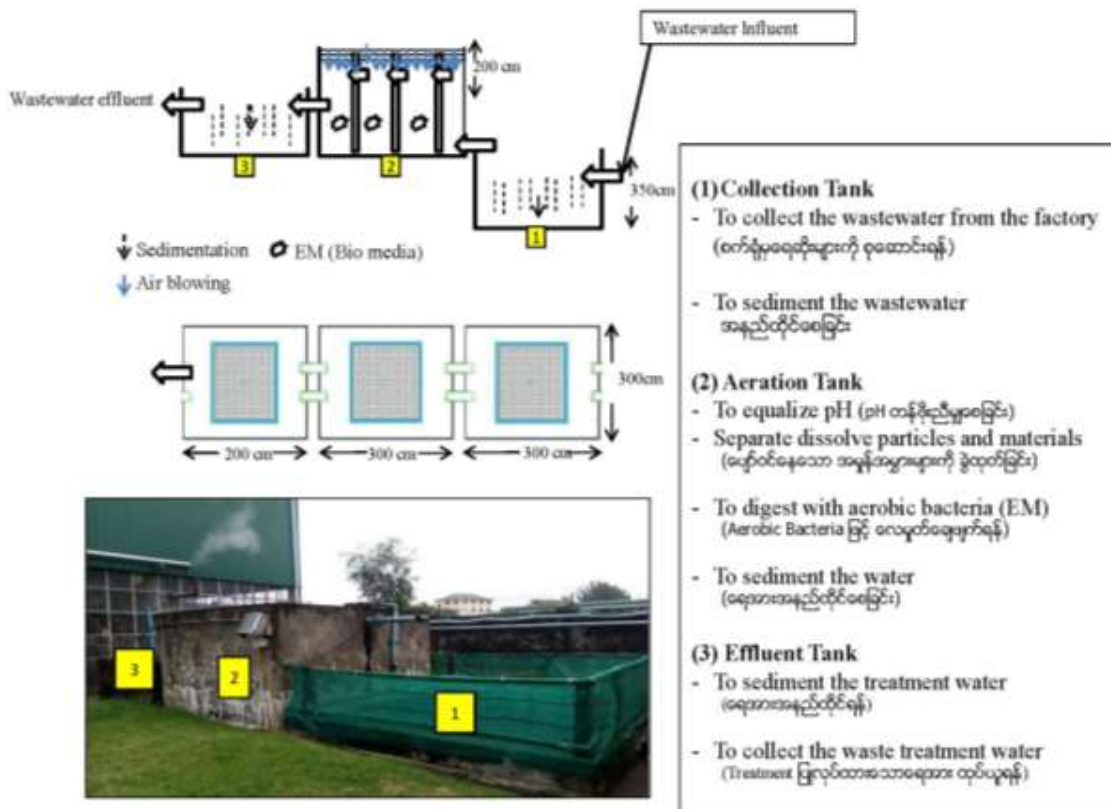


Figure (7) Waste water Treatment Plant

Other Facilities

In order that the employees may enjoy proper welfare commensurate with that of a prestigious Company, the company has set up a plan, as stated below, for employees as employees' welfare plan.

Self- cleanliness

- (a) To teach the laborers how to keep self-cleanliness: washing hands with soap before and after having meals and after using the toilet.
- (b) To train them to wear clean uniforms, gloves, masks and caps.
- (c) There will be a clean and ventilated room for canteen with enough tables and benches, clean drinking water and soap for washing hands
- (d) The toilet will be provided with soap, enough water and deodorants. If necessary, some kind of antiseptic liquid will be sprayed.
- (e) Provide Purified drinking water to the employees.

Medical Care

The medicine box of the factory of Thai Faster Products and M.K Company Limited, it is the basic medicine that employees need when they felt sick or have a little accident during the operation. If the employee is seriously ill or has a serious accident, there have to go to hospital by the factory.

- (a) Sometimes, there will be educational seminar on medical care.
- (b) There will be medical check-ups for some kinds of infectious diseases like tuberculosis.
- (c) If necessary, treatment with free of charges will be given.
- (d) The Company provides Covid-19 Vaccination for employees see the attached in Appendix (28).

Ways of Training

- (a) Our members will be trained to be honest, good and clever ones by using awarding and punishing system.
- (b) Those who work hard will be encouraged by suitable on-job training courses
- (c) There will be a promotion and demotion system depending on their skills.
- (d) They will be trained to have mutual respects among senior and junior laborers and supervisors.
- (e) They will be trained to understand the value of unity in every field.
- (f) There will be provided emergency reponse training to the workers.

Transportation Arrangement

The transportation arrangement for raw material, finished goods and ferry for worker is as shown in following table the factory will should be arrange the effective car parking for ferry bus. The ferries are stopped inside the factory estate. Therefore, traffic jam will not cause by the ferry car of Thai Faster Products & M.K Co., Ltd.

Description of the Environment and Social Environment

TFFPMK Jelly factory is located in Shwe Lin Pan Industrial Zone, Hlaing Tharyar Township, and Yangon Region. It is of prime importance to collect baseline data in order to identify the potential environmental issues to be managed through the operation phase. Information was gathered on the existing physical environment, particularly as related to climate, geology, water quality, air quality and noise. The secondary data collection is based on September 2020 General Administration Department of Hlaing Tharyar (Eastern) Township.

Table (11) Environmental and Social Condition near the Project Area

Type	Description																																				
Natural Environment																																					
Meteorology	<ul style="list-style-type: none"> Hlaing Tharyar (Eastern) Township is located in the northern district of Yangon Region. The location of the township is between north latitude 16° 47' and 20° 12' and between east longitude 96° 12' and 100° 13'. It occupies an area of 13.96 square miles. 																																				
Topography	<ul style="list-style-type: none"> Insein Township is located in the eastern part of the Hlaing Tharyar (Eastern) Township, Hlaing Tharyar (West) Township from the West, Twantay township from the South and Shwe Pyi Thar township from the North of Hlaing Tharyar (East) Township are respectively. 																																				
Geographic	<ul style="list-style-type: none"> The topography of Hlaing Tharyar (East) Township is flat. 																																				
Hydrology	<ul style="list-style-type: none"> In Hlaing Tharyar (Eastern) Township, the Pan Hlaing River flows from west to east and merges into the Hlaing River which flows north to south. Pan Hlaing River is shallow, 2015. In January, the river was re-excavated and boats can travel along the river. 																																				
Climate	<ul style="list-style-type: none"> The climate of the Hlaing Tharyar (Eastern) Township is a tropical monsoon climate. The highest temperature is 41°C and lowest temperature is 27°C. <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th rowspan="3">No.</th> <th rowspan="3">Year</th> <th colspan="2">Rainfall</th> <th colspan="2">Temperature</th> </tr> <tr> <th rowspan="2">Rainy Days</th> <th rowspan="2">Total Rainfall (inches)</th> <th>Summer (°C)</th> <th>Winter (°C)</th> </tr> <tr> <th>Highest</th> <th>Lowest</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>2017</td> <td>123</td> <td>132.05</td> <td>40</td> <td>27</td> </tr> <tr> <td>2</td> <td>2018</td> <td>105</td> <td>113.28</td> <td>41</td> <td>26</td> </tr> <tr> <td>3</td> <td>2019</td> <td>112</td> <td>102.01</td> <td>39</td> <td>26</td> </tr> <tr> <td>4</td> <td>2020</td> <td>101</td> <td>97.72</td> <td>40</td> <td>26</td> </tr> </tbody> </table>	No.	Year	Rainfall		Temperature		Rainy Days	Total Rainfall (inches)	Summer (°C)	Winter (°C)	Highest	Lowest	1	2017	123	132.05	40	27	2	2018	105	113.28	41	26	3	2019	112	102.01	39	26	4	2020	101	97.72	40	26
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3	2019	112	102.01	39	26																																
4	2020	101	97.72	40	26																																
Sea level	<ul style="list-style-type: none"> The sea level of Hlaing Tharyar (Eastern) Township is 100 feet. 																																				
Biodiversity																																					
Natural plants	<ul style="list-style-type: none"> The natural plants that grow naturally in Hlaing Tharyar (Eastern) Township are; the clover emerald tree vanda even kukko tree and boskai tree. 																																				
wild animal	<ul style="list-style-type: none"> There are no wild animals in the Hlaing Tharyar (Eastern) Township. 																																				
Natural	<ul style="list-style-type: none"> Hlaing tharyar (Eastern) Township is located between Pan Hlaing 																																				

Environment	River and Hlaing Reiver, so the environment is lush and green.																																				
Natural Environmental conservation	<ul style="list-style-type: none"> To protect the environment, planting shady plants on the left/ right sides of highways every year. Raising awarenss about not catching fish during fishing trips in lakes/ channels. The levant deparments, to educate and preach according to the industrial zones to ensure that waste discharges from the factories are organized. There is coopertaiton with NGOs. 																																				
Administrative	<ul style="list-style-type: none"> Hlaing Tharay (Eastern) Township is Ward (9) It is composed of (5) village groups and (9) villages. 																																				
Housing/ Population and Communities	<ul style="list-style-type: none"> As of the end of September 2020, Hlaing Thayar (Eastern) Township has 21,141 urban households, 7,152 village households, 29,056 urban households, and 12,630 village households. 																																				
Population by National Ethnic Group	<ul style="list-style-type: none"> The polulation by National Ethnic Group of Hlaing Thayar (Eastern) Township is the following table. <table border="1"> <thead> <tr> <th>Sr. No.</th> <th>Ethnicity</th> <th>No. of Persons</th> <th>Percentage (%)</th> </tr> </thead> <tbody> <tr> <td>1.</td> <td>Kachin</td> <td>101</td> <td>0.044</td> </tr> <tr> <td>2.</td> <td>Kayah</td> <td>8</td> <td>0.033</td> </tr> <tr> <td>3.</td> <td>Kayin</td> <td>2,638</td> <td>1.150</td> </tr> <tr> <td>4.</td> <td>Chin</td> <td>434</td> <td>0.18</td> </tr> <tr> <td>5.</td> <td>Mon</td> <td>448</td> <td>0.19</td> </tr> <tr> <td>6.</td> <td>Burmese</td> <td>216,986</td> <td>94.64</td> </tr> <tr> <td>7.</td> <td>Rakhine</td> <td>3,173</td> <td>1.37</td> </tr> <tr> <td>8.</td> <td>Shan</td> <td>322</td> <td>0.14</td> </tr> </tbody> </table>	Sr. No.	Ethnicity	No. of Persons	Percentage (%)	1.	Kachin	101	0.044	2.	Kayah	8	0.033	3.	Kayin	2,638	1.150	4.	Chin	434	0.18	5.	Mon	448	0.19	6.	Burmese	216,986	94.64	7.	Rakhine	3,173	1.37	8.	Shan	322	0.14
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Religion	<ul style="list-style-type: none"> According to the religion of the people living in Hlaing Thayar (Eastern) Township, the population is Buddhist (220,859); Christianity (3,461); Hindi (3,781); Islamabad (1,163) respectively. 																																				
Population by Foreigner	<ul style="list-style-type: none"> The number of foreigners living in Hlaing Thayar (Eastern) Township is Chinese (964), which is (0.42%) of the township's population. There are Indians (804 people) and (0.35%) of the township's population; There are 111 Pakistanis, 0.05 of the township's population. There are 583 Bangladeshis (0.25%) of the village population. Others (2692) are 2.24% of the township population. 																																				
Socio-economic																																					
Economical	<ul style="list-style-type: none"> Hlaing Thayar (Eastern) Township is located in Yangon Region and is a township with slow economic development. The local people in the township have few employees and most of them work as factory workers. Livestock farming is owned and bred. The township is located on the Yangon-Pathein road and has good transportation. Although the township does not have any major products, there are exports from the Irrawaddy region. 																																				

Land Use	<ul style="list-style-type: none"> Land using of Hlaing Thayar (Eastern) Township is the follow table. <table border="1"> <thead> <tr> <th>No.</th> <th>Types of Land</th> <th>Area (acres)</th> </tr> </thead> <tbody> <tr> <td>1.</td> <td>Net Cultivation Area</td> <td></td> </tr> <tr> <td></td> <td>(i) Paddy land</td> <td></td> </tr> <tr> <td></td> <td>(ii) Farmland for crop</td> <td></td> </tr> <tr> <td></td> <td>(iii) Cultivated Island</td> <td></td> </tr> <tr> <td></td> <td>(iv) Orchard</td> <td></td> </tr> <tr> <td></td> <td>(v) Hillside</td> <td></td> </tr> <tr> <td>2.</td> <td>Vacant Land Area</td> <td></td> </tr> <tr> <td>3.</td> <td>Industrial Land</td> <td>3455.678</td> </tr> <tr> <td>4.</td> <td>Rural Land and Others</td> <td>13191.552</td> </tr> <tr> <td>5.</td> <td>Reserved Forest and Protected Forest Area</td> <td>-</td> </tr> <tr> <td>6.</td> <td>Wild forest</td> <td>-</td> </tr> <tr> <td>7.</td> <td>Virgin Soil area</td> <td>-</td> </tr> <tr> <td>8.</td> <td>Non-cultivated area</td> <td>-</td> </tr> </tbody> </table> 	No.	Types of Land	Area (acres)	1.	Net Cultivation Area			(i) Paddy land			(ii) Farmland for crop			(iii) Cultivated Island			(iv) Orchard			(v) Hillside		2.	Vacant Land Area		3.	Industrial Land	3455.678	4.	Rural Land and Others	13191.552	5.	Reserved Forest and Protected Forest Area	-	6.	Wild forest	-	7.	Virgin Soil area	-	8.	Non-cultivated area	-
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Industry	<p>As the industry of Hlaing Tharay (East Ping) Township</p> <ul style="list-style-type: none"> Army garment factory (1). 108 factories in Industrial Zone (1). 132 factories in Industrial Zone (2). 66 factories in 3 industrial zones 123 factories in 4 industrial zones 13 factories in 6 industrial zones 43 factories in 7 industrial zones 306 factories in Shwe Linping Zone <p>There are total of (92) privately owned domestic industries in the township.</p> <ul style="list-style-type: none"> There are (22) cooperative societies and (1) cooperative societies in Hlaing Thayar (East Pyong) township. 																																										
Economic Infrastructure	<p>Commodity depot in Hlaing Tharay (Eastern) Township. There are no fairgrounds.</p> <ul style="list-style-type: none"> There are 11 state-owned markets. There are (4) malls. There are 8 private banks and 1 government bank. There are 467 stores and shops. There are (3) drinking water industries. 																																										
Livelihood	<ul style="list-style-type: none"> The number of people working in Hlaing Thayar (Eastern) Township is government employees (2887); service industry (185 people); Transactions (978 people); Industry (17,350 people); Random (3270 people) and other business (2645 people). 																																										
The number of working people and unemployed	<ul style="list-style-type: none"> In Hlaing Thayar (Eastern) township, the number of working people (132698) and the number of unemployed (22709) is 14.6. 																																										
Educational	<ul style="list-style-type: none"> High schools (8) in Hlaing Tharay (Eastern) Township. High school branch (5) schools; Primary school (14) Pre-primary school (4); There are 7 monastic education schools. 																																										
Health Information	<ul style="list-style-type: none"> There are 2 (2) government hospitals in Hlaing Tharay (Eastern) Township. (2) private hospitals; Dispensary (113); and there are 4 (4) 																																										

	<p>Rural Health Departments/Divisions.</p> <ul style="list-style-type: none"> The most common diseases in the region are diarrhea, tuberculosis stomach ache Liver disease.
Sports and entertainment industry	<ul style="list-style-type: none"> Soccer field (2) in Hlaing Tharay (Eastern) Township. Volleyball court (2); Golf course (1); Cinema (1); Public Park (1).
Religious Information •	<ul style="list-style-type: none"> As religious buildings in Hlaing Tharay (Eastern) Township, Pagoda (1); Monastery (46); Nunnery School (2); There is (1) temple. A prominent god The pagodas are Aung Munthaya Pagoda, Shwe Rin Aye Pagoda.

Source- www.gad.gov.mm

Primary Data for the Surrounding Environment

Air Quality

The objective of the air-quality sampling program is to document baseline air quality conditions in the project area. Seven sampling points were selected in the project area. Field investigation was done by EMP team in March 2018 for baseline data of water quality, air quality and noise. These points are listed in Table 4.9 and shown in Figure 4.2.

Ambient Air Quality result is shown in Table 4.10 by comparing with air quality guidelines of Myanmar Environmental Quality (Emission) Guidelines 2015 from Ministry of Natural Resources and Environmental Conservation.

Ambient particulates levels were much higher than the recommended air quality guidelines established by National Environmental Quality (Emission) but levels of other parameters were lower than this standard.

The ambient PM_{2.5} and PM₁₀ level is higher than the NEQG due to the transportation of motor vehicle and near the road with the entrance of the factory. Moreover, cumulative impact may be because the factory is located at the Industrial zone. There should be implemented according to EMP for this impact.

Water Quality

The objective of the water-quality sampling program is to document baseline conditions of water quality in the project area. Five sampling points were selected in the project area. These points are listed in Table 4.13 and shown in Figure 4.5.

Samples were compared with Drinking Water Standards of WHO, EPA and Indian Specification for tube well water and drinking water; and Water Quality Guidelines of National Environmental Quality (Emission) Guidelines from Ministry of Natural Resources and Environmental Conservation for waste water.

These samples were analyzed at Laboratory of GMES Co., Ltd and at Ecological Laboratory of Advancing Life and Regenerating Motherland (ALARM) to confirm the analysis results from GMES and the results obtained are shown in Appendix (14).

The values of location 2, 3, 4, 5 are not treated and the factory has already installed wastewater treatment plant (WWTP). There will be discharged to the municipal drain channel after treated of wastewater in the WWTP.

Wastewater Quality

The objective of the waste water-quality sampling program is to document baseline conditions of water quality in the project area. Three sampling points were selected in the project area.

These results were compared with Guidelines of National Environmental Quality (Emission) Guidelines from Ministry of Natural Resources and Environmental Conservation for waste water (Food and Beverages Processing).

These samples were analyzed at Laboratory of GMES Co., Ltd and at Ecological Laboratory of Advancing Life and Regenerating Motherland (ALARM) to confirm the analysis results from GMES and the results obtained are shown in Appendix (15)

The value of WWSP-1 (Processing discharge) and WWSP-2 (inlet of WWTP) is not treated and the factory has already installed wastewater treatment plant (WWTP). There will be discharged to the municipal drain channel after treated of wastewater in the WWTP.

The value of WWSP-3 is after treated from the Wastewater Treatment Plant. BOD, COD and Coliform were a little higher than the standard value and other parameters within the standard of National Environmental Quality (Emission) Guidelines. So, there will perform within the Guideline of NEQG for the effluent of wastewater value by the Thai Faster Products and M.K Co., Ltd.

.Noise Level

Three sampling points for noise level measurement were selected in the project area. These points are same as the air quality sampling points of Location-1, 6 & 7 listed in Table 4.21 and shown in Figure 4.8. Noise measurements were taken using Sound Level Meter (SD-4033SD) and the results recorded for the present study are presented in Table 4.22.

According to the Table 4.22, Noise level guidelines established by National Environmental Quality (Emission) are 70 dBA for factory surrounding and 55 dBA for residential vicinity. The average values of noise level recorded at location-1 (Ambient noise) monitored is slightly greater than the standard. This noise would be from ambient sources including vehicular traffic on the road.

The Noise level guidelines established by United State OHS is 105 dBA during the working time for 1 hour average of noise exposure limit. The average values of noise level recorded at location-6 (mixing room) and location-7 (boiler room) monitored is lower than the United State OHS standard.

Soil Quality

Soil sample was collected from beside the Boiler Section in the project area as shown in Figure 4.9. Laboratory of GMES Co., Ltd performed the analysis of soil sample by measuring the parameters such as pH, Chloride, Total Iron, Aluminum. Soil location point is shown in Figure 4.9 and the result is shown in Table 4.23.

These results shown in Table 4.23 are existing soil conditions of project area. At this condition, vegetation is already present and it looks healthy. So it can be concluded that existing soil is unpolluted. We were collected soil sample for the base line of the project current condition.

Table (12) Rating for Significance

Attribute	Description	Weight
Negligible	The impact is non-existent or unsubstantial and is of no or little importance to any stakeholder and can be ignored.	< 20
Low	The impact is limited in extent, has low to medium intensity; whatever its probability of occurrence is, the impact will not have a material effect on the decision and is likely to require management intervention with increased costs.	< 40
Moderate	The impact is of importance to one or more stakeholders, and its intensity will be medium or high; therefore, the impact may materially affect the decision, and management intervention will be required.	< 60
High	The impact could render development options controversial or the project unacceptable if it cannot be reduced to acceptable levels; and/ or the cost of management intervention will be a significant factor in mitigation.	> 60
Status	Perceived effect of the impact	
Positive (+)	Beneficial impact	
Negative (-)	Adverse impact	
Negative impacts are shown with a (-) while positive ones are indicated as (+)		

The significance of the impact, rated from Low to High, is indicated in the table below with an explanation of the impact magnitude and a guide that reflects the extent of the proposed mitigation measures deemed necessary.

Table (13) Summary of Impact Significances for Operation Phase

Impact Sources	Pollutants	Impact Duration	Impact Scale	Impact magnitude/ Severity	Impact probability	Total Score	Impact Significance Rating
Air Quality							
Processing	PM, dust	Long term (4)	Site (1)	Low (2)	Definite (x5)	(35)	Low (Negative)
Generator	CO, CO ₂ , SO ₂ , NO _x	Short term (1)	Local (2)	Low (2)	Definite (x5)	(25)	Low (Negative)
Boiler	PM, SO _x , NO _x , CO _x	Long term (4)	Site (1)	Medium (6)	Definite (x5)	(55)	Moderate (Negative)

Truck and delivery car	SO _x , NO _x , CO _x	Medium term (3)	Local (2)	Low (2)	probable (x2)	(14)	Negligible (Positive)
Water Quality							
Domestic water	pH, BOD, COD, TSS, TDS, Oil & Grease	Medium term (3)	Site (1)	Medium (6)	Definite (x5)	(35)	Low (Negative)
Process wastewater	BOD, COD, TSS, TDS, color, Oil & Grease, pH	Long term (4)	local (2)	Medium (6)	Definite (x5)	(60)	Moderate (Negative)
Waste Disposal							
Hazardous Wastes	Water & soil	Medium term (3)	Site (1)	Low (2)	Definite (5)	(30)	Low (Negative)
Non-Hazardous Wastes	Water & soil		Local (1)	Low (2)	Definite (x5)	(30)	
Domestic Wastes	Water & soil		Local (1)	Low (2)	Definite (x5)	(30)	
Noise							
vehicle movement,	worker health and surrounding environment	Short term (1)	Site (1)	Low (2)	Definite (x5)	(20)	Low (Negative)
operation of generators		Short term (1)	Site (1)	Low (2)	Definite (x5)	(20)	Low (Negative)
Fire Hazards							
electric shock, Fuel Leakage, Smoking	PM, Dust and explosion	Permanent (5)	Local (2)	High (8)	Definite (x5)	75	High (Negative)
Emergency Risk							
Flood risk, cyclone, high tide Earthquake	Air, Water, Soil and human Health	Short term (1)	Regional (3)	High (8)	probable (x2)	24	Low (Negative)
Hazardous of Machineries Handling							
Electric shock, improper instilling machines, Do not have regularly maintenance	Worker Health and Surrounding Environment	Permanent (5)	Local (2)	High (8)	Definite (x5)	75	High (Negative)

Boiler and air compressor								
Local Economy								
Job opportunities	Job opportunities for local people will be provided and regional will be boosted.	Long term (4)	Local (2)	Medium (6)	Definite (x5)	60	High (Positive)	

Mitigation Measures for Operation Phase

The mitigation measures for operation phase pollution of TFPMK's Jelly Factory are summarized in the following table.

Table (14) Mitigation Measures for Operation Phase

Activity & Sub Activities	Environmental Impacts	Mitigation Measures	Final Impacts
Operation Phase			
1. Air Pollution			
Process, Boiler, Generator, Truck and Delivery car	Air Quality	<ul style="list-style-type: none"> • Good ventilation and clear assess will be provided. • Select diesel generator type with high combustion efficiency to minimize dark smoke generation • Conduct regular maintenance • Trained/Approved transports will be given work for the transportation of the raw materials / products. • Proper records will be maintained. 	Low, as proper handling of material will be followed
2. Solid Waste			
Packaging materials such as waxed corrugated boxes, pallets, shrink wrap, strapping ties, drums & polystyrene	Soil contamination	<ul style="list-style-type: none"> • Segregation of solid wastes will be done and will be sold for raising social- welfare fund. • There will provide training programs to related employees for handling and storage of chemicals. 	Beneficial Impacts on the factory and surrounding environment

3. Wastewater			
Effluent Generation from the Process, Utility	Water quality	<ul style="list-style-type: none"> • Segregation of the waste streams will be done. • Less pollution streams will be treated. • Treated effluent will be utilized for greenbelt, gardening & firefighting requirement. • Domestic wastewater will be disposed of into septic tank. 	Low impacts, As extreme care will be taken in treatment & monitoring of the quality of the effluent.
4. Hazardous Waste Generation			
Raw materials such as color, essence or flavoring ingredients	Soil, Water	<ul style="list-style-type: none"> • Preparation and mixing areas will be made of impervious surface to prevent leach ability. • Records of quantity of waste generated will be maintained. • Empty cans or drums will be sold to the vendors. 	Low impacts, due to preventive maintenance
5 Noise Pollution			
Noise Generation due to plant operation	Factory area & Environment	<ul style="list-style-type: none"> • Preventive Maintenance to ensure low noise generation. • Personal Protective Equipment (Ear Plug & Muff) will be utilized in the affected area. 	Low impacts, Due to preventive maintenance & usage of PPE's.
6 Storage of raw materials and products			
Storage of raw materials	Air, Risk	<ul style="list-style-type: none"> • Proper Storage area for raw materials, fuel oil drums and finished products. • Proper records will be maintained, Good ventilation & clear assess will be provided. 	Low impacts, as proper Handling of material will be followed.
7. Hazardous of Machineries Handling			
Effect on Worker Occupational	Effect on Worker	<ul style="list-style-type: none"> • Installation of machine prevention system with 	Beneficial impacts on the

Health and Safety	Occupational Health and Safety	regular inspection on the system <ul style="list-style-type: none"> Regular safety training for workers in a accordance with OHS training Avoid unnecessary accidents 	factory and surrounding environment
8. Fires Hazard			
<ul style="list-style-type: none"> Accidental spillage of fuel from unconscious handling Ignorance of fire hazard improper storage of raw materials and finished products 	Factory area and Surrounding Environment	Scheduled fire drill will be done. In all the necessary locations in the factory fire extinguish -hers must be in place. The expiry date & working function of the fire extinguishers must be checked regularly. Regarded no-smoking sign ensure smoking area(s) are away from flammable materials.	Beneficial Impacts on the factory and surrounding environment
9. Greenbelt Development			
Greenbelt Development	Factory area and Surrounding Environment	Development of good greenbelt within premises and at periphery of the premises.	Beneficial impacts on Air, Land & Noise.
10. Socio-economic			
Employment	Socio economy	Employment of the local people. Indirect employment to the service sector & suppliers. Substantial benefits in the form of contracts to local agencies for different services Employment in Skilled, Semi Skilled and Labor class.	Beneficial impacts on the socio economy

Environment Management Plan

The following sections describe the environment management system proposed for Operation phase. Thai Faster Products and M.K Company Limited must take responsibility to implement the environmental management plan as shown in below Table.

Table (15) Environmental Management Plan (Operation phase)

Air Pollution Management Plan

Objective	<ul style="list-style-type: none"> To reduce the source and amounts of the pollutants that is responsible for the pollution of the air quality. To comply with national emission guidelines.
Management Plan	<ul style="list-style-type: none"> Maintain green area to improve air quality. Regular checkup and scheduled maintenance of machineries and

	<p>generators.</p> <ul style="list-style-type: none"> • Keep proper housekeeping in the factory or in the premises to reduce dust generation. • There is no open burning of waste materials on site. • Install good ventilation system and dust emission system • Employees are instructed to wear mask during working time in dust generating area. Careful handling and weighting of the powder. • All the bare land area is covered with grass field or paved with concrete. • Generator exhaust is oriented away from people accommodated area. • A system such as water spraying in the chimney should be implemented to reduce particulate emissions from the boiler chimney. • The ash from the boiler must be properly collected so that it does not scatter.
<p>Responsible Team</p>	<p>EMT Team Leader/ Members</p>
<p>Responsibility</p>	<ul style="list-style-type: none"> • Implementation of above air pollution management plan. • Contact the environmental service contractor for monitoring air quality as scheduled. • Report the results of the air quality monitoring to the management and keep the records. • Inform public about air quality at appropriate time.

Solid waste Management Plan

Objective	<ul style="list-style-type: none"> To dispose solid waste generated in proper way to prevent from pollution of soil and water body. To comply with government waste management policy.
Management Plan	<p>Hazardous Waste</p> <ul style="list-style-type: none"> Storage All waste, hazardous or not, must be contained to prevent it from blowing away and from leaching into surface or groundwater. Hazardous waste must be in containers or tanks clearly labeled with the words “Hazardous Waste”. Volumes and time limits for storing hazardous waste on-site vary by generation category. Handling All employees must be instructed to the Safety Data sheet and there must be wore suitable PPE when the hazardous materials handling. Skillful and training worker must be taken and holding on it. Disposal Hazardous waste must be disposed at permitted waste facility such as authorized organization/ YCDC. Record amount of waste regularly.
Management Plan	<p>Non-Hazardous waste</p> <ul style="list-style-type: none"> Storage Non-hazardous waste needs to be removed from on-site at regular intervals to prevent release to the environment, and to avoid additional permit requirements. Nonhazardous waste and unused product must be contained to prevent discharge to the air, or runoff to surrounding land or water. Disposal Non-hazardous waste disposed at permitted waste facility such as Yangon City Development Committee. Record amount of waste regularly.
Responsible Team	<ul style="list-style-type: none"> EMT Team Leader/ Members
Responsible Team	<ul style="list-style-type: none"> EMT Team Leader/ Members
Responsibility	<ul style="list-style-type: none"> To ensure the solid waste management plan is implemented. To monitor whether the solid waste is segregated accordingly or not. To check the waste transfer notes and documented. To avoid pollution of the environment due to solid wastes.

Noise Pollution Management Plan

Objective	<ul style="list-style-type: none"> To reduce the noise pollutant of the factory boundary environment. To comply with national guidelines and OHS guideline.
Management Plan	<ul style="list-style-type: none"> Use sound absorbing material such as curtains, insulation sheet and damper where necessary and appropriate. Generator shall be put in the enclosed room. Rotate the working shift for employees who work in the high noise area. Generator and machineries such as pumps have to be maintained regularly. Employees who work in the high noise area should be provided with enough ear plugs or ear mufflers. Drivers must turn off the vehicle engines when not moving.
Responsible Team	<ul style="list-style-type: none"> EMT Team Leader/ Members
Responsibility	<ul style="list-style-type: none"> Implementation of above noise pollution management plan. Contact the environmental service contractor for monitoring of noise level as scheduled. Report the results of the noise level monitoring to the management and keep the records. Inform public about noise quality at appropriate time.

Water pollution Management Plan

Objective	<ul style="list-style-type: none"> To protect and mitigate for the water pollution. Prevent pollution of groundwater sources.
Management Plan	<ul style="list-style-type: none"> All drainage channels need to be covered by gratings. Baskets must be provided for Silt and debris. Avoid disposing of used oil direct into the drain. Wastewaters from the production are collected to the wastewater treatment pond and discharge to the municipal drainage. To provide awareness of discharge of wastw water for employees. To monitor for the results of the water quality and keep the records it.
Responsible Team	EMT Team
Responsibility	<ul style="list-style-type: none"> To ensure the above EMP is well implemented. To monitor the effectiveness of the EMP. To take action if there is any concern.

Resource Utilizing Management Plan

Objective	<ul style="list-style-type: none"> To minimize the electricity usage and water usage.
Management Plan	<p><u>Energy</u></p> <ul style="list-style-type: none"> Use energy efficient lamp and devices. That costs more upfront but over the years it saves more money and energy. Use maximum day light. Educate employees regarding with the energy saving features of electrical appliances such as air conditioner, microwaves, fans, printers, computers and other devices to let them use these features to cut the energy usage. Plant shady trees outside of the building to protect from hotness of the building inside. Turn off and unplug the equipment when not using. <p><u>Water</u></p> <ul style="list-style-type: none"> Use eco flush toilets. Treated effluent will be utilize for greenbelt, gardening and firefighting requirement.. Domenstic wastewater will be disposed of into septic tank. Records of quantity of wastewater discharged will be maintained. Detect the leak and fix it immediately.
Responsible Team	EMT Team Leader/ Members
Responsibility	<ul style="list-style-type: none"> Report the electricity consumption and other energy issues to top management. Monitor the electricity consumption. If there is any concern, review the EMP. Take corrective action and fix it if it is required.

Occupational Safety and Health Management Program

Thai Faster Products and M.K Company Limited currently maintain an occupational health and safety program actively managed by on-site staff. To implement the safety and health management for employees, the Occupational Health and Safety Management Committee was formed with the following members.

The duties and responsibilities of Occupational Health and Safety Management Committee are as follows.

1. To inspect the operation regularly with checklists for Safety and prevention of accidents.
2. To respond quickly when accident, illness or other emergency cases happen.
3. To convene the monthly committee meeting for discussing the situation of the Occupational Health and Safety status, accidents, emergency, other production problems and mitigation measures.

4. To report the findings and remarks from the monthly meeting to the administration for implementation.
5. To provide training for safety and health risk and prevention.
6. To keep the records of inspections, accidents and meeting minute.
7. Adequate budgetary provisions have been made by proponent. The management for execution of environmental management plans should be framed. The detailed capital and recurring (per annum) budget should be earmarked for pollution control/monitoring equipment; operation and maintenance of pollution control facilities.

Occupational health and safety management program is implemented to promote the health conditions, physical conditions, mental conditions and social well beings of the employees and to prevent from the risk of workplace hazard and incidents.

Infectious Disease Control

- Do regular cleaning of toilets and canteen area and office area.
- Cover waste bins to avoid breeding of flies and other insects
- Make sure there will be no water ponding within premise to avoid breeding of mosquitos.
- For Covid-19 infectious disease; educate the employees for awareness of sensitization, self-hygiene and precaution practices such as safe social distancing, wearing masks and washing hands, etc.

Socio-Economic Management Plan

Company shall aside any percentage of profit as CSR fund.

- Proponent shall use its CSR fund for upgrading of health care and education of the local community.
- Local employment policy should be adopted for local labour recruitment.
- Minimize the impacts of local community by adherence to EMP.
- Increase the interaction between factory workforce and local people by arranging public meetings and fun meetings at appropriate time.
- Facilitate the access to get opportunities for local contractors for providing local business development

Emergency Response & Disaster Management Plan

Emergency response & disaster management plan is required to avoid panic and to tackle the situation effectively during emergency time if occurred. The plan covers emergency response activities that shall be carried out in the event of emergency time.

The emergency response plan (ERP) is included are describe the following;

- The emergency response team structure
- The roles and responsibilities of command staff and support staffs
- Resources such as personnel & equipment that can be utilized during emergency time.
- Checklist of ERP activities.

Emergency Response Plan for Earthquake

- Turn off the gas and electricity. Wear shoes. Carry flashlight.
- Evacuate the employees as there are risks of falling objects and building collapsing.
- Identify the safe places indoor and outdoor.
- For indoor search the safe spots such as under sturdy desk or table. Stay away from glass windows, mirrors and heavy cabinets.
- For outdoor go away from the buildings, trees, telephone, electrical lines and overpasses.
- Follow the drop, cover and hold on procedures to be safe during earthquakes.
- Drop to the ground, cover under sturdy objects like table or furniture and hold on to it until the shaking is stopped.
- Stay as safe as possible during earthquake and make minimum movements until the shaking is finished.
- Use emergency whistle if trapped.

Flood Control Plan

Bago River can have potential on flood and the following factors should be aware to all of the workers from safety point of view during flood.

- Do not walk through flowing water.
- Use a pole to test the depth of standing water before you proceed.
- Do not drive through a flooded area. Two feet of water will carry away most automobile.
- Stay away from power lines and electrical wires.
- Turn off your all electricity if your building is flooded.
- Watch out for hiding animals.
- Look before you step. Mud can be very slippery to walk on.
- Be alert for gas leaks. Leave the area immediately if you smell gas fumes.

Fire Prevention Plan

Fires have been a persistent problem in most industry. Significant capital expenditure may be required to install adequate fire prevention and protection measures. Uncontrolled fires at the factory may not only destroy the business but also cause significant damage to neighboring properties and habitats.

The following standards are required for all factories:

- At least one alternative exit with a stair connecting all the floors of the factory building.
- No exit can be locked or fastened during working hours.
- An effective and clearly audible means to warn of fires.
- Cleared passages providing access to each escape route.
- A fire drill at least once a year in each factory where more than fifty workers are employed.
- Firefighting Training and Protection Measures

- "NO SMOKING" signs shall be conspicuously displayed at strategic locations in the factory.
- Whenever a fire or any accident occurs, notify the nearest fire station.

Using Fire Extinguishers

- Ensure that you use the correct extinguisher
- Always keep an emergency exit behind you. (Away from the fire)
- Stay low to avoid the effects of smoke/heat.
- Direct extinguisher stream at base of flames.
- Move stream in a side to side, sweeping motion.
- If the fire gets to the point where you can no longer able to control it, retreat and close the doors. (Do not lock)

Using Fire Hose Reels

- Turn on the stop valve
- Run out the length of hose
- Turn on the water nozzle and direct stream at the base of the fire.
- Ensure you leave a direct egress path between you and the exit door/egress route

Environmental Monitoring Plan

Monitoring is an essential and an integral part of the implementation of the proposed environmental mitigation measures. Environmental monitoring generates useful information and improves the quality of implementation of mitigation measures.

Monitoring involves the observation, review and assessment of onsite activities to ensure adherence to regulatory standards and the recommendations made to reduce negative impacts. The plan must be comprehensive and address relevant issues, with a reporting component that will be made available to the regulatory agencies based on a mutually agreed frequency. It is recommended that a minimum bi-annually monitoring report be submitted to the authorities.

Table (16) Environmental Monitoring Plan

Environmental Issue	Item	Location	Frequency	Responsibility
Air Quality	PM ₁₀ , PM _{2.5} , O ₂ , CO, CO ₂ , NH ₃ , NO ₂ , SO ₂ , O ₃ , VOC	Ambient air within the factory premises	Annual	Designated EMT member
	PM ₁₀ , PM _{2.5} , VOC, O ₂ , CO, CO ₂ , NO ₂ , SO ₂	Boiler and diesel generator	Bi-annual	
	PM ₁₀ , PM _{2.5} , SO _x , NO _x	Workplace (Mixing room)	Bi-annual	
	Establish a routine maintenance, inspection program for burners	Boiler	Daily	
Non-hazardous Solid Waste	Set quantified waste reduction and disposal	Workplace, Factory Premise	As necessary	EMT, Operation

Environmental Issue	Item	Location	Frequency	Responsibility
	targets (in volume, weight or costs)			supervisor
	Separate bins for different kinds of waste	Workplace, Factory Premise	Daily	Operation supervisor, Workers
Hazardous Solid Waste	Provide training to employees on how to dispose of hazardous material	Workplace, Factory Premise	For each new staff	Manager
	Ensure MSDS for hazardous products are up-to-date and accessible at any time.	Workplace, Factory Premise	Monthly	Designated EMT member
Water Quality	Aluminum, Chloride, copper, cyanide, Manganese, pH, Sulfate, Total Alkalinity, TDS, Hardness, Total Iron, Turbidity	Tube well	3 time/ yr	Designated EMT member
		Drinking water		
Waste water Quality	BOD ₅ , COD, Oil & Grease, pH, Total Nitrogen, Total Phosphorous, TSS, Coliform, temperature	Processing wastewater	3 time/ yr	Operation supervisor, Designated EMT member
		WWTP influent	3 time/ yr	
		WWTP effluent	3 time/ yr	
Noise Quality				
Ambient Noise	Noise level in decibel	Factory Premise	1 time/ yr	Designated EMT
Workplace Noise	Noise level in decibel	Maintain all equipment so it's running efficiently.	Weekly/ necessary	Factory manager
		Employees working in areas with high noise levels	Daily	Factory manager
Workplace Noise	Noise level in decibel	Mixing room	Bi-annual	Designated EMT
		generator and Boiler	Bi-annual	
Emergency Response Equipment	▪ Firefighting equipment (extinguisher, fire hydrants, firehose)	Factory Premise, Workplace, Generator Room, Fuel Storage Area	Daily	Fire brigade

Environmental Issue	Item	Location	Frequency	Responsibility
	▪ Fire-drill testing	Factory Premise	Monthly	Fire brigade
	▪ Servicing firefighting equipment	All equipment	Quarterly	Fire brigade
	▪ Reviewing records of accidents which is recorded on & around the entire facility	-	Quarterly	Fire brigade
	▪ OHS training	Factory Premise	Biannual	OHS manager
Occupational Health and Safety	▪ the sanitary facilities that should be kept clean and well lit.	Factory Premise	Weekly	General manager, nurses and OHS team
	▪ Ensure proper solid waste disposal and facilities.	Factory Premise	Daily	OHS team
	▪ Provide First Aid kits on the site. Ensure nurse(s) is stand-by in clinic. Educate workers on environmental management.	Factory Premise	Daily	General manager and OHS team
	▪ Provision of all necessary PPEs.	Factory Premise	As necessary	General manager and OHS team
▪ Workers should be trained on OSH and first-aid administration.	Factory Premise	As necessary		
Energy Consumption	▪ Record diesels consumption	Generator, and Compressors	Monthly	General manager and OHS team
	▪ Record Electricity usage	Electric Meter	Monthly	
Resources Usage	▪ The unused equipment must be switched-off	Power Distribution Panel	Daily	In-charge in each section
	▪ All water taps shut when not in used	All Water Taps	Daily	For all employees

Budgetary Provisions for EMP

Adequate budgetary provisions have been made by proponent. The management for execution of environmental management plans should be framed. The detailed capital and recurring (per annum) budget should be earmarked for pollution control/monitoring equipment, operation and maintenance of pollution control facilities.

The project is going in operation phase when this EMP report was prepared. Thus, estimated EMP budget was more emphasized for operation phase. The Project will carry out impact monitoring during operation phase. The following table shows the estimated expenditures for the implementation of Environmental Management Plan for operation phase twice a year. It can change according to the situation. The project proponent will carry out impact monitoring during operation. The following table shows the costs estimated for Environmental Monitoring for the Thai Faster Products and M.K Company Limited.

Table (17) Estimated Costs for Environmental Monitoring

Sr. No.	Monitoring	Locations	(a) no. of location	(b) frequency	(c) Rate (Kyats)	(a x b x c) Total Amount (Kyats)
Operation Phase						
1.	Air Quality monitoring	Stack emission of boiler and Generator	2	2 times /year	300,000	1,200,000
		Workplace Air Quality	1	2 times /year	200,000	400,000
		Ambient Air Quality	1	1 time /year	1,000,000	1,000,000
					Sub-total	2,600,000
2.	Water Quality	Tube-well water	1	3 times / year	150,000	450,000
		Boiler Section Drainage	1		150,000	450,000
		Process wastewater	1		150,000	450,000
		WWTP (influent)	1		150,000	450,000
		WWTP (effluent)	1		150,000	450,000
					Sub-total	2,250,000
3.	Noise Level	Work Place	3	2 times / year	50,000	300,000
		Ambient Noise	1	1 time / year	50,000	50,000
					Sub-total	350,000
4.	Miscellaneous					
	Wastewater Management				Lump sum	500,000
	Air Pollution Control				Lump sum	500,000
	Solid Waste Management				Lump sum	700,000
Green Plan				Lump sum	200,000	

Sr. No.	Monitoring	Locations	(a) no. of location	(b) frequency	(c) Rate (Kyats)	(a x b x c) Total Amount (Kyats)
		Sign board on safety			Lump sum	1,000,000
		Emergency safety measures			Lump sum	100,000
		Fire safety measures			Lump sum	500,000
		Personal Protective Equipment			Lump sum	500,000
		Training			Lump sum	500,000
					Sub Total	4,500,000
					Total = Sub-total+ Sub-total+ Sub-total + Sub -total	97,00,000

PUBLIC CONSULTATION AND INFORMATION DISCLOSURE

Public consultations on environmental management programs are designed to provide a real understanding of industry issues and the aim is to make the public aware of the environmental impact of industrial operations and the increase in job opportunities caused by industry. By participating in the consultation process with anyone affected by the proposed project, the business community will be able to resolve any issues that may arise in advance.

METHODOLOGY AND APPROACH

Green Myanmar Environmental Services Co., Ltd. has taken the following two steps in gathering public opinion and information about the factory.

- (a) Meeting with factory staff and obtaining workplace advice
- (b) Meeting with the relevant government organizations and the vicinity of the factory

MEETING WITH THE FACTORY'S EMPLOYEES

The manufacturing of various of Jellies of the Thai Faster Products and M.K Company Limited for reporting of the Environmental Management Plan (EMP), there were met with the factory staff about of the Drinking water system, cleaning system, sanitation system, Noise, Particles, Smell Smoke, Adequate lighting and Ventilation system, in the workplace and about the social situation in the workplace. A total number of (21) suggestions letters were collected from employees. We also received (21) signed employees at attendance lists that were shown in Appendix (19). Their comments and suggestions were attached as Appendix (20).

Method	- Meeting
Date	- 29.3.2018
Participants	- 21 Factory's staff
Venue	- Meeting room

Table (18) Excerpts from suggestion of the factory staff

No	Suggestions/ Comments
	• Suggestion on occupational health and safety
	• About the personal protective equipment, all persons mentioned that they were provided.
	• About the drinking water, all persons mentioned that they were provided with good drinking water.
	• About the sanitation system, all persons recommended it is good and enough.
	• About the cleaning system, all staff members who attended the meeting stated that it was convenient to have soap / hand sanitizer for washing.
	• About the light intensity of workplace, all persons recommend.
	• About the ventilation system in workplace, all persons recommend.
	Suggestion on working conditions in the workplace
	• About the noise in workplace, all persons mentioned there was no noise at the workplace.
	• About the odor, all persons mentioned there have no odor at the workplace.
	• About the particles/dust in workplace, all persons mentioned there was no particle at the workplace.
	Suggestion on the social relation in workplace
	• About the social relation in workplace, all persons mentioned it was convenient with upper level.

Meeting with the relevant government organizations and the vicinity of the factory

There are two ways of discussion, one way is participants can involve themselves in public consultation meeting and another way is by writing suggestions on distributed suggestion form.

Meeting attendees were encouraged to ask questions and give comments during and after the presentation. Comment forms were available at each meeting for attendees to write comments at the time of the meeting.

On August 5th 2018 at KaSin Village Tract Administrative Office, Hlaing Thar Yar Township, the public meeting for disseminating project information to general public including stakeholder and requesting their comments and (20) suggestions letter well collect from the (30) participants from local community attended the public meeting and participated in open discussion. Attendee lists were shown to Appendix (17). Their comments and suggestions were attached as Appendix (18).

Method	- Meeting
Date	- 5.8.2018
Participants	- local community, administrative organization, responsible person of project and Third party organization
Venue	- KaSin Village Tract Administrative Office, Hlaing Thar Yar Township.

The main points of discussion, questions and answers were mentioned in the following table.

Table (19) Comments of Public Consultation Meeting

No	Participants	Suggestions and Discussions
1	U Myo Thint	<ul style="list-style-type: none"> • Ensure to keep for Air, Water and Soil of the environment
2	U Than Zaw Oo	
3	Ma Aye Aye Htet	
4	Daw Thuzar Nyunt	<ul style="list-style-type: none"> • benefits and disadvantages of the impact to the Environment • supporting for allowance of the employees
5	Daw Khin Ohn Myint	<ul style="list-style-type: none"> • Ensure to keep the environment not to effect due to the manufacturing of various types of Jellies
6	U Tate Sein	<ul style="list-style-type: none"> • Follow to National guideline, not to effect health and social of the surrounding of the factory
7	U Sein Thaung	<ul style="list-style-type: none"> • Ensure to keep for surrounding of the factory
8	U Soe Myint	
9	U Mya Thwin	
10	Myo Thu	<ul style="list-style-type: none"> • Thank you so much for performing of a good practice
11	Ma Myint Myint Aye	<ul style="list-style-type: none"> • I want to mitigate food dye in the jellies for health of the children
12	U Kyi Soe	<ul style="list-style-type: none"> • To keep cleaning of the factory's environment
13	Daw Aye Thandar	<ul style="list-style-type: none"> • I got it, the benefits and disadvantages of the impact to the Environment due to dispose of wastewater from the factory
14	Daw Wai Wai Khin	<ul style="list-style-type: none"> • I advise to discuss manufacturing of jellies for the health of the children because the most of the children are customers
15	Daw Zar Zar Htet	<ul style="list-style-type: none"> • Ensure a safe and healthy workplace for employees
16	Daw Aye Mi	<ul style="list-style-type: none"> • Ensure to keep the production of jellies and not polluting the environment
17	Ma Khin Win Maw	<ul style="list-style-type: none"> • I want to mitigate food dye in the jellies for health of the children • Process of factory and area is very clean • I want to manufacture of jellies, not to cause disease but to get energy
18	Ma Thida	<ul style="list-style-type: none"> • To keep the environment clean • Not to cause for the health of the employees of the factory • I advise to discuss manufacturing of jellies for the health of the children because the most of the children are customers
19	Daw Su Wai	<ul style="list-style-type: none"> • To keep the environment clean • Must be cleaned packaging of the jellies • Don't be use chemical • Not to pollute for Air, Water, Soil and Noise of the environment • I advise to manufacture of Jellies, not to effect on the health of the children • Must be cleaned surrounding of the factory
20	Daw Swe Swe Oo	<ul style="list-style-type: none"> • Don't be use chemical dye • Must be cleaned packaging of the jellies • I advise to generate for Jellies, not to effect on the health of the children but to get energy for them

Response for Comments and Suggestions

Green Myanmar Environmental Services (GMES) Co., Ltd requested client, Thai Faster Products & M.K Co., Ltd to commitments on the suggestions of public consultation meeting by email at 17.8.2018. The client replied at 24.8.2018 by email. The GMES requesting letter and the proponent's commitment letters are attached as Appendix (21) and (22) respectively.

Conclusion

This Initial Environment Examination (IEE) study was carried out based on the primary data, secondary data, information provided by the project proponent, existing studies and reports relevant to the project, baseline environmental monitoring and stakeholder engagement. Assessments of potential environmental impacts due to implementation of the project activities during operational phase is conducted qualitatively and quantitatively where possible. This IEE report provides a full picture of all potential environmental impacts associated with the proposed project, and made recommendations for prevention and mitigation measures for negative impacts and enhancement for positive impacts.

Findings

Air Pollution

Particulate Matter (PM10 & PM2.5) contents of ambient air are higher than National Environmental Quality (Emission) Guidelines. Sulfur Dioxide level of ambient air is also slightly higher than guidelines. Other parameters are within the permissible limits of the guidelines. The Particulate Matter (PM10 & PM2.5) contents of workplace air analysis are within the guideline values and there is no issue.

Water Pollution

It has been noticed that turbidities of waste water and tube well water are slightly higher than the guideline values. The drinking water quality is within the WHO guideline limits. The other parameters of all water sources are within the guideline values and there are no issues.

Noise Pollution

The ambient noise level is within the permissible level. Noise level monitoring in several workplaces are conducted and in most of the workplaces the noise levels are within the allowable limits. Based on the evaluation of the significance of impacts qualitatively, these are the summary of findings.

Solid Waste Generation

There is found dispose of the solid waste systematically accord to the guidelines and no critical issue of solid waste disposal.

For operational phase, air pollution, water pollution, soil pollution, socio-economic aspects and health and safety issues have moderate risks and fire hazard is major risk. But after implementation of mitigation measures, the residual impacts are low risks and it is acceptable. For decommissioning phase, air pollution, water pollution, socio-economic impacts, health and safety issues are moderate risks and noise pollution is major risk. But

after implementing the mitigation measures, the residual impacts will likely to be low risks and it would be acceptable.

9.3 Recommendations

- Based on potential impacts figured out, an Environmental Management Plan (EMP) is prepared and presented in this report, as a solution for environmental, social, health and safety issues for operational phase and decommissioning phase. EMP is prepared in compliance with the existing environmental policy, laws, rules and instructions of the Republic of the Union of Myanmar. Many of the impacts are localized. As the project, fire hazard is a critical concern. The other concerns are water resource depletion and electricity consumption. The recommendations are
- To reduce the risk of fire, Fire Prevention Plan (as in EMP) need to be implemented and adhered to it.
- To minimize the water consumption, it is recommended that to install water meter and water saving equipment.
- To reduce electricity consumption, it is recommended that to use natural light as much as possible in the daytime, energy saving lamps, auto pump, and variable speed drive motor and inverter type air conditioners.
- To minimize Sulfur Dioxide emission level, low Sulfur content diesel should be used for generators.
- To reduce PM2.5 and PM10 emission within premises, grow more plants. It is also advised that to maintain good housekeeping. Spray water to suppress the dust generation.
- To reduce turbidity of tube well water, let the particles settle first for sedimentation in the water storage tank before using.
- To reduce turbidity of waste water, put the sedimentation pond and discharge the waste water only after treating to the waste water treatment plant.
- To reduce the risks of incidents, preventive measures for health, safety and fire must be followed by all employees.
- The proponent should follow environmental policy, laws, rules and instructions of Union of Myanmar.
- Implement EMP once it is approved by relevant authorities.
- Keep all the records of EMP for environmental audit.
- Review the annual environmental audit report and take necessary actions for any concerns raised.
- To boost the socio economic of the local environment and social welfares of the employees, the effective CSR should be developed and implemented.
- The effective implementation and adherence to EMP might assist for minimizing of the negative environmental and social impacts to acceptable levels.

အကျဉ်းချုပ်အစီရင်ခံစာ

၂၀၁၈ ခုနှစ်၊ မတ်လတွင် ထိုင်းဖက်စပ်ပရောဒက်စ်အင်န်အမ်ကော ကုမ္ပဏီလီမိတက်တို့မှ ဂျယ်လီ စက်ရုံနှင့်ပတ်သက်၍ မြန်မာရင်းနှီးမြှုပ်နှံမှုကော်မရှင်သို့ တင်ပြရမည်ဖြစ်သော ပတ်ဝန်းကျင်စီမံခန့်ခွဲမှုအစီအရင်ခံစာတင်သွင်းရာတွင် အထောက်အကူပြုရန် စီမံလမ်းမြန်မာပတ်ဝန်းကျင်ဆိုင်ရာဝန်ဆောင်မှု ကုမ္ပဏီလီမိတက် (GMES) သို့ တောင်းဆိုလာပါသည်။

ထိုင်းဖက်စပ်ပရောဒက်စ်အင်န်အမ်ကောကုမ္ပဏီလီမိတက်သည် ရန်ကုန်တိုင်းဒေသကြီး၊ လှိုင်သာယာမြို့နယ်၊ ရွှေလင်ပန်းစက်မှုရုံ၊ ကနောင်မင်းသားကြီးလမ်း၊ မြေကွက်အမှတ် ၄၆၇/က တွင် တည်ရှိပါသည်။ ဤ ကုမ္ပဏီသည် မြန်မာကုမ္ပဏီများအက်ဥပဒေပါ စည်းကမ်းချက်များနှင့်အညီ ဖွဲ့စည်းထားသော ဖက်စပ်ကုမ္ပဏီတစ်ခုဖြစ်ပြီး၊ ရင်းနှီးမြှုပ်နှံမှု တန်ဖိုးစုစုပေါင်း အမေရိကန်ဒေါ်လာ ၂,၀၀၀,၀၀၀ ဖြစ်ပါသည်။

Thai Faster Products and M.K ကုမ္ပဏီလီမိတက်သည် ဖက်စပ်ရင်းနှီးမြှုပ်နှံမှုကုမ္ပဏီတစ်ခုဖြစ်ပြီး Thai Faster Product ကုမ္ပဏီလီမိတက်မှ (၆၀ %)၊ Mantakanok ကုမ္ပဏီလီမိတက်မှ (၃၀%) နှင့် M.K ကုမ္ပဏီလီမိတက်မှ (၁၀%) တို့ဖြင့် ဖွဲ့စည်းထားပါသည်။

Thai Faster Product ကုမ္ပဏီလီမိတက်သည် ထိုင်းနိုင်ငံမှ ကုမ္ပဏီအမှတ် ၀၇၄၅၅၅၅၀၀၄၇၄၉ ရှိသော ပုဂ္ဂလိကပိုင်ကုမ္ပဏီတစ်ခုဖြစ်ပြီး ထိုင်းနိုင်ငံ၊ Samutsakorn ပြည်နယ်၊ Kratumban ခရိုင်၊ Aom-Noy ခရိုင်ခွဲ၊ Moo.7၊ ၉၉/၉၉ တွင်တည်ရှိပါသည်။

Mantakanok ကုမ္ပဏီလီမိတက်သည် ထိုင်းနိုင်ငံမှ ကုမ္ပဏီအမှတ် ၀၅၇၅၅၄၁၀၀၀၁၃၆ ရှိသော ပုဂ္ဂလိကပိုင်ကုမ္ပဏီတစ်ခုဖြစ်ပြီး ထိုင်းနိုင်ငံ၊ Bangkolam ခရိုင်၊ Bangkoklo ခရိုင်ခွဲ၊ ဘန်ကောက်၊ Charoen-rad လမ်း၊ အမှတ် ၁၀၆/၂ တွင်တည်ရှိပါသည်။

M.K ကုမ္ပဏီလီမိတက်သည် မြန်မာနိုင်ငံမှ ကုမ္ပဏီမှတ်ပုံတင်အမှတ် ၆၄၄ ရှိသော ပုဂ္ဂလိကပိုင်ကုမ္ပဏီတစ်ခုဖြစ်ပြီး မြန်မာနိုင်ငံ၊ ရန်ကုန်တိုင်းဒေသကြီး၊ စမ်းချောင်းမြို့နယ်၊ ပြည်လမ်း၊ အမှတ် ၃၃၃ တွင် တည်ရှိပါသည်။

ကုမ္ပဏီ၏ရည်ရွယ်ချက်မှာလုပ်ငန်းနှင့် ၎င်း၏ ထောက်ပံ့ဖြန့်ဖြူးရေးလမ်းကြောင်းများ၊ ပိုမို တိုးတက်ကောင်းမွန်သော ကုန်ကြမ်းအသုံးပြုခြင်းနည်းလမ်းများကို အခြေခံ၍ နိုင်ငံစီးပွားရေး၊ သဘာဝ ပတ်ဝန်းကျင်နှင့် လူမှုရေးဆိုင်ရာ ရေရှည်ဖွံ့ဖြိုးတိုးတက်မှုများကိုဖော်ဆောင်ရန်ဖြစ်ပြီး၊ အပြန်အလှန်အားဖြင့် ကုမ္ပဏီ၏ စွမ်းရည်ပြည့်ဝစွာဆောင်ရွက်နိုင်မှု နှင့် အကျိုးအမြတ်များ တိုးတက်စေရန် ရည်ရွယ်ပါသည်။

စီမံကိန်း၏အဓိကအကြောင်းအရာများမှာ အောက်ဖော်ပြပါအတိုင်းဖြစ်ပါသည်။

စီမံကိန်းအမည်	ဂျယ်လီမျိုးစုံ ထုတ်လုပ်ဖြန့်ဖြူးရေး
ကုမ္ပဏီအမည်	ထိုင်းဖက်စပ်ပရောဒက်စ်အင်န်အမ်ကောကုမ္ပဏီလီမိတက်
ကုမ္ပဏီမှတ်ပုံတင်အမှတ်	အမှတ် ၈၅၅ FC, ၂၀၁၃-၂၀၁၄
စီမံကိန်းလိပ်စာ	ရန်ကုန်တိုင်း၊ လှိုင်သာယာမြို့နယ်၊ ရွှေလင်ပန်းစက်မှုရုံ၊ ကနောင်မင်းသားကြီးလမ်း၊ မြေကွက်အမှတ် ၄၆၇/က
မြေအမျိုးအစား	စက်မှုရုံ

မြေအကျယ်အဝန်း	၂.၀၃၆ ဧက (၈၇၆၉၄.၂၁၄ စတုရန်းပေ)
ရင်းနှီးမြှုပ်နှံမှုကာလ	နှစ် ၅၀ (၁၀ နှစ်သက်တမ်းတိုး နှစ်ကြိမ်ပြုလုပ်နိုင်)
မြေငှားရမ်းကာလ	စဦး (၅)နှစ် (သတ်မှတ် နှစ် ၇၀ ကာလထိ သက်တမ်းတိုးနိုင်)
မြေငှားရမ်းသူ	ဦးပြည့်ဖြိုး
စတင်သည့်အချိန်	5.2.2014
စက်စမ်းသပ်လည်ပတ်ချိန်	2.1.2015
စီးပွားဖြစ်လည်ပတ်ချိန်	4.1.2017
အနီးပတ်ဝန်းကျင်	လက်ျာဘက် ။ ဝက်မစွတ် ဝန်ထောက်လမ်း လက်ဝဲဘက် ။ မြန်မာရိုးဟို အထည်စက်ရုံ
အနီးဆုံးလူနေအိမ်ခြေ	အလယ်ကျေးရွာ
အနီးဆုံးရေအရင်းမြစ်	လှိုင်မြစ်
မြေမျက်နှာသွင်ပြင်	မြေပြန့်၊ နန်းဆန်သောမြေ
ဆက်သွယ်ရမည့်သူ	ဒေါ်ဝင်းစန္ဒာ
ရာထူး	စာရင်းကိုင်
ဖုန်းနံပါတ်	၀၉၉၄၅၅၆၄၀၃၀၀ အီးမေးလ်: thaifaster.mm@gmail.com
ရင်းနှီးမြှုပ်နှံမှု	အမေရိကန်ဒေါ်လာ ၂,၀၀၀,၀၀၀
ရင်းနှီးမြှုပ်နှံမှုပုံစံ	ထိုင်းဖတ်စတာကုန်ထုတ်လုပ်ငန်းကုမ္ပဏီလီမိတက် (ထိုင်း) ၆၀% မန်တကနေ့ကုမ္ပဏီလီမိတက် (ထိုင်း) ၃၀% M.K ကုမ္ပဏီ လီမိတက် ၁၀%
ရေအရင်းအမြစ်	အနက် ပေ ၁၀၀ ရှိ သော ၂ လက်မ အဝါစိတွင်း ၂ တွင်းမှ ထုတ်ယူ သုံးစွဲပါသည်။
ရေသုံးစွဲမှု	တစ်ရက်လျှင် ဂါလံ (၁၂,၀၀၀)
စွမ်းအင်အရင်းအမြစ်	လျှပ်စစ်ဓာတ်အားလိုင်း (နိုင်ငံတော်ပင်မဓါတ်အားလိုင်း)
နှစ်စဉ်လျှပ်စစ်သုံးစွဲမှု	၉၁၂,၀၀၀ ကီဂါဝပ်နာရီ (တစ်နှစ်)
နှစ်စဉ်လောင်စာဆီသုံးစွဲမှု	ဒီဇယ် ၁၅,၈၅၀ ဂါလံ (တစ်နှစ်) စပါးခွံ ၈၄၂.၄၀ တန် (တစ်နှစ်)
ကုန်ချော	ဂျယ်လီ အမျိုးမျိုး ပြည်တွင်းရောင်းချမှု ၉၀% ပြည်ပတင်ပို့မှု ၁၀%
ခန့်မှန်းလုပ်သားဦးရေ (ပထမနှစ်)	ပြည်တွင်းဝန်ထမ်း - ၁၈၈ ပြည်ပဝန်ထမ်း - ၈

စက်ရုံလည်ပတ်ချိန်	အလုပ်ချိန် တနင်္လာ မှ သောကြာ : ၀၇:၀၀ မှ ၁၆:၀၀ (အချိန်ပို) စနေ : ၀၇:၀၀ မှ ၁၁:၀၀ တစ်လ လုပ်ရက် : ၂၆ ရက် တစ်ပတ် လုပ်ရက် : ၆ ရက် (တနင်္လာ မှ စနေ) အဆိုင်း : ၁ ဆိုင်း
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ဇယား - ပတ်ဝန်းကျင်စီမံခန့်ခွဲမှုအစီအစဉ်အကောင်အထည်ဖော်ဆောင်ရွက်သည့်အဖွဲ့

စဉ်	လုပ်ငန်းတာဝန်	သတ်မှတ်တာဝန်နှင့်လုပ်ပိုင်ခွင့်	အမည်၊ ရာထူး၊အဖွဲ့အစည်း နှင့် ကြားကာလ မှတ်ပုံတင်အမှတ်
၁	ပတ်ဝန်းကျင်စီမံ ခန့်ခွဲမှုဆောင်ရွက်ရေး အဖွဲ့ခေါင်းဆောင်	<ul style="list-style-type: none"> ပတ်ဝန်းကျင်စီမံခန့်ခွဲမှုအစီအစဉ်ပုံစံထုတ် ဒီဇိုင်း ရေးဆွဲခြင်း နည်းပညာပိုင်းဆိုင်ရာအစည်းများနှင့်တွေ့ဆုံ ဆွေးနွေး ရှင်းလင်းခြင်း ပတ်ဝန်းကျင်စီမံခန့်ခွဲမှုအစီအစဉ်လုပ်ငန်း စောင့်ကြပ် ကြည့်ရှုခြင်း အရည်အသွေးကိုစိစစ်ခြင်း ကိန်းဂဏန်းအချက်အလက်များ စုစည်းခြင်း နှင့် ခွဲခြားဆန်းစစ်ခြင်း 	Engr. ဦးကျော်စိုးဝင်း အုပ်ချုပ်မှုဒါရိုက်တာ စိမ်းလန်းမြန်မာပတ်ဝန်းကျင် ဆိုင်ရာ ဝန်ဆောင်မှုလုပ်ငန်း ကုမ္ပဏီလီမိတက် (Professional Engineer) No. 0019
၂	လေအရည်အသွေး စီမံခန့်ခွဲမှုအကြံပေး	<ul style="list-style-type: none"> လေထုအရည်အသွေးတိုင်းတာရန် အကြံပေးခြင်း နည်းပညာပိုင်းဆိုင်ရာများအကြံပေးခြင်း လေထုညစ်ညမ်းမှုဆန်းစစ်ခြင်းနှင့် ကုစားမှု နည်းလမ်းများအကြံပေးခြင်း လေထုအရည်တိုင်းတာရရှိမှုရလဒ်အပေါ် အခြေခံကာတွက်ချက်ခြင်းနှင့်ဆန်းစစ်ခြင်း အား အကြံပေးခြင်း အစီရင်ခံစာပြင်ဆင်မှုတွင် အကြံပေးခြင်း 	Engr. ဦးစိန်သောင်းဦး ဥက္ကဋ္ဌ စိမ်းလန်းမြန်မာပတ်ဝန်းကျင် ဆိုင်ရာ ဝန်ဆောင်မှုလုပ်ငန်း ကုမ္ပဏီလီမိတက် (Professional Engineer) No. 0023
၃	ပတ်ဝန်းကျင်ဆိုင်ရာ အကြံပေးခြင်း	<ul style="list-style-type: none"> ပတ်ဝန်းကျင်စီမံခန့်ခွဲမှုပုံစံထုတ်ရန် အကြံပေးခြင်း လူပုဂ္ဂိုလ်များ၏သတ်မှတ်တာဝန်နှင့်လုပ်ပိုင် ခွင့်များ ဖွံ့ဖြိုးတိုးတက်စေရန် အကြံပေးခြင်း ပတ်ဝန်းကျင်အခြေခံအချက်အလက်များကို အကြံပေးခြင်း ကွင်းဆင်းတိုင်းတာမှုများအတွက် အကြံ ပေးခြင်း ရရှိလာသည့်ကိန်းဂဏန်းအချက်အလက် များကိုအကြံပေးခြင်း ပြီးပြည့်စုံသော အစီရင်ခံစာ ပေးသားပြုစု နိုင်ရန်အကြံပေးခြင်း 	Engr. ဒေါ်ခင်ဆွေအေး အကြံပေး၊ စိမ်းလန်းမြန်မာပတ်ဝန်းကျင် ဆိုင်ရာ ဝန်ဆောင်မှုလုပ်ငန်း ကုမ္ပဏီလီမိတက် (Professional Engineer) ကထိက(ငြိမ်း) ဓါတုအင်ဂျင်နီယာဌာန၊ ရန်ကုန်စက်မှုတက္ကသိုလ် No. 0021

		<ul style="list-style-type: none"> Facilitate technical analysis Streamline the Environmental Management Plan 	
၄	ပတ်ဝန်းကျင်ဆိုင်ရာ အခြေခံ အချက်အလက်များ အကြံပေးခြင်း	<ul style="list-style-type: none"> ပတ်ဝန်းကျင်ဆိုင်ရာအချက်အလက်များ ကောက်ယူရန် နည်းလမ်း၊ ပုံစံ၊ လုပ်ဆောင်မှုများကို အကြံပေးခြင်း ပတ်ဝန်းကျင်ဆိုင်ရာအချက်အလက်များ ကောက်ယူရန်သင်တန်းပေးခြင်း စက်မှုလုပ်ငန်းစဉ်၊ ထိခိုက်မှုများ၊ ဒီဇိုင်းများ နှင့် ညစ်ညမ်းမှုထိန်းချုပ်ခြင်းများအတွက် ဆန်းစစ်ခြင်းနှင့်အစီရင်ခံစာပြင်ဆင်ခြင်း ပတ်ဝန်းကျင်စီမံခန့်ခွဲမှုဆိုင်ရာအတွက် စေင့်ကြည့်ရမည့်အချက်များအကြံပေးခြင်း 	Engr. ဒေါက်တာမောင်မောင်ဝင်း Dr. Maung Maung Win, ပါမောက္ခ (ငြိမ်း) ဓါတုအင်ဂျင်နီယာဌာန၊ ရန်ကုန်စက်မှုတက္ကသိုလ် ပတ်ဝန်းကျင်ဆိုင်ရာစီမံခန့်ခွဲမှု Thailand and USA No.0027
၅	ပတ်ဝန်းကျင်ဆိုင်ရာ အရည်အသွေးစီမံခန့် ခွဲမှုအကြံပေး	<ul style="list-style-type: none"> ပတ်ဝန်းကျင်ဆိုင်ရာ လေထုနှင့်ရေအရည် အသွေးကောက်ယူရာတွင်လမ်းညွှန် အကြံပေးခြင်း နမူနာကောက်ယူရာတွင်အကြံပေးခြင်း နမူနာကောက်ယူပစ္စည်းများကို စစ်ဆေးခြင်းနှင့်မှတ်တမ်းရေးသားခြင်း ပတ်ဝန်းကျင်ဆိုင်ရာအခြေခံအချက်အလက် အတွက်အစီရင်ခံစာပြင်ဆင်ခြင်း 	ဒေါ်ခင်ရွှေဌေး(အကြံပေး) ကထိက(ငြိမ်း) ဓါတုအင်ဂျင်နီယာဌာန၊ ရန်ကုန်စက်မှုတက္ကသိုလ် ပတ်ဝန်းကျင်အင်ဂျင်နီယာ ပညာရပ်ဆိုင်ရာမဟာဘွဲ့ (စက်မှု) No.0022
၆	ပတ်ဝန်းကျင်ဆိုင်ရာ ဆန်းစစ်ခြင်း ကွင်းဆင်းလေ့လာ ရေးခေါင်းဆောင်	<ul style="list-style-type: none"> ပတ်ဝန်းကျင်ဆိုင်ရာအချက်အလက်များ ကောက်ယူရန် Checklist ပြင်ဆင်ခြင်း နည်းပညာဆိုင်ရာဆွေးနွေးခြင်းနှင့်မှတ်တမ်း ထိန်းသိမ်းခြင်း ဒေသဆိုင်ရာအချက်အလက်များ ဒေသအာဏာပိုင်များ၊ အဖွဲ့အစည်းများ၊ ဒေသခံများနှင့်ဆွေးနွေးတိုင်ပင်ခြင်း 	ဦးခင်အောင် အထွေထွေမန်နေဂျာ စီမံလမ်းမြန်မာပတ်ဝန်းကျင် ဆိုင်ရာ ဝန်ဆောင်မှုလုပ်ငန်း ကုမ္ပဏီလီမိတက် No.0025
၇	ရေနှင့်စွန့်ပစ်ရည် ဓါတ်ခွဲစမ်းသပ်ခြင်း ဆိုင်ရာ အကြံပေး	<ul style="list-style-type: none"> ရေနှင့်စွန့်ပစ်ရည်နမူနာကောက်ယူရာတွင် အကြံပေးခြင်း ရေနှင့်စွန့်ပစ်ရည်ကိုင်တွယ်ခြင်း၊ စမ်းသပ်ခြင်းများတွင် အကြံပေးခြင်း အစီရင်ခံစာရေးသားပြုစုရာတွင် အကြံပေးခြင်း ဓါတ်ခွဲရလဒ်များအစီရင်ခံစာရေးရာတွင် အကြံပေးခြင်း ပတ်ဝန်းကျင်စီမံခန့်ခွဲမှုအစီအစဉ် အစီရင်ခံစာရေးသားပြုစုခြင်း 	ဦးမျိုးမြင့် အကြံပေး၊ စီမံလမ်းမြန်မာပတ်ဝန်းကျင် ဆိုင်ရာ ဝန်ဆောင်မှုလုပ်ငန်း ကုမ္ပဏီလီမိတက်၊ စက်ရုံမှူး(ငြိမ်း)၊ အမှတ် (၁) စက်မှုဝန်ကြီးဌာန No.0026
၈	စွန့်ပစ်ရည်စီမံခန့်ခွဲမှု အကြံပေး	<ul style="list-style-type: none"> စက်မှုလုပ်ငန်းနှင့်မြူနီစီပယ်စွန့်ပစ်ပစ္စည်း ကွင်းဆင်းကောက်ယူခြင်းကိုအကြံပေးခြင်း ဓါတ်ခွဲစမ်းသပ်မှုများကို အကြံပေးခြင်း ကိန်းဂဏန်းအချက်အလက်များကို စီစဉ် 	Engr. ဒေါ်တင်မေစိုး အကြံပေး၊ ပါမောက္ခ (ငြိမ်း) ဓါတုအင်ဂျင်နီယာဌာန၊

		ခြင်း၊ တွက်ချက်ခြင်း၊ ကောက်ချက်ချခြင်း၊ ဆန်းစစ်ခြင်းတွင်အကြံပေးခြင်း • အစီရင်ခံစာရေးသားရာတွင်အကြံပေးခြင်း	မန္တလေးစက်မှုတက္ကသိုလ် (Professional Engineer) No.0028
၉	ပတ်ဝန်းကျင်ဆန်းစစ်ခြင်းအကြံပေး	• EMP ရေးဆွဲခြင်းအားအကြံပေးခြင်း • EMP လေ့လာရေးအဖွဲ့ကိုတာဝန် ခွဲပေးခြင်း • အခြေခံအချက်အလက်ကာကွယ်မှုအားအကြံပေးခြင်း • ကွင်းဆင်းလေ့လာခြင်းအား အကြံပေးခြင်း	Engr. ဦးမောင်မောင်အေး ဆောက်လုပ်ရေးတာဝန်ခံ (ပတ္တမြားဆောက်လုပ်ရေးလုပ်ကွက်၊ Total E & P Myanmar)
၁၀	ကွင်းဆင်းလေ့လာဆောင်ရွက်သည့် ကြီးကြပ်ခေါင်းဆောင်	• ပတ်ဝန်းကျင်ဆိုင်ရာအကြောင်းရာ၊ လေ့လာစစ်ဆေးမည့်အချက်အလက် ပြင်ဆင်ခြင်း • အကြံပေးကွင်းဆင်းလေ့လာစစ်ဆေးခြင်း • ကွင်းဆင်းလေ့လာခြင်းကို ကြီးကြပ်ခြင်း • အစီရင်ခံစာအချေအစစ်ဆေးခြင်း	ဦးကြည်ဟန်ဘို အရည်အသွေးစီစစ်အင်ဂျင်နီယာ စိမ်းလန်းမြန်မာပတ်ဝန်းကျင်ဆိုင်ရာ ဝန်ဆောင်မှုလုပ်ငန်းကုမ္ပဏီလီမိတက်
၁၁	ပတ်ဝန်းကျင်ဆိုင်ရာ အရည်အသွေး တိုင်းတာခြင်း	• ပတ်ဝန်းကျင်ဆိုင်ရာ အခြေခံအချက်အလက် များ ကောက်ယူခြင်း • လေထု၊ မြေထု၊ ရေထုနှင့်ဆူညံသံများ တိုင်းတာခြင်း • ရေနှင့်စွန့်ပစ်ရည်များ ကောက်ယူခြင်း • အခြေခံအချက်အလက်ကောက်ယူသော ပုံထုတ်ပေးခြင်း • အခြေခံအချက်အလက်များတွက်ချက်ခြင်း • အစီရင်ခံစာပြင်ဆင်ရာတွင် ပံ့ပိုးပေးခြင်း	ဦးမျိုးသက်နောင် (အဖွဲ့ခေါင်းဆောင်) ဦးအောင်ကျော်သန်း တိုင်းတာပညာရှင် ဦးမျိုးမင်းထွန်း လက်ထောက်ကျွမ်းကျင်ပညာရှင် စိမ်းလန်းမြန်မာပတ်ဝန်းကျင်ဆိုင်ရာ ဝန်ဆောင်မှုလုပ်ငန်းကုမ္ပဏီလီမိတက်

မူဝါဒ ၊ ဥပဒေနှင့် ဖွဲ့စည်းမှုဆိုင်ရာ မူဘောင်များ

အဆိုပြုလုပ်ငန်းအတွက် ပတ်ဝန်းကျင်ဆန်းစစ်ခြင်းအစီရင်ခံစာတွင် လိုက်နာဆောင်ရွက်ရမည့် နိုင်ငံတော်မှထုတ်ပြန်ထားသော ဥပဒေများကို လိုက်နာဆောင်ရွက်ရမည့်အပြင် စီမံကိန်းနှင့်ဆက်စပ် သည့် အခြားဥပဒေများကိုလည်း လိုက်နာဆောင်ရွက်ရန် ဖြစ်ပါသည်။

- အမျိုးသားပတ်ဝန်းကျင်ဆိုင်ရာ မူဝါဒ (၁၉၉၄)
- ပတ်ဝန်းကျင်ထိန်းသိမ်းရေး ဥပဒေ နှင့် ပတ်ဝန်းကျင် (၂၀၁၂)ထိန်းသိမ်းရေးနည်းဥပဒေ (၂၀၁၄)
- ပတ်ဝန်းကျင်ထိခိုက်မှု ဆန်းစစ်ခြင်းဆိုင်ရာ လုပ်ထုံးလုပ်နည်း (၂၀၁၅)
- အမျိုးသား ပတ်ဝန်းကျင်ဆိုင်ရာ အရည်အသွေး လမ်းညွှန်ချက်များ (ထုတ်လွှတ်မှု)
- ဆိပ်ကမ်းအာဏာပိုင်ဥပဒေ (၂၀၁၅)
- ဓါတုပစ္စည်းနှင့် ဆက်စပ်ပစ္စည်းများ အန္တရာယ်မှ ကာကွယ်တားဆီးရေး ဥပဒေ (၂၀၁၇)
- စက်မှုဇုန်အတွင်းရင်းနှီးမြှုပ်နှံသူများ လိုက်နာလုပ်ဆောင်ရမည့် လုပ်ထုံးလုပ်နည်းများ (၂၀၁၅)
- အမျိုးသားစီမံကိန်းနှင့်စီးပွားရေးဖွံ့ဖြိုးတိုးတက်မှုဝန်ကြီးဌာန -သတိပေးချက်အမှတ်.၈၁/၂၀၁၄
- ပို့ကုန်သွင်းကုန် ဥပဒေ (၂၀၁၂)
- လုပ်ငန်းခွင်ကျန်းမာရေးနှင့် ဘေးအန္တရာယ်ကင်းရှင်းရေး ဥပဒေ (မူကြမ်း ၂၀၁၉)

- မြန်မာ့အထူးစီးပွားရေးဇုန်ဥပဒေ (၂၀၁၄)
- မြန်မာ့အထူးစီးပွားရေးဇုန်နည်းဥပဒေ (၂၀၁၅)
- မြန်မာနိုင်ငံ ရင်းနှီးမြုပ်နှံမှု ကော်မရှင်၏ ညွှန်ကြားစာအမှတ် ၁ ၂၀၁၄/၁နှင့် ၂၀၁၃/
- အလုပ်သမားလျော်ကြေးငွေ အက်ဥပဒေ (၁၉၂၃)
- အလုပ်သမားအဖွဲ့အစည်းဥပဒေ (၂၀၁၂)
- အလုပ်သမားရေးရာ အငြင်းပွားမှု ဖြေရှင်းရေးဥပဒေ (၂၀၁၆၊ ဖြည့်စွက် ၂၀၁၂)
- သဘာဝဘေးအန္တရာယ်စီမံခန့်ခွဲမှုဥပဒေ (၂၀၁၃)
- နိုင်ငံတကာအဖွဲ့အစည်းများနှင့် ကွန်ဗီးရှင်းများနှင့် သဘောတူညီချက်များ
- စီမံကိန်းနှင့်အခြားဆက်စပ်ဥပဒေများ

စီမံကိန်းတည်နေရာ

အဆိုပြုစက်ရုံသည် မြန်မာနိုင်ငံ၊ ရန်ကုန်တိုင်းဒေသကြီး၊ ရွှေလင်ပန်းစက်မှုဇုန်၊ ကနောင်မင်းသားကြီးလမ်း၊ အကွက်အမှတ် (၄၆၇/က) တွင်တည်ရှိပြီး ဂျပန်အမျိုးမျိုးထုတ်လုပ်ခြင်းလုပ်ငန်းကို လုပ်ကိုင်ဆောင်ရွက်လျက်ရှိပါသည်။ စက်ရုံအရှေ့အရပ်တွင် ရွှေလင်ပန်းကုမ္ပဏီလီမိတက်၊ အနောက်အရပ်တွင် ကနောင်မင်းသားကြီးလမ်း၊ တောင်အရပ်တွင် မြန်မာရိုဟိုးကုမ္ပဏီလီမိတက်နှင့် မြောက်အရပ်တွင် ဝက်မစွပ်ဝန်ထောက်လမ်း တို့ ဖြစ်ပါသည်။ ပထဝီဝင်တည်နေရာအမှတ်မှာ-

မြောက်လတ္တီတွဒ် - ၁၆° ၅၄ မိနစ် ၃၅.၆၁၅ စက္ကန့်.

အရှေ့လောင်ဂျီတွဒ် - ၉၆° ၀၄ မိနစ် ၁၃.၁၅၂ စက္ကန့်.



ပုံ - ၁ စက်ရုံတည်နေရာပြပုံ

စက်ရုံပတ်ဝန်းကျင်နှင့်လမ်းကြောင်းပြပုံ

စက်ရုံပတ်ဝန်းကျင်တွင်

ဆန်စက် (ရွှေလဝန်းကုမ္ပဏီလီမိတက်)

ကနောင်မင်းသားကြီးလမ်း

အထည်ချုပ်စက်ရုံ (မြန်မာရိုးဟိုးကုမ္ပဏီလီမိတက်)

ဝက်မစွပ်ဝန်ထောက်လမ်း

အရှေ့အရပ်

အနောက်အရပ်

တောင်အရပ်

မြောက်အရပ်

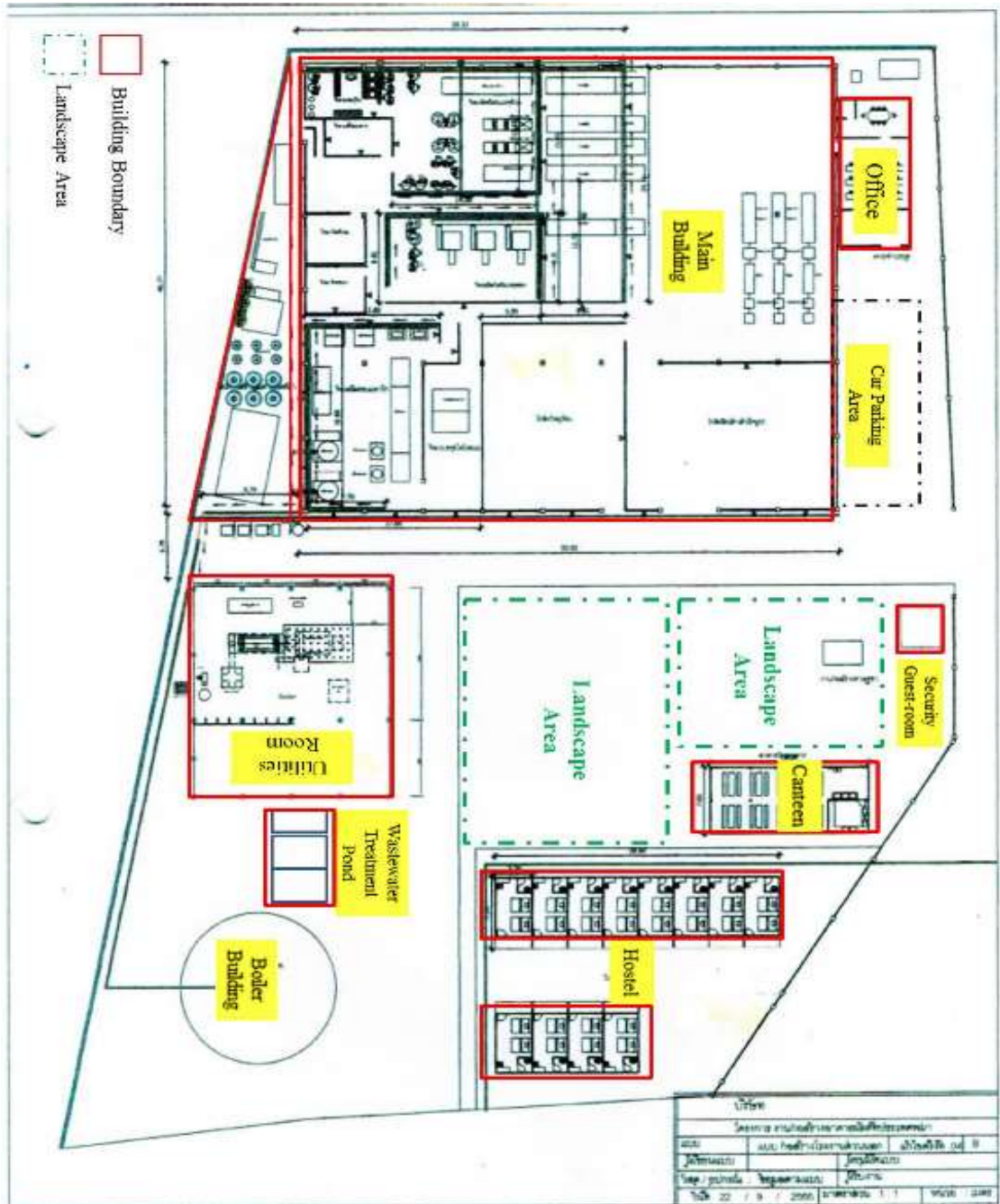


ပုံ - စက်ရုံပတ်ဝန်းကျင်နှင့်လမ်းကြောင်းပြပုံ

အဆောက်အဦများ

- စက်ရုံဧရိယာတွင် ထုတ်လုပ်မှုအဆောက်အဦ (၁၅၅ ပေ x ၁၈၀ ပေ)
- ဘိုဇိုလ်အဆောက်အဦ (၆၆ ပေ x ၇၂.၅ ပေ)
- ဧည့်သည်နားနေဆောင် (၉၅ ပေ x ၂၅ ပေ)
- စားသောက်ဆောင် (၉၅ ပေ x ၂၅ ပေ)

လက်ရှိ စက်ရုံအဆောက်အဦများနေရာချထားမှုတွင် ကုန်ကြမ်းသိုလှောင်နေရာ၊ ထုတ်လုပ်မှုနေရာ၊ အထောက်အပံ့ပေးသောပစ္စည်းနေရာ၊ ရုံးခန်း၊ စိမ်းလန်းစိုပြေဧရိယာနှင့်ကားပါကင်တို့ ပါဝင်သော နေရာချထားမှုပုံကို အောက်တွင်ဖော်ပြထားပါသည်။



ပုံ - ၃ စက်ရုံအဆောက်အဦနေရာချထားမှု

ကုန်ချောထုတ်လုပ်မှု

ဂျယ်လီအမျိုးမျိုးထုတ်လုပ်ဖြန့်ဖြူးရေးလုပ်ငန်းတွင် အောက်ဖော်ပြပါ အမျိုးအစားများကို ထုတ်လုပ်ဖြန့်ဖြူးသွားမည်ဖြစ်ပါသည်။

၁။ ဟီရိုး ဂျယ်လီကပ်

၂။ ဟီရိုး ပလပ်စ် ဂျယ်လီ

၃။ ဒိုင်ယာမိုတို လိုက်တ ကပ် ဂျယ်လီ

၄။ ဒိုင်ယာမိုတို ဘစ်စ ကပ် ဂျယ်လီ တို့ကိုထုတ်လုပ်မည်ဖြစ်ပါသည်။

ထုတ်လုပ်မှုအသေးစိတ်အချက်အလက်များကို အောက်ပါဇယား-၃ တွင် ဖော်ပြထားပါသည်။

ဇယား -၃ ထုတ်လုပ်မှုစာရင်း

စဉ်	Particular	အလေးချိန် (ဂရမ်)
၁	Hero Jelly Cup	၂၀
၂	Hero Plus Jelly	၁၂၀
၃	Daiya Moto Light Kit Jelly Cup	၅၅
၄	Daiya Moto Big Cup Jelly	၁၃၀



ပုံ - ၄ ထုတ်ကုန်ပစ္စည်းများ

ထုတ်လုပ်မှုပမာဏ

အဆိုပြုစက်ရုံတွင် ဂျယ်လီအမျိုးမျိုးထုတ်လုပ်ခြင်းလုပ်ငန်းကို ဆောင်ရွက်သွားမည်ဖြစ်ပြီး ထုတ်လုပ်မှု၏ ၉၀ % ကို ပြည်တွင်းတွင် ရောင်းချသွားမည်ဖြစ်ပြီး ၁၀ % ကို ထိုင်းနိုင်ငံသို့ တင်ပို့သွားမည် ဖြစ်ပါသည်။ ထုတ်လုပ်မှုဆိုင်ရာအသေးစိတ်ကို အောက်ပါဇယား (၄)နှင့် ဇယား (၅) တွင် ဖော်ပြထား ပါသည်။ ကုန်ထုတ်လုပ်မှုသည် တစ်ရက်လျှင် တစ်ဆိမ်းဖြင့် တစ်လ ၂၆ ရက်ဖြင့် လုပ်ကိုင် ဆောင်ရွက်မှု အပေါ်မူတည်ပါသည်။

ဇယား - ၄ ဂျယ်လီအမျိုးမျိုး နှစ်စဉ်ထုတ်လုပ်မှုပမာဏ (ပြည်တွင်းရောင်းချရန်)

စဉ်	ထုတ်ကုန်အမည်	စက္ကူတစ်ပုံးလျှင် ထုတ်ပိုးမှု	ထုတ်လုပ်မှုပမာဏ (စက္ကူပုံး)				
			နှစ်စဉ်				
			ပထမ	ဒုတိယ	တတိယ	စတုတ္ထ	ပဉ္စမ - နှစ်သုံးဆယ်
၁	Hero Jelly Cup	20 g x 35 cups x 12 bags	216,000	368,280	432,000	432,000	475,200
၂	Hero Plus Jelly	120 g x 6 bags x 16 packs	40,500	129,600	162,000	162,000	178,200
၃	Daiyamoto Light Kit Jelly Cup	55 g x 15 cups x 12 packs	90,000	172,800	216,000	216,000	237,600
၄	Daiyamoto Big Cup Jelly	130 g x 6 cups x 12 packs	27,000	259,200	324,000	324,000	356,400
စုစုပေါင်းထုတ်လုပ်မှုပမာဏ			373,500	929,880	1,134,000	1,134,000	1,247,400

ဇယား - ၅ ဂျယ်လီအမျိုးမျိုး နှစ်စဉ်ထုတ်လုပ်မှုပမာဏ (ပြည်ပတင်ပို့ရန်)

စဉ်	ထုတ်ကုန်အမည်	စက္ကူတစ်ပုံးလျှင် ထုတ်ပိုးမှု	ထုတ်လုပ်မှုပမာဏ (စက္ကူပုံး)				
			နှစ်စဉ်				
			ပထမ	ဒုတိယ	တတိယ	စတုတ္ထ	ပဉ္စမ - နှစ်သုံးဆယ်
၁	Hero Jelly Cup	20 g x 35 cups x 12 bags	24,000	45,320	48,000	48,000	52,800
၂	Hero Plus Jelly	120 g x 6 bags x 16 packs	4,500	18,000	18,000	18,000	19,800
၃	Daiyamoto Light Kit Jelly Cup	55 g x 15 cups x 12 packs	10,000	24,000	24,000	24,000	26,400
၄	Daiyamoto Big Cup Jelly	130 g x 6 cups x 12 packs	3,000	16,000	36,000	36,000	39,600
စုစုပေါင်းထုတ်လုပ်မှုပမာဏ			41,500	103,320	126,000	126,000	138,600

ကုန်ကြမ်းပစ္စည်းများ

ဂျယ်လီအမျိုးမျိုးထုတ်လုပ်ခြင်းလုပ်ငန်းတွင် အသုံးပြုမည့် ကုန်ကြမ်းပစ္စည်းများမှာ သကြား၊ ဖလူးတိုက်ဆွိုင်းအပ်၊ အစားအသောက်အရည်အသွေးမြင့်ကုန်ပစ္စည်းများ၊ အချိုခါတ်ပါဝင်သောအရည်နှင့် အမှုန့်ပစ္စည်းများ၊ လူတို့ဖန်တီးထားသော အရသာနှင့်အရောင်တို့ပါဝင်ပါသည်။ Thai Faster Products and M.K. Company Limited သည် သကြား၊ ထုတ်ပိုးစက္ကူပုံးကဲ့သို့သောပစ္စည်းများကို ပြည်တွင်းတွင် ဝယ်ယူ၍ အခြားပစ္စည်းများကို ပြည်ပမှ တင်သွင်းပါသည်။ ကုန်ကြမ်းပစ္စည်းများ စာရင်းကို အောက်ပါဇယား (၆)နှင့် (၇)တွင် ဖော်ပြထားပါသည်။ စားသောက်ကုန် အရည်သွေးမြင့်ခါတုပစ္စည်းများကို ဇယား (၈)တွင် ဖော်ပြထားပါသည်။

ဇယား (၆) ကုန်ကြမ်းပစ္စည်းများစာရင်း

စဉ်	အမျိုးအစား	ရေတွက်မှု	အရေအတွက်					တင်သွင်းမှု
			ပထမ	ဒုတိယ	တတိယ	စတုတ္ထ	ပဉ္စမ - နှစ်သုံးဆယ်	
၁	Carrageenan Powder	ကိုလိုရင်	11,085	28,406.8	34,740	34,740	38,214	ယိုးဒယားနိုင်ငံ
၂	Locust bean Gum		11,830	30,148.8	36,840	36,840	40,524	
၃	Konjac Gum		4,984	12,706.96	15,528	15,528	17,080.8	
၄	Artificial Flavor		3,856	9,965.44	12,192	12,192	13,411.2	
၅	Artificial Color		1,114.5	2,895.72	3,546	3,546	3,900.6	
၆	PP Cup	ခွက်	100,800,000	173,712,000	201,600,000	201,600,000	221,760,000	ပြည်တွင်း
	-HeroJelly		18,000,000	35,424,000	43,200,000	43,200,000	47,520,000	
	-Daiya moto Light - Daiyamot Big Cup		2,160,000	19,814,400	25,920,000	25,920,000	28,512,000	
၇	Plastic Bag	အိတ်	2,880,000	4,963,200	5,760,000	5,760,000	6,336,000	ပြည်တွင်း
	-Hero Jelly - Hero Plus		4,320,000	14,169,600	17,280,000	17,280,000	19,008,000	
၈	-Hero Jelly	ခု	100,800,000	173,712,000	201,600,000	201,600,000	221,760,000	ယိုးဒယားနိုင်ငံ
	-Daiya moto Light		18,000,000	35,424,000	43,200,000	43,200,000	47,520,000	
	- Daiya moto Big		2,160,000	19,814,400	25,920,000	25,920,000	28,512,000	
၉	စက္ကူဘူးခွံအသေး							
	Daiyamoto	ဘူး	1,200,000	2,361,600	2,880,000	2,880,000	3,168,000	ပြည်

စဉ်	အမျိုးအစား	ရေတွက်မှု	အရေအတွက်					တင်သွင်းမှု
			ပထမ	ဒုတိယ	တတိယ	စတုတ္ထ	ပဉ္စမ - နှစ်သုံးဆယ်	
	Light Kit							တွင်း
	Daiyamoto Big Cup	ဘူး	360,000	3,302,400	4,320,000	4,320,000	4,752,000	
၁၀	ပလပ်စတစ် တိပ်	ခု	415,000	1,033,200	1,260,000	1,260,000	1,386,000	ပြည်တွင်း

ဇယား (၇) ကုန်ကြမ်းပစ္စည်းများလိုအပ်ချက် (ပြည်တွင်းမှဝယ်ယူခြင်း)

စဉ်	အမျိုးအစား	ရေတွက်ပုံ	ပမာဏ				
			ပထမ	ဒုတိယ	တတိယ	စတုတ္ထ	ပဉ္စမ - နှစ်သုံးဆယ်
၁	သန့်စင်သော သကြား	ကီလိုဂရမ်	485,800	1,239,408	1,514,400	1,514,400	1,665,840
၂	စက္ကူပုံးခွံ						
	Hero Jelly Cup	ခု	240,000	413,600	480,000	480,000	528,000
	Hero Plus Jelly		45,000	147,600	180,000	180,000	198,000
	Daiyamoto Light Kit Jelly Cup		100,000	196,800	240,000	240,000	264,000
	Daiyamoto Big Cup Jelly		30,000	275,200	360,000	360,000	396,000

ဇယား (၈) စားသောက်ကုန်အရည်အသွေးမြှင့်မီတုပစ္စည်းများ

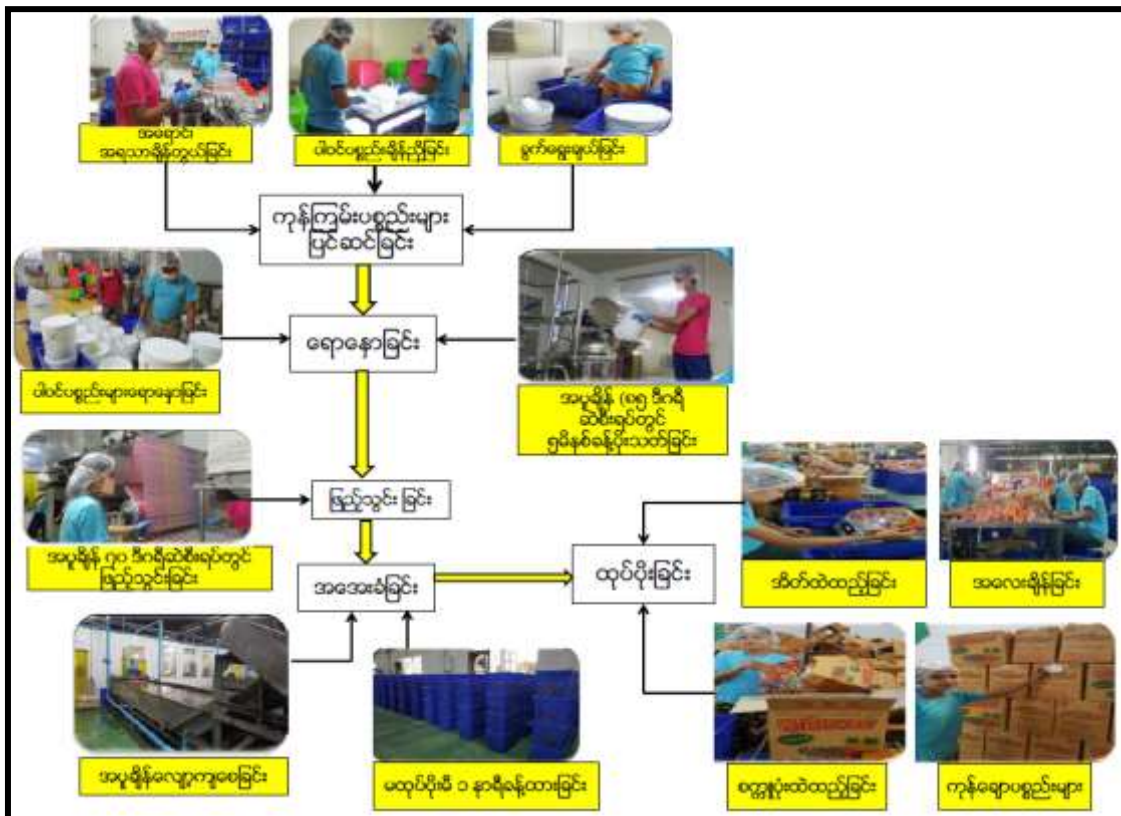
အမျိုးအစား	ထုတ်ပိုးမှုပုံစံ	ဟီးရီးဘျိုင်းဂျယ်လီနှင့် နိုင်ယာဆိုတိုဂျယ်လီ (ကီလိုဂရမ်)			သယ်ယူ/ပို့ဆောင်အဖွဲ့စည်း	တင်သွင်းမှု
		နေ့စဉ်	လစဉ်	နှစ်စဉ်		
Tripotassium Citrate (P-PCT)	အိတ်	2.714	81.410	976.92	M.K Trading logistic	ယိုးဒယားနိုင်ငံ
Maltodextrin		8.832	264.960	3,179.52		
Citric Acid Monohydrate		3	90	1,080		
Grap Flavor Symrise (F-GRS)	ပုံး	0.83	2.478	29.74		
Orange Flavor(Symrise) (F-ORS)		0.022	0.662	7.95		
Lychee Flavor (VM) (F-LCV)		0.029	0.875	10.50		
Grap Flavor(MV/GRV/) (F-GRM)	ပုံး	0.067	2.016	24.19		
Grape Flavor(Sensient) (F-GRV)		0.198	5.950	71.40		
Stawberry Flavor TFF (F-STT)		0.060	1.800	21.60		
Orange Flavor (Thai Inter) (F-ORT)	ပုံး	0.227	6.806	81.67		
Salacider Flavor (Firmenich) (F-SLF)		0.218	6.528	78.34		

Pineapple Falvor (Thai Inter) (F-PAT)		0.110	3.311	39.74	
Aspartame Powder (P-APT)	စက္ကူပုံး	0.226	6.775	81.30	
Acesul FAME-K (P-ACEF)		0.236	7.085	85.02	
Sunset Yellow FCF (P-SSY)	အိတ်	0.250	7.500	90.00	
Dark Red Carmoisine (P-CMI)		0.079	2.356	28.27	
Tartrazine (P-TTZ)		0.050	1.500	18.00	ပြည်တွင်း
Probenz SG Sodium Benzoate (P-BZA)	အိတ်	0.916	27.492	329.90	

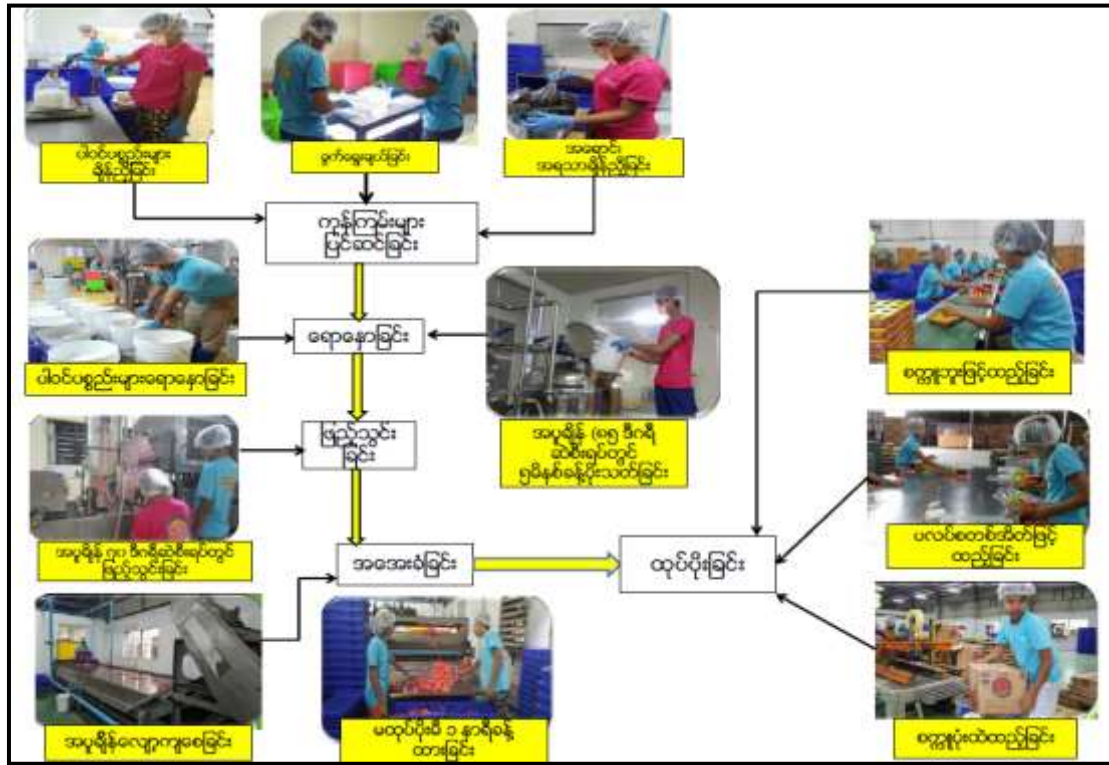
ကုန်ထုတ်လုပ်မှုအဆင့်ဆင့်ပြပုံ

ဂျယ်လီ (Hero Boys and Daiya Moto) ထုတ်လုပ်မှုလုပ်ငန်းစဉ်အဆင့်ဆင့်ကို

- (၁) ကုန်ကြမ်းပစ္စည်းများပြင်ဆင်ခြင်း၊
- (၂) ရောနှောခြင်း၊
- (၃) ဖြည့်သွင်းခြင်း၊
- (၄) အအေးခံခြင်းနှင့်
- (၅) ထုတ်ပိုးခြင်းတို့ ဖြစ်ပါသည်။



ပုံ - ၅ Hero Boys ဂျယ်လီထုတ်လုပ်မှုအဆင့်ဆင့်



ပုံ - G Daiya Moto ဂျယ်လီထုတ်လုပ်ပုံအဆင့်ဆင့်

ဝန်ထမ်းအင်အား

Thai Faster Products and M.K ကုမ္ပဏီလီမိတက်သည် ဝန်ထမ်းများကို အောက်ပါ ဇယားအတိုင်း စီစဉ်ဆောင်ရွက်ထားပါသည်။ သို့သော် ကုမ္ပဏီအနေဖြင့် ကနဦးလုပ်ငန်း ဆောင်ရွက်သည့် နှစ်တွင် ဝန်ထမ်း (၁၉၆) ဖြင့် ဂျယ်လီထုတ်လုပ်ခြင်းလုပ်ငန်းကို ဆောင်ရွက်ပါမည်။

ဇယား (၉) အလုပ်အကိုင်အစီအစဉ်

အမျိုးအစား	နေရာ	အရေအတွက်				
		ပထမနှစ်	ဒုတိယနှစ်	တတိယနှစ်	စတုတ္ထနှစ်	ပဉ္စမ မှ နှစ်သုံးဆယ်
ပြည်တွင်းဝန်ထမ်း						
အုပ်ချုပ်မှုအဆင့်	စီမံခန့်ခွဲရေး	1	1	2	2	2
ကျွမ်းကျင်မှုအဆင့်	ထုတ်လုပ်ရေး	3	3	3	3	3
ကြီးကြပ်သူအဆင့်	အရည်အသွေး	10	10	15	15	15
အတွင်းရေးမှူး	ရုံးပိုင်းဆိုင်ရာ	4	4	6	6	6
ကျွမ်းကျင်လုပ်သား	ကုန်ထုတ်လုပ်မှု	20	25	30	30	30
ဝန်ထမ်းများ	ထုတ်လုပ်မှု	150	250	300	300	300
Total		188	293	356	356	356
Foreign Experts and Technicians Personnel Required						
အုပ်ချုပ်မှုအဆင့်	စီမံခန့်ခွဲရေး	3	2	1	1	1
ကျွမ်းကျင်မှုအဆင့်	ထုတ်လုပ်ရေး	3	3	3	3	3
ကြီးကြပ်သူအဆင့်	ရုံးပိုင်းဆိုင်ရာ	2	2	2	2	2
စုစုပေါင်း		8	7	6	6	6

အလုပ်ချိန်နှင့်အလုပ်လုပ်ရက်ပေါင်း

ထုတ်လုပ်မှုလုပ်ငန်းစဉ်အတွက်အလုပ်ချိန်မှာ

နံနက် ၇:၀၀ နာရီ မှ ညနေ ၄:၀၀ နာရီ အထိ (တနင်္လာမှ သောကြာ)

ညနေ ၅:၃၀ နာရီ အထိ (အချိန်ပို)

နံနက် ၇:၀၀ နာရီ မှ နေ့လည် ၁၁:၀၀ နာရီအထိ (စနေနေ့)

အားလပ်ရက် (တနင်္ဂနွေနေ့)

တစ်နှစ်အလုပ်လုပ်ရက်ပေါင်း - ရက်ပေါင်း ၃၀၀

Thai Faster Products and M.K. Company သည် ရှောင်တခင်ခွင့်များ၊ အချိန်ပိုများ၊ အချိန်ပိုခံစားခွင့်များနှင့်နှစ်စဉ် အကျိုးခံစားခွင့်များ စသည်တို့ဖြင့် ဝန်ထမ်းများအတွက် အစီစဉ်များ ထားရှိထားပါသည်။ ထို့အပြင် ရှေးဦးသူနာပြုဆေးသေတ္တာများနှင့် ကျန်းမာရေးစောင့်ရှောက်မှု အစီအစဉ်များ ထောက်ပံ့ပေးထားပါသည်။

စွန့်ပစ်ရည်ထွက်ရှိမှုနှင့်သန့်စင်မှုနည်းစနစ်

စွန့်ပစ်ရည်ထွက်ရှိမှု

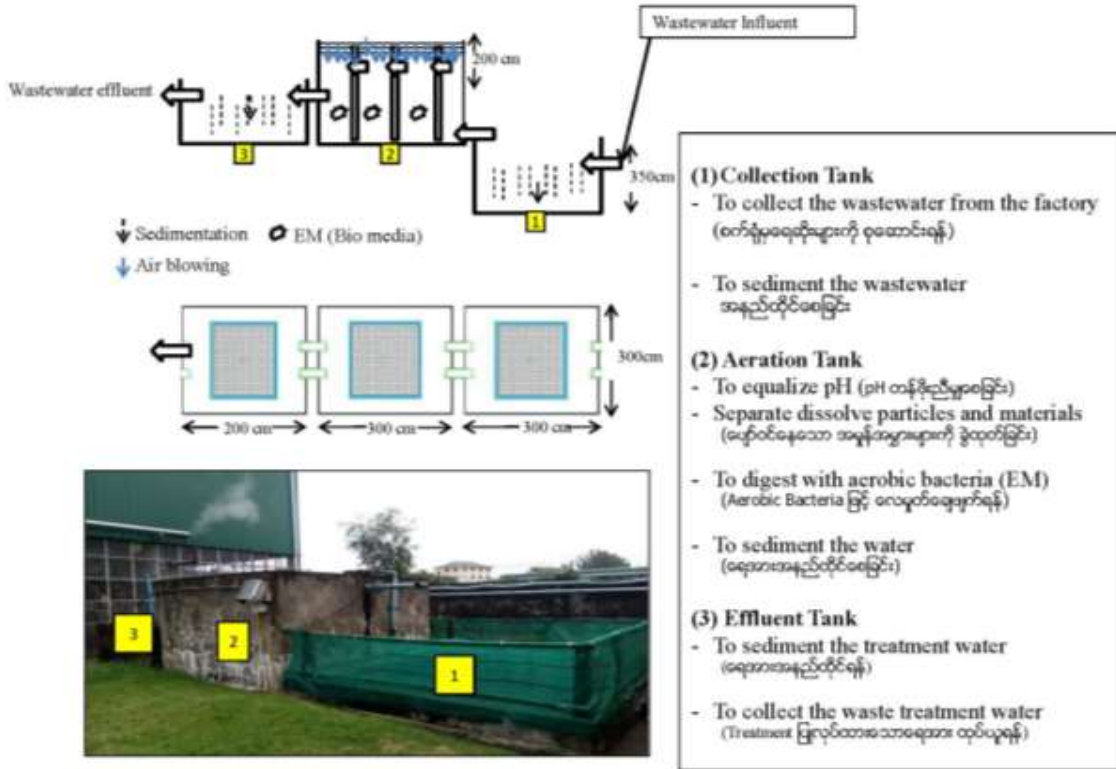
စက်ရုံတွင် အဓိကအားဖြင့် ထုတ်လုပ်မှုလုပ်ငန်းစဉ်နှင့် အထွေထွေသုံးစွဲမှု ထွက်ရှိလာသော စွန့်ပစ်ရည်များ သာဖြစ်ပါသည်။ ထုတ်လုပ်မှုလုပ်ငန်းစဉ်မှထွက်ရှိသော စွန့်ပစ်ရည်များအနေဖြင့် ကြမ်းခင်းဆေးကြောခြင်း၊ ထုတ်လုပ်မှုကန်များဆေးကြောခြင်း၊ အအေးခံခြင်းမှ ထွက်ရှိခြင်းတို့ဖြစ်ပါသည်။ အထွေထွေသုံးစွန့်ပစ်ရည်များတွင် စားသောက်ဆောင်မှလက်ဆေးခြင်း၊ ရုံးခန်းတို့မှထွက်ရှိပြီး သန့်စင်ခန်းများမှ ဆေးကြောခြင်းတို့ ဖြစ်ပါသည်။ မိုးရေများသည် မြူနီစီပယ်မြောင်းထဲသို့ သီးသန့်အနေဖြင့် စီးဆင်းသွားပါသည်။ စွန့်ပစ်ရည်စုတ်ခြင်းနှင့် စွန့်ပစ်ခြင်းများကို အောက်ပါ ဇယား (၁၀)တွင် ဖော်ပြထားပါသည်။

ဇယား - ၁၀ စွန့်ပစ်ရည်ထွက်ရှိမှုနှင့်စွန့်ပစ်မှု

စဉ်	အရင်းမြစ်	ပမာဏ (လီတာ)			သန့်စင်မှုစနစ်
		ရက်	လ	နှစ်	
၁	ထုတ်လုပ်မှုလုပ်ငန်းစဉ်	10,000	260,000	3,000,000	စွန့်ပစ်ရည်သန့်စင်ကန်
၂	အထွေထွေသုံးရေ	200	5,200	60,000	

စွန့်ပစ်ရည်သန့်စင်မှုစနစ်

စက်ရုံတွင် ထုတ်လုပ်မှုလုပ်ငန်းစဉ်များမှ ထွက်ရှိလာသော စွန့်ပစ်ရည်များကို သန့်စင်ရန် စွန့်ပစ်ရည်သန့်စင်စနစ် တပ်ဆင်ထားပါသည်။ စွန့်ပစ်ရည်သန့်စင်ကန်နှင့်လုပ်ဆောင်အဆင့်ဆင့်ကို အောက်ပါပုံ (၇) တွင် ဖော်ပြထားပါသည်။



ပုံ - ၇ စွန့်ပစ်ရည်သန့်စင်ကန်

အခြားအထောက်အပံ့များ

ကုမ္ပဏီအနေဖြင့် စက်ရုံရှိ ဝန်ထမ်းများပျော်ရွှင်စေရန်နှင့် သက်သာချောင်ချိရေးအစီအစဉ်များကို လည်း စီမံဆောင်ရွက်ထားပါသည်။

တစ်ကိုယ်ရည်သန့်ရှင်းရေး

(က) ဝန်ထမ်းများကို တစ်ကိုယ်ရည်သန့်ရှင်းရေးနှင့်ပတ်သက်၍သင်ကြားပေးခြင်း - အစားအစားများမစားမီနှင့် အိမ်သာမှထွက်လာပြီးနောက် ဆပ်ပြာဖြင့်ဆေးကြောရန်

(ခ) ယူနီဖောင်းများကို သန့်ရှင်းစွာဝတ်ဆင်စေရန်နှင့်လက်အိတ်၊ နှာခေါင်းစဉ်နှင့် ခေါင်းအုပ်များ ထောက်ပံ့ပေးခြင်း

(ဂ) စားသောက်ဆောင်အတွက် လေဝင်လေထွက်ကောင်းမွန်စေခြင်း၊ ခုံများလုံလောက်စွာ ထားရှိခြင်းနှင့် သောက်ရေသန့်၊ လက်ဆေးဆပ်ပြာထား ထားရှိထားပေးခြင်း

(ဃ) သန့်စင်ခန်းများလုံးလောက်စွာထောက်ပံ့ပေးထားခြင်း၊ လက်သန့်စင်ဆေးရည်များ ထောက်ပံ့ပေးထားခြင်း

(င) သောက်သုံးရေသန့်ထောက်ပံ့ပေးထားခြင်း

ကျန်းမာရေးဆိုင်ရာစောင့်ရှောက်မှု

Thai Faster Products and M.K Company Limited စက်ရုံတွင် ဆေးသေတ္တာကို ထားရှိထားပြီး ဝန်ထမ်းများအတွက် နာမကျန်းဖြစ်ပါက လိုအပ်သော အခြေခံဆေးဝါးများနှင့် အခြားအသေးစား

မတောတဆမှုများအတွက် စီစဉ်ထားပါသည်။ အကယ်၍ အခြားထိခိုက်မှု ကြီးကြီးမားမားဖြစ်လာပါက ဆေးရုံနှင့်ချိတ်ဆက်ဆောင်ရွက်ထားပါသည်။

(က) စက်ရုံတွင် ဝန်ထမ်းများ၏ ကျန်းမာရေးဆိုင်ရာအသိပညာပေးခြင်း

(ခ) တစ်ခါတစ်ရံ အဆုတ်ရောဂါကဲ့သို့သော ဆေးစစ်ဆေးမှုများကို လုပ်ဆောင်ပါသည်။

(ဂ) လိုအပ်ပါက အခမဲ့ ကုသမှုများကို ထောက်ပံ့ပေးသွားမည်ဖြစ်ပါသည်။

(ဃ) ကုမ္ပဏီအနေဖြင့် ကိုဗစ်-၁၉ ကဲ့သို့သော ကူးစက်ရောဂါများအတွက် ဝန်ထမ်းများကို ကာကွယ်ဆေးထိုးပေးခြင်း လုပ်ဆောင်ပေးထားမှုကို နောက်ဆက်တွဲ (၂၈)တွင် ဖော်ပြထားပါသည်။

သင်တန်းများပေးခြင်း

(က) စက်ရုံဝန်ထမ်းများ ရိုးသားကြီးစားမှုနှင့်လူတော်လူလိမ်မာများ ဖြစ်လာစေရန် ဆုပေးဒဏ်ပေးစနစ်ကို လုပ်ဆောင်ပါသည်။

(ခ) အလုပ်ကျွေးစားသူများအတွက် သင့်လျော်သော အလုပ်သင်တန်းများ ထောက်ပံ့ခြင်း

(ဂ) ဝန်ထမ်းများ၏ ကျွမ်းကျင်မှုပေါ်မူတည်၍ အလုပ်ခွင်ရာထူးများစနစ်ကို ကျင့်သုံးပါသည်။

(ဃ) လုပ်ငန်းခွင်ကြီးကြပ်သူ၊ လက်အောက်ဝန်ထမ်း၊ အထက်လူကြီးစသည်ဖြင့် ရိုးသေလေးစားမှု ရှိစေရန် သင်ကြားပြသထားပါသည်။

(င) လုပ်ငန်းခွင်ရှိ မည်သည့်နေရာတွင်မဆို စည်းလုံးညီညွတ်ကြစေရန် သင်ကြားထားပါသည်။

(စ) အရေးအပေါ်တုံ့ပြန်မှုဆိုင်ရာများအတွက် သင်ကြားပို့ချထားပါသည်။

သယ်ယူပို့ဆောင်ရေးစီစဉ်ထားရှိခြင်း

ကုန်ကြမ်းများ၊ ကုန်ချောများနှင့်ဝန်ထမ်းများ၏ သယ်ယူပို့ဆောင်ရေးအတွက် အောက်ပါ ဇယားတွင် ဖော်ပြထားပြီး စက်ရုံအနေဖြင့် ဝန်ထမ်းကြို/ပို့ယာဉ်များအတွက် စနစ်တကျဖြစ်စေရန် စီစဉ်ထားပါသည်။ ဝန်ထမ်းကြို/ပို့ယာဉ်များကို စက်ရုံ ပရဝုဏ်အတွင်းတွင်သာ ရပ်နားစေပါသည်။ ထို့ကြောင့် Thai Faster Products & M.K ကုမ္ပဏီ၏ မော်တော်ယာဉ်များကြောင့် ယာဉ်ကြော ကျဉ်တည်းမှုမရှိစေရန် ဖြစ်ပါသည်။

ပတ်ဝန်းကျင်နှင့်လူမှုဝန်းကျင်ဆိုင်ရာအခြေအနေများဖော်ပြချက်

အဆိုပြုစက်ရုံသည် ရွှေလင်ပန်းစက်မှုဇုန်၊ လှိုင်သာယာမြို့နယ်၊ ရန်ကုန်တိုင်းဒေသကြီးတွင် တည်ရှိသောကြောင့် ပတ်ဝန်းကျင်ဆိုင်ရာအခြေအနေများနှင့် လူမှုစီးပွားဆိုင်ရာအချက်အလက်များကို မြို့နယ်အထွေထွေအုပ်ချုပ်ရေးဦးစီးဌာန၏ ၂၀၂၀ ခုနှစ်၊ စက်တင်ဘာလ ရက်စွဲပါ လှိုင်သာယာ (အရှေ့ပိုင်း) မြို့နယ် ဒေသဆိုင်ရာအချက်အလက်များမှ ကိုးကားခဲ့ပါသည်။

ဇယား - ပတ်ဝန်းကျင်နှင့်လူမှုဝန်းကျင်ဆိုင်ရာအခြေအနေများဖော်ပြချက်

အမျိုးအစား	ဖော်ပြချက်
ပထဝီဝင်အနေအထား	
တည်နေရာနှင့်	လှိုင်သာယာ (အရှေ့ပိုင်း)မြို့နယ်သည် ရန်ကုန်တိုင်းဒေသကြီး၊ မြောက်ပိုင်းခရိုင်တွင်

အကျယ်အဝန်း	တည်ရှိပါသည်။ လှိုင်သာယာမြို့နယ်သည် မြောက်လတ္တီတွဒ် ၁၆ ဒီဂရီ ၄၇ မိနစ် နှင့် ၂၀ ဒီဂရီ ၁၂ မိနစ်ကြား၊ အရှေ့လောင်ဂျီတွဒ် ၉၆ ဒီဂရီ ၁၂ မိနစ်နှင့် ၁၀၀ ဒီဂရီ ၁၃ မိနစ်အကြား တွင်တည်ရှိပါသည်။ လှိုင်သာယာ (အရှေ့ပိုင်း) မြို့နယ်၏ အကျယ်အဝန်းမှာ (၁၃.၉၆) စတုရန်းမိုင် ကျယ်ဝန်းပါသည်။																																		
နယ်နိမိတ်	လှိုင်သာယာ (အရှေ့ပိုင်း) မြို့နယ်၏ အရှေ့ဘက်တွင် ရန်ကုန်တိုင်းဒေသကြီး၊ မြောက်ပိုင်းခရိုင်၊ အင်းစိန်မြို့နယ်၊ အနောက်ဘက်တွင် လှိုင်သာယာ (အနောက်ပိုင်း) မြို့နယ်၊ တောင်ဘက်တွင် တွံတေးမြို့နယ်၊ မြောက်ဘက်တွင် ရွှေပြည်သာမြို့နယ်တို့ နှင့် နယ်နိမိတ်ချင်း ထိစပ်လျက်ရှိပါသည်။																																		
မြေမျက်နှာသွင်ပြင်	လှိုင်သာယာ(အရှေ့ပိုင်း)မြို့နယ်၏ မြေမျက်နှာသွင်ပြင်မှာ ညီညာ ပြန့်ပြူးပါသည်။																																		
ရေဆင်း	လှိုင်သာယာ(အရှေ့ပိုင်း)မြို့နယ်တွင် ပန်းလှိုင်မြစ်သည် အနောက်မှ အရှေ့သို့ စီးဆင်းပြီး မြောက်မှတောင်သို့ စီးဆင်းသော လှိုင်မြစ်အတွင်းသို့ ပေါင်းဆုံပါသည်။ ပန်းလှိုင်မြစ်သည် တိမ်ကောနေသဖြင့် ၂၀၁၅ ခုနှစ်၊ ဇန်နဝါရီလတွင် မြစ်ကြောင်း ပြန်လည်တူးဖော်ခဲ့ရာ မြစ်ကြောင်းတစ်လျှောက် စက်လှေများ သွားလာနိုင်ပြီ ဖြစ်ပါသည်။																																		
ပင်လယ်ရေ မျက်နှာပြင်အမြင့်	လှိုင်သာယာ(အရှေ့ပိုင်း)မြို့နယ်သည် ပင်လယ်ရေ မျက်နှာပြင်အထက် ပျမ်းမျှ အမြင့်ပေ ၁၀၀ တွင် တည်ရှိပါသည်။																																		
ရာသီဥတုနှင့် သဘာဝပတ်ဝန်းကျင်																																			
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၂	၂၀၁၈	၁၀၅	၁၁၃.၂၈	၄၁	၂၆																														
၃	၂၀၁၉	၁၁၂	၁၀၂.၀၁	၃၉	၂၆																														
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စက်မှုလက်မှုလုပ်ငန်း	<p>လှိုင်သာယာ (အရှေ့ပိုင်း) မြို့နယ်၏ စက်မှုလက်မှုလုပ်ငန်းများအနေဖြင့် တပ်မတော်အထည်ချုပ်စက်ရုံ (၁)ရုံ၊ စက်မှုဇုန် (၁) တွင် စက်ရုံပေါင်း (၁၀၈) ရုံ၊ စက်မှုဇုန် (၂) တွင် စက်ရုံပေါင်း (၁၃၂) ရုံ၊ စက်မှုဇုန် (၃) တွင် စက်ရုံပေါင်း (၆၆) ရုံ၊ စက်မှုဇုန် (၄) တွင် စက်ရုံပေါင်း (၁၂၃) ရုံ၊ စက်မှုဇုန် (၆) တွင် စက်ရုံပေါင်း (၁၃) ရုံ၊ စက်မှုဇုန် (၇) တွင် စက်ရုံပေါင်း (၄၃) ရုံ၊ ရွှေလင်ပန်းဇုန် တွင် စက်ရုံပေါင်း (၃၀၆) ရုံ မြို့နယ်ရှိ ပုဂ္ဂလိကပိုင် အိမ်တွင်း စက်မှုလက်မှုလုပ်ငန်းများအနေဖြင့် စုစုပေါင်း (၉၂) ရုံပါသည်။</p> <p>လှိုင်သာယာ (အရှေ့ပိုင်း) မြို့နယ်တွင် သမဝါယမ အသင်းပေါင်း (၂၂) ခု နှင့် အသင်းစုပေါင်း (၁) ခုရှိပါသည်။</p>																																							
စီပွားရေးဆိုင်ရာ အခြေခံအဆောက်အအုံ	<p>လှိုင်သာယာ(အရှေ့ပိုင်း) မြို့နယ်တွင် ကုန်စည်ဒိုင်း၊ ပွဲရုံများ မရှိပါ။</p> <p>ဈေးများအနေဖြင့် နိုင်ငံပိုင် (၁၁) ခု ရှိပါသည်။</p> <p>ကုန်တိုက်များအနေဖြင့် (၄) ခုရှိပါသည်။</p> <p>ပုဂ္ဂလိကပိုင် ဘဏ် (၈)ခုနှင့် အစိုးရဘဏ် (၁) ခု ရှိပါသည်။</p> <p>စတိုးဆိုင်နှင့်အရောင်းဆိုင်များ (၄၆၇) ရှိပါသည်။</p> <p>သောက်သုံးရေရရှိရေးလုပ်ငန်း (၃) ခု ရှိပါသည်။</p>																																							
အသက်မွေးဝမ်းကျောင်း လုပ်ငန်း	<p>လှိုင်သာယာ(အရှေ့ပိုင်း) မြို့နယ်တွင် အလုပ်လုပ်ကိုင်သူဦးရေမှာ အစိုးရဝန်ထမ်း (၂၈၈၇ ဦး)၊ ဝန်ဆောင်မှုလုပ်ငန်း (၁၈၅ ဦး)၊ အရောင်းအဝယ် (၉၇၈ ဦး)၊ စက်မှုလက်မှု (၁၇၃၅၀ ဦး)၊ ကျပန်း (၃၂၇၀ ဦး) နှင့် အခြားလုပ်ငန်း (၂၆၄၅ ဦး) တို့ ဖြစ်ပါသည်။</p>																																							
အလုပ်လုပ်သူဦးရေနှင့် အလုပ်လက်မဲ့ဦးရေ	<p>လှိုင်သာယာ(အရှေ့ပိုင်း) မြို့နယ်တွင် လုပ်ငန်းခွင်ရှိ လုပ်သားဦးရေ (၁၃၂၆၉၈) နှင့် အလုပ်လက်မဲ့ဦးရေ (၂၂၇၀၉) ရှိပါသဖြင့် အလုပ်လက်မဲ့ ရာခိုင်နှုန်းမှာ (၁၄.၆) ဖြစ်ပါသည်။</p>																																							
ပညာရေးကဏ္ဍ																																								
ပညာရေးဆိုင်ရာ အချက်အကိများ	<p>လှိုင်သာယာ(အရှေ့ပိုင်း) မြို့နယ်တွင် အထက်တန်းကျောင်း (၈) ကျောင်း၊ အထက်တန်းကျောင်းခွဲ (၅) ကျောင်း၊ မူလတန်းကျောင်း (၁၄) ကျောင်း၊</p>																																							

မူလတန်းကြိုကျောင်း (၄)၊ ဘုန်းတော်ကြီးသင် ပညာရေးကျောင်း (၇) ကျောင်း ရှိပါသည်။	
ကျန်းမာရေးကဏ္ဍ	
ကျန်းမာရေးဆိုင်ရာ အချက်အလက်များ	လှိုင်သာယာ(အရှေ့ပိုင်း) မြို့နယ်တွင် အစိုးရဆေးရုံ (၂) ရုံ၊ ပုဂ္ဂလိကဆေးရုံ (၂) ရုံ၊ ဆေးပေးခန်း (၁၁၃) နှင့် ကျေးလက် ကျန်းမာရေးဌာန/ ဌာနခွဲ (၄) ခု ရှိပါသည်။ ဒေသတွင်း အများဆုံးဖြစ်တတ်သော ရောဂါများမှာ ဝမ်းလျှော၊ တီဘီ၊ ဝမ်းကိုက်၊ အသည်းရောင် ရောဂါတို့ဖြစ်ပါသည်။
အားကစားနှင့် ဖျော်ဖြေရေးလုပ်ငန်း	လှိုင်သာယာ (အရှေ့ပိုင်း) မြို့နယ်တွင် ဘောလုံးကွင်း (၂)၊ ဘော်လီဘောကွင်း (၂)၊ ဂေါက်ကွင်း (၁)၊ ရုပ်ရှင်ရုံ (၁)၊ ပန်းခြံ (၁) တို့ဖြစ်ပါသည်။
ဘာသာရေးကဏ္ဍ	
ဘာသာရေးဆိုင်ရာ အချက်အလက်များ	လှိုင်သာယာ (အရှေ့ပိုင်း) မြို့နယ်ရှိ သာသနိက အဆောက်အဦများအနေဖြင့် စေတီ (၁)၊ ဘုန်းကြီးကျောင်း (၄၆)၊ သီလရှင်ကျောင်း (၂)၊ ဓမ္မာရုံ (၁) ရှိပါသည်။
	ထင်ရှားသော ဘုရား၊ စေတီပုထိုးများမှာ အောင်မြေသာယာဘုရား၊ ရွှေရင်အေးဘုရား တို့ဖြစ်ပါသည်။

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လက်ရှိပတ်ဝန်းကျင်ဆိုင်ရာအခြေအနေများ (အခြေခံအချက်အလက်)

လေထုအရည်အသွေး

စက်ရုံဧရိယာတွင် လေထုအရည်အသွေးကို အခြေခံအလက်အချက်အနေဖြင့် ကောက်ယူခဲ့ပါသည်။ နေရာ (၇) နေရာသတ်မှတ်ကောက်ယူခဲ့ပါသည်။ ပတ်ဝန်းကျင်ဆိုင်ရာလေ့လာမှုပြုလုပ်သောအဖွဲ့အနေဖြင့် ၂၀၁၈ ခုနှစ် မတ်လ တွင် လေထုအရည်အသွေး၊ ရေထုအရည်အသွေးနှင့်ဆူညံသံများကို တိုင်းတာ ကောက်ယူ ဆောင်ရွက်ခဲ့ပါသည်။ ၎င်းတို့၏ နေရာများကို အခန်း(၄)၏ ဇယား ၄.၉ နှင့် ပုံ ၄.၂ တွင် ဖော်ပြထားပါသည်။

သယံဇာတနှင့်သဘာဝပတ်ဝန်းကျင်ထိန်းသိမ်းရေးဝန်ကြီးဌာန၏ မြန်မာနိုင်ငံအမျိုးသားပတ်ဝန်းကျင် ဆိုင်ရာအရည်အသွေး(ထုတ်လွှတ်မှု) လမ်းညွှန်ချက်များ ၂၀၁၅နှင့်နှိုင်းယှဉ်ခဲ့ပြီး ပတ်ဝန်းကျင်လေထု အရည်အသွေး တိုင်းတာမှုတန်ဖိုးကို ဇယား ၄.၁၀ တွင် ဖော်ပြထားပါသည်။

ပတ်ဝန်းကျင်လေထု အမှုန်အမွှားတန်ဖိုးမှာ သတ်မှတ်လမ်းညွှန်ချက် ထက်မြင့်မားသော်လည်း အခြားတန်ဖိုးများမှာ လမ်းညွှန်ချက်အတွင်း ရှိပါသည်။ ပတ်ဝန်းကျင်ရှိလေထုအတွင် အမှုန်အမွှား (PM2.5 နှင့် PM10) မြင့်မားခြင်းမှာ မော်တော်ယာဉ်များသွားလာမှုနှင့် စက်ရုံဝင်ပေါက်နှင့်လမ်းအနီး ရှိသော ကြောင့်ဖြစ်ပါသည်။ စက်မှုဇုန်အတွင်း တည်ရှိသောကြောင့် စုပေါင်းသက်ရောက်မှုကြောင့်လည်း ဖြစ်နိုင် ပါသည်။ အဆိုပါသက်ရောက်မှုများအတွက် ပတ်ဝန်းကျင်စီမံခန့်ခွဲမှုအစီအစဉ်ပါ အစီရင်ခံစာပါအတိုင်း လိုက်နာလုပ်ဆောင်ရပါမည်။

ရေထုအရည်အသွေး

ရေအရည်အသွေးနမူနာများကို ကောက်ယူခြင်းမှာ စီမံကိန်းဧရိယာအတွင်း ရေအရည်အသွေး၏ အခြေခံအချက်အလက်များကို မှတ်တမ်းတင်ရန်ဖြစ်ပါသည်။ စီမံကိန်းဧရိယာတွင် ရေနမူနာကို (၅) နေရာမှ ကောက်ယူခဲ့ပါသည်။ ၎င်းတို့ကို အစီရင်ခံစာ၏ အခန်း (၄)၊ ဇယား ၄.၁၃ နှင့် ပုံ ၄.၅ တွင် ဖော်ပြထား ပါသည်။

နမူနာကောက်ယူခဲ့သည့်တန်ဖိုးများကို ကမ္ဘာ့ကျန်းမာရေးကုသမှုအဖွဲ့အစည်း၊ ပတ်ဝန်းကျင် ဆိုင်ရာကာကွယ်မှုအေဂျင်စီနှင့် သောက်သုံးရေးအတွက် အိန္ဒိယ သတ်မှတ်ချက်များနှင့် နှိုင်းယှဉ်ခဲ့ပါသည်။ သယံဇာတနှင့်သဘာဝပတ်ဝန်းကျင်ထိန်းသိမ်းရေးဝန်ကြီးဌာန၏ မြန်မာနိုင်ငံအမျိုးသားပတ်ဝန်းကျင် ဆိုင်ရာ အရည်အသွေး(ထုတ်လွှတ်မှု) လမ်းညွှန်ချက်များ စွန့်ပစ်ရည်စွန့်ပစ်မှုဆိုင်ရာ လမ်းညွှန်ချက်များ နှင့်နှိုင်းယှဉ်ခဲ့ပါသည်။

ရေအရည်သွေးနမူနာများကို Green Myanmar Environmental Services ကုမ္ပဏီလီမိတက်နှင့် Ecological Laboratory of Advancing Life and Regenerating Motherland (ALARM) ဓါတ်ခွဲခန်း တို့တွင် တိုင်းတာစစ်ဆေးခဲ့ပါသည်။ တိုင်းတာမှုရလဒ်များကို အစီရင်ခံစာနောက်ဆက်တွဲ (၁၄) တို့တွင် ဖော်ပြထားပါသည်။

ရေနမူနာကောက်ယူအမှတ် (၂၊ ၃၊ ၄၊ ၅) တို့မှတန်ဖိုးများသည် သန့်စင်မှုမပြုလုပ်ခင်အခြေအနေ ကဖြစ်ပြီး စက်ရုံတွင် ရေဆိုးသန့်စင်စက်ကို တည်ဆောက်ပြီးဖြစ်ပါသည်။ ၎င်း ရေများကို ရေဆိုးသန့်စင် ကန်တွင် သန့်စင်ပြီးမှ စည်ပင်သာယာမြောင်းသို့ စွန့်ပစ်သွားမည် ဖြစ်ပါသည်။

စွန့်ပစ်ရည်အရည်အသွေး

စွန့်ပစ်ရည်နမူနာကောက်ယူခြင်းမှာ စီမံကိန်း၏ ဧရိယာအတွင်း ရေအရည်အသွေး၏ အခြေခံ အချက်အလက်များကို မှတ်တမ်းတင်ရန်ဖြစ်ပါသည်။ အဆိုပြုစက်ရုံတွင် စွန့်ပစ်ရည်နမူနာ (၃) နေရာမှ ကောက်ယူစစ်ဆေးခဲ့ပါသည်။ ၎င်းရလဒ်များကို မြန်မာနိုင်ငံအမျိုးသားပတ်ဝန်းကျင်ဆိုင်ရာ အရည်အသွေး (ထုတ်လွှတ်မှု) လမ်းညွှန်ချက်များ စွန့်ပစ်ရည်စွန့်ပစ်မှုဆိုင်ရာ လမ်းညွှန်ချက်များ နှင့်နှိုင်းယှဉ်ခဲ့ပါသည်။

ရေအရည်သွေးနမူနာများကို Green Myanmar Environmental Services ကုမ္ပဏီလီမိတက်နှင့် Ecological Laboratory of Advancing Life and Regenerating Motherland (ALARM) ဓါတ်ခွဲခန်းတို့တွင် တိုင်းတာစစ်ဆေးခဲ့ပါသည်။ တိုင်းတာမှုရလဒ်များကို အစီရင်ခံစာနောက်ဆက်တွဲ (၁၅၊ ၁၆) တို့တွင် ဖော်ပြထားပါသည်။

စွန့်ပစ်ရည်တိုင်းတာမှုအမှတ်-၁ (ထုတ်လုပ်မှုလုပ်ငန်းစဉ်မှထွက်ရှိမှု)၊ စွန့်ပစ်ရည်တိုင်းတာမှုအမှတ်- ၂ (စွန့်ပစ်ရည်သန့်စင်ကန်သို့အဝင်) တို့၏ တန်ဖိုးများသည် သန့်စင်ခြင်း မပြုလုပ်ခြင်း တန်ဖိုးများဖြစ်ပြီး စက်ရုံတွင် ရေဆိုးသန့်စင်ကန်ကို တပ်ဆင်ထားပြီးဖြစ်ပါသည်။ ၎င်း ရေများကို ရေဆိုးသန့်စင်ကန်တွင် သန့်စင်ပြီးမှ စည်ပင်သာယာမြောင်းသို့ စွန့်ပစ်သွားမည် ဖြစ်ပါသည်။

စွန့်ပစ်ရည်တိုင်းတာမှုအမှတ်-၃ (စွန့်ပစ်ရည်သန့်စင်ကန်မှအထွက်) သည် ရေဆိုးများကို သန့်စင်ပြီး တန်ဖိုးများဖြစ်ပါသည်။ BOD, COD, Coliform တန်ဖိုးများသည် သတ်မှတ်လမ်းညွှန်ချက်များထက် အနည်းငယ် ကျော်လွန်ပြီး ကျန်သောတန်ဖိုးများသည် သတ်မှတ်ချက် အတွင်းရှိပါသည်။ ရေဆိုးစွန့်ပစ်မှု အတွက် NEQG လမ်းညွှန်ချက် သတ်မှတ်ချက်အတွင်း ရရှိစေရန် ဆက်လက်ဆောင်ရွက် သွားမည် ဖြစ်ပါသည်။

ဆူညံသံအဆင့်

အဆိုပြုစက်ရုံဧရိယာတွင် ဆူညံသံတိုင်းတာခြင်းကို နေရာ (၃) နေရာ ရွေးချယ်ခဲ့ပါသည်။ တိုင်းတာခဲ့သောနေရာ (၁၊ ၆၊ ၇) တို့ကို ဇယား ၄.၂၁ နှင့် ပုံ ၄.၈တွင် ဖော်ပြထားပါသည်။ ဆူညံသံ တိုင်းတာမှုအတွက် ဆူညံသံတိုင်းတာခြင်းစက် (SD-4033SD) ကိုအသုံးပြုခဲ့ပါသည်။ ၎င်းတို့၏ တန်ဖိုးများကို ဇယား ၄.၂၂ တွင်ဖော်ပြထားပါသည်။

ဇယား ၄.၂၂ အရ ဆူညံသံတိုင်းတာမှုများကို မြန်မာနိုင်ငံအမျိုးသားပတ်ဝန်းကျင်ဆိုင်ရာ အရည်အသွေး(ထုတ်လွှတ်မှု) လမ်းညွှန်ချက်များအရ ပတ်ဝန်းကျင်ဆိုင်ရာအတွက် 70 dBA ဖြစ်ပြီး လူနေထိုင်မှုပတ်ဝန်းကျင်အတွက် 55 dBA ဖြစ်ပါသည်။ ပတ်ဝန်းကျင်ဆိုင်ရာအတွက် ဆူညံသံ တိုင်းတာမှု (တိုင်းတာမှုအမှတ်-၁) တန်ဖိုးမှာ လမ်းညွှန်ချက်တန်ဖိုးထက် အနည်းငယ် ကျော်လွန်လျက်ရှိပါသည်။ ထိုသို့ ဖြစ်ရခြင်းမှာ ပတ်ဝန်းကျင်လမ်းပေါ်မှ မော်တော်ယာဉ်များသွားလာခြင်းကြောင့်ဖြစ်ပါသည်။

လုပ်ငန်းခွင်ဆူညံသံတိုင်းတာမှုအတွက် ပျမ်းမျှ ၁ နာရီ သတ်မှတ်ချက်မှာ (အမေရိကန်စံနှုန်း သတ်မှတ်ချက်) မှာ 105 dBA ဖြစ်ပါသည်။ လုပ်ငန်းခွင်ဆူညံသံတိုင်းတာမှုအမှတ်-၆ (ရောနှောအခန်း)၊ နှင့် တိုင်းတာမှုအမှတ်-၇ (ဘွိုင်လာအခန်း) တို့ ရှိ တန်ဖိုးများသည် အမေရိကန် OHS သတ်မှတ်ချက်များထက် လျော့နည်းပါသည်။

မြေထုအရည်အသွေး

ပုံ-၉ တွင်ပြထားသည့်အတိုင်း စီမံကိန်းဧရိယာရှိ ဘွိုင်လာအခန်းဘေးမှ မြေနမူနာ ကောက်ယူခဲ့ပါသည်။ GMES Co., Ltd ၏ ဓါတ်ခွဲခန်းသည် pH, Chloride, Total Iron, Aluminum ကဲ့သို့သော ပါရာမီတာများကို တိုင်းတာခဲ့ပါသည်။ မြေနမူနာကောက်ယူမှုအမှတ်ကို ပုံ ၄.၉တွင် ပြသထားပြီး တန်ဖိုးကို ဇယား ၄.၂၃ တွင် ဖော်ပြထားပါသည်။

ဇယား ၄.၂၃ အရ တိုင်းတာမှုတန်ဖိုးများသည် စီမံကိန်းလက်ရှိမြေဆီလွှာအရည်အသွေးများဖြစ်ပြီး အသီးအရွက်များစိုက်ပျိုးနိုင်ပြီး မြေဆီလွှာကောင်းမွန်ပါသည်။ ထို့ကြောင့် လက်ရှိမြေဆီလွှာသည် ညစ်ညမ်းမှုမရှိဟု ကောက်ချက်ချနိုင်ပါသည်။ အဆိုပြုစီမံကိန်းအတွက် မြေနမူနာများကို ကောက်ယူခဲ့ခြင်းဖြစ်ပါသည်။

ဇယား (၁၂) သိသာထင်ရှားမှုများအဆင့်

အမျိုးအစား	ဖော်ပြချက်များ	သတ်မှတ်ချက်
လစ်လျူရှုနိုင်	သက်ရောက်မှုသည် မရှိနိုင် (သို့) များပြားလှပြီး မည့်သည့်သက်ဆိုင်မှုအတွက်မျှ (သို့) အနည်းငယ်မျှ အရေးမကြီးပဲ လျစ်လျူရှု နိုင်သည်။	< ၂၀
နည်းပါး	သက်ရောက်မှုသည် အတိုင်းအတာအကန့်အသတ်ရှိပြီး ပြင်းထန်မှုနည်းသော အလယ်အလတ်၊ ယင်း၏ဖြစ်နိုင်ချေသည် မည်သို့ပင်ဖြစ်စေ သက်ရောက်မှုသည် ဆုံးဖြတ်ချက်အပေါ် အကျိုးသက်ရောက်မှုရှိမည်မဟုတ်သည့်အပြင် ကုန်ကျစရိတ် တိုးလာသဖြင့် ပတ်ဝန်းကျင်ဆိုင်ရာစီမံခန့်ခွဲမှု လိုအပ်နိုင်ဖွယ်ရှိပါသည်။	< ၄၀

အမျိုးအစား	ဖော်ပြချက်များ	သတ်မှတ်ချက်
အသင့်အတင့်	သက်ရောက်မှုသည် တစ်ခု (သို့) တစ်ခုထက်ပိုသော သက်ဆိုင်သူများအတွက် အရေးကြီးပြီး ၎င်း၏ပြင်းထန်မှုမှာ အလယ်အလတ် (သို့)မြင့်မားမည်ဖြစ်ပါသည်။ ထို့ကြောင့် သက်ရောက်မှုသည် ဆုံးဖြတ်ချက်ကို ရုပ်ပိုင်းဆိုင်ရာအရ သက်ရောက်မှုရှိနိုင်ပြီး ပတ်ဝန်းကျင်ဆိုင်ရာစီမံခန့်ခွဲရေးတွင်လိုအပ်မည် ဖြစ်ပါသည်။	< ၆၀
မြင့်မား	သက်ရောက်မှုသည် ဖွံ့ဖြိုးတိုးတက်ရေးဆိုင်ရာ ရွေးချယ်စရာများကို အငြင်းပွားဖွယ်ဖြစ်စေနိုင်သည် (သို့) ၎င်းကို လက်ခံနိုင်သောအဆင့်သို့ လျော့ချနိုင်ခြင်း မရှိပါက အဆိုပြုစီမံကိန်းကို လက်ခံနိုင်မည်မဟုတ်ပါ။ (သို့) ပတ်ဝန်းကျင်ဆိုင်ရာသိသာထင်ရှားမှုများ၏ အရေးကြီးသော အချက်ဖြစ်ပါသည်။	> ၆၀
ဖော်ပြချက်	သက်ရောက်မှုများ၏အဆင့်	
ကောင်းကျိုး (+)	ကောင်းကျိုးသက်ရောက်မှုများ	
ဆိုးကျိုး (-)	သက်ရောက်နိုင်မှုများ	
ဆိုးကျိုးသက်ရောက်နိုင်မှုများအတွက် (-) နှင့်ကောင်းကျိုးသက်ရောက်မှုအတွက် (+)		

အနိမ့်မှအမြင့်အထိ အဆင့်သတ်မှတ်ထားသော အကျိုးသက်ရောက်မှုများ၏ အရေးပါပုံ ကို အောက်ဖော်ပြပါ ဇယားတွင် သက်ရောက်မှုပြင်းအား၏ ရှင်းလင်းချက်နှင့်လိုအပ်သော အဆိုပြုထား သော လျော့ပါးရေးအစီအမံများ၏ အတိုင်းအတာကို ထင်ဟပ်စေသည့် လမ်းညွှန်ချက်ဖြင့် ညွှန်ပြ ထားပါသည်။

ဇယား(၁၃) သက်ရောက်မှုများ၏သိသာထင်ရှားမှု (လုပ်ငန်းလည်ပတ်ခြင်းကာလ)

သက်ရောက်မှု	ညစ်ညမ်းမှုများ	ကြာချိန်	အကွာအဝေး	ပြင်းအား	ဖြစ်နိုင်ချေ	တန်ဖိုး	သိသာထင်ရှားမှုအဆင့်
လေထုအရည်သွေး							
ထုတ်လုပ်မှု လုပ်ငန်းစဉ်	PM, အမှုန်အမွှား	ကာလ ရှည် (4)	စီမံကိန်း (1)	နည်း (2)	အတိကျ ဖြစ်(x5)	(35)	နိမ့် (ဆိုးကျိုး)
မီးစက်	CO, CO ₂ , SO ₂ , NO _x	ကာလတို (1)	ဒေသအတွင်း (2)	နည်း (2)	အတိကျ ဖြစ်(x5)	(25)	နိမ့် (ဆိုးကျိုး)
ဘွိုင်လာ	PM, SO _x , NO _x , CO _x	ကာလ ရှည် (4)	စီမံကိန်း (1)	အသင့်အတင့် (6)	အတိကျ ဖြစ်(x5)	(55)	အလယ်အလတ် (ဆိုးကျိုး)
မော်တော်ယာဉ်များ	SO _x , NO _x , CO _x	ကာလ အလယ်အလတ် (3)	ဒေသအတွင်း (2)	နည်း(2)	ဖြစ်နိုင်ချေ (x2)	(14)	လျစ်လျူရှု
ရေထုအရည်အသွေး							
အထွေထွေသုံးရေ	pH, BOD, COD, TSS,	ကာလ အလယ်	စီမံကိန်း (1)	အသင့်အတင့်(6)	အတိကျ ဖြစ်(x5)	(35)	နိမ့် (ဆိုးကျိုး)

	TDS, Oil & Grease	အလတ် (3)					
ထုတ်လုပ်မှုမှ စွန့်ပစ်ရည်	BOD,COD, TSS, TDS, color, Oil & Grease, pH	ကာလရှည် (4)	ဒေသအတွင်း (2)	အသင့်အတင့် (6)	အတိကျဖြစ်(x5)	(60)	အလယ်အလတ် (ဆိုးကျိုး)
စွန့်ပစ်ပစ္စည်းစွန့်ပစ်မှု							
အန္တရာယ်ရှိ စွန့်ပစ်ပစ္စည်း	ရေထုနှင့် မြေထု	ကာလအလယ်အလတ် (3)	စီမံကိန်း (1)	နည်း (2)	အတိကျဖြစ်(x5)	(30)	နိမ့် (ဆိုးကျိုး)
အန္တရာယ်မရှိ စွန့်ပစ်ပစ္စည်း	ရေထုနှင့် မြေထု		စီမံကိန်း (1)	နည်း (2)	အတိကျဖြစ်(x5)	(30)	
အထွေထွေ စွန့်ပစ်ပစ္စည်း	ရေထုနှင့် မြေထု		စီမံကိန်း (1)	နည်း (2)	အတိကျဖြစ်(x5)	(30)	
ရည်သံ							
မော်တော်ယာဉ်နှင့် ထုတ်လုပ်မှုလုပ်ငန်းသုံးစက်	အလုပ်များ၏ ကျန်းမာရေးနှင့် ပတ်ဝန်းကျင်	ကာလတို (1)	စီမံကိန်း (1)	နည်း (2)	အတိကျဖြစ်(x5)	(20)	နိမ့် (ဆိုးကျိုး)
မီးစက်များ မောင်းနှင်ခြင်း		ကာလတို (1)	စီမံကိန်း (1)	နည်း (2)	အတိကျဖြစ်(x5)	(20)	နိမ့် (ဆိုးကျိုး)
မီးဘေးအန္တရာယ်							
လျှပ်စစ် ရှေ့၊ ဆီမော်တင်ဆယိုစိမ့်ခြင်း၊ ဆေးလိပ်သောက်ခြင်း	PM, အမှုန်အမွှားနှင့်ပေါက်ကွဲနိုင်ခြင်း	အမြဲတမ်း	ဒေသတွင်း (2)	များ (8)	အတိကျဖြစ်(x5)	75	မြင့် (ဆိုးကျိုး)
အရေးပေါ်အန္တရာယ်							
ရေကြီးခြင်း၊ မုန်တိုင်းတိုက်ခြင်း၊ ဒီရေတက်များခြင်း၊ ငလျင်လှုပ်ခြင်း	လေထု၊ ရေထု၊ မြေထုနှင့် လူသားကျန်းမာရေး	ကာလတို (1)	နယ်မြေဒေသတွင်း(3)	မြင့် (8)	ဖြစ်နိုင်ချေ (x2)	24	နိမ့် (ဆိုးကျိုး)
စက်ပစ္စည်းများကိုင်တွယ်ခြင်းဆိုင်ရာဘေးအန္တရာယ်							
လျှပ်စစ်ရှေ့၊ စက်ပစ္စည်းတပ်ဆင်မှုချို့ယွင်းခြင်း၊ ဘို့င်လာနှင့်လေဖိအားစက်များကို ပုံမှန်မစစ်ဆေးခြင်း	အလုပ်သမားများ၏ကျန်းမာရေးနှင့် ပတ်ဝန်းကျင်	အမြဲတမ်း (5)	ဒေသအတွင်း (2)	မြင့် (8)	အတိအကျ (x5)	75	မြင့် (ဆိုးကျိုး)

နယ်မြေဒေသအတွင်းစီးပွားရေး							
အလုပ်အကိုင် အခွင့်အလမ်းများ	ဒေသခံပြည်သူများတွက် အလုပ်အကိုင် အခွင့်အလမ်း ပံ့ပိုးနိုင်ခြင်း	ရေရှည် (4)	ဒေသတွင်း (2)	အသင့်အတင့် (6)	အတိအကျ (x5)	60	မြင့် (ကောင်းကျိုး)

လုပ်ငန်းလည်ပတ်ခြင်းကာလလျော့နည်းစေရေးနည်းလမ်းများ

Thai Faster Products and M.K ကုမ္ပဏီလီမိတက်၏ ဂျပန်လီစက်ရုံအတွက် လုပ်ငန်းလည်ပတ်ခြင်းကာလ သက်ရောက်မှုများ၏ လျော့နည်းစေရေးအကျဉ်းချုပ်ကို အောက်ပါဇယားတွင် ဖော်ပြထားပါသည်။

ဇယား (၁၄) လုပ်ငန်းလည်ပတ်ခြင်းကာလ လျော့နည်းစေရေးနည်းလမ်းများ

လုပ်ဆောင်မှုများ	ပတ်ဝန်းကျင်အပေါ် သက်ရောက်မှု	လျော့နည်းစေရေးနည်းလမ်းများ	နောက်ဆုံး သက်ရောက်မှု
၁။ လေထုညစ်ညမ်းခြင်း			
ထုတ်လုပ်မှုလုပ်ငန်းစဉ်၊ ဘိုင်းလာ၊ မီးစက်နှင့် မော်တော်ယာဉ်များ သွားလာမှု	လေထုအရည်အသွေး	<ul style="list-style-type: none"> လေဝင်လေထွက်ကောင်းမွန်ပြီး ရှင်းလင်းစေရန် ဆောင်ရွက်ရမည်။ လောင်ကျွမ်းမှုအားကောင်းပြီးမီးခိုးထွက်ရှိမှုနည်းသော ဂျင်နရေတာ အမျိုးအစားကို ရွေးချယ်ရမည်။ စက်ပစ္စည်းများကို ပုံမှန်ပြုပြင် ထိန်းသိမ်းမှုပြုလုပ်ရန် သယ်ယူပို့ဆောင်ရေးကုန်ကြမ်း၊ ကုန်ချောများအတွက် လေ့ကျင့် သင်ကြားထားသော ခွင့်ပြုထားသောသူများ ဖြစ်ရမည်။ မှတ်တမ်းများထိန်းသိမ်း ထားရမည်။ 	သင့်လျော်သော ပြုပြင်ထိန်းသိမ်းမှုများ ဆောင်ရွက်သွားပါက လျော့နည်းပါမည်။
၂။ စွန့်ပစ်အမှိုက်			
ဖယောင်းခံလှိုင်းတွန့် သေတ္တာများ၊ ဖော့ခံများ၊ ရေစိုခံပလပ်စတစ်အကာများ၊ ကြိုးများ နှင့် ဖော့ဘူးများ အစရှိသည့် ထုပ်ပိုးပစ္စည်းများ	မြေဆီလွှာ	<ul style="list-style-type: none"> ၎င်းအရာဝတ္ထုများကို ခွဲထုတ်ရောင်းချပြီး အများ အကျိုးအတွက် ပြန်လည်လျှော့ဒါန်းခြင်း ခါတုပစ္စည်းများကို တွယ်ခြင်းနှင့် သိုလှောင်ခြင်းအတွက် သက်ဆိုင်ရာ ဝန်ထမ်းများအား သင်တန်းအစီအစဉ် ပံ့ပိုးပေးခြင်း 	စက်ရုံနှင့်အနီးပတ်ဝန်းကျင် သက်ရောက်မှု အတွက်လျော့နည်း စေပါသည်။
၃။ စွန့်ပစ်ရည်			
ထုတ်လုပ်မှုလုပ်ငန်းစဉ် နှင့်အခြား	ရေထု အရည်အသွေး	<ul style="list-style-type: none"> စွန့်ပစ်အညစ်အကြေးများကို ခွဲခြားသတ်မှတ်ခြင်းအားလုပ်ဆောင်မည်ဖြစ်ပါသည်။ 	သက်ရောက်မှုလျော့နည်းခြင်း။ စွန့်ပစ်

<p>အထောက်အပံ့များ</p>		<ul style="list-style-type: none"> • ညစ်ညမ်းမှုလျော့နည်းစေရန်သန့်စင်မှု ပြုလုပ်ရပါမည်။ • သန့်စင်မှုပြုလုပ်ပြီးရေများကို စိမ်းလန်းစိုပြေရေး၊ ဥယျာဉ် စိုက်ပျိုးခြင်းနှင့် မီးငြိမ်းသတ်ခြင်းနေရာများတွင်အသုံးပြုပါမည်။ အထွေထွေသုံးရေများကို မိလ္လာကန်ထဲသို့စွန့်ပစ်ပါမည်။ 	<p>ရာတွင် သန့်စင်ပြီးမှ စွန့်ပစ်ရန်နှင့် စွန့်ပစ်ရည်ထွက်ရှိမှုကိုပုံမှန်စောင့်ကြည့်ခြင်း။</p>
<p>၄။ အန္တရာယ်ရှိစွန့်ပစ်ပစ္စည်းများ</p>			
<p>ဆိုးဆေး၊ အနံ့ရည်များနှင့် အရောင်ဓာတုများ</p>	<p>ရေထုနှင့် မြေဆီလွှာ</p>	<ul style="list-style-type: none"> • ၁။ အသုံးပြု၊ ရောစပ်သော နေရာများကို ပျော်ဝင်ခြင်း၊ စိမ့်ခြင်းမရှိစေရန်၊ စိမ့်မဝင်နိုင်သည့် မျက်နှာပြင်များပြုလုပ်ခြင်း • ၂။ စွန့်ပစ်ပစ္စည်း ပမာဏကို မှတ်တမ်းတင် ထိန်းချုပ်ခြင်း • ၃။ ဘူးခွံနှင့်ပုံးအလွတ်များကို ရောင်းချခြင်း 	<p>ကြိုတင်ကာကွယ်မှုများကြောင့် ထိခိုက်မှုနည်းပါးမည် ဖြစ်သည်</p>
<p>၅။ ဆူညံသံများထွက်ရှိခြင်း</p>			
<p>စက်ရုံလည်ပတ်မှုမှ အသံ</p>	<p>စက်ရုံဧရိယာနှင့် ပတ်ဝန်းကျင်</p>	<ul style="list-style-type: none"> • ၁။ အသံတိုးတိတ်စေရန် ကြိုတင်ပြုပြင်ထိန်းသိမ်းခြင်း • ၂။ အသံရိုက်ခတ်မှုမြင့်မားသော နေရာများတွင် နားကြပ်/နားဆို့အစရှိသော အကာအကွယ်ကိရိယာ (PPE)များ အသုံးပြုခြင်း 	<p>ပြုပြင်ထိန်းသိမ်းမှုနှင့် PPE များ အသုံးပြုခြင်းကြောင့် ထိခိုက်မှုနည်းပါးမည်</p>
<p>၆။ ကုန်ကြမ်းနှင့်ကုန်ရောပစ္စည်းများသိုလှောင်ခြင်း</p>			
<p>ကုန်ကြမ်းပစ္စည်းများ သိုလှောင်ခြင်း</p>	<p>လေထု၊ ဘေးအန္တရာယ်</p>	<ul style="list-style-type: none"> • ၁။ သင့်တော်သောသိုလှောင်နေရာများ ထားခြင်း • ၂။ သင့်တော်သော မှတ်တမ်း ထားရှိခြင်း • ၃။ လေဝင်လေထွက်ကောင်းမွန်၍သွားလာရလွယ်ကူရန်ထားရှိခြင်း။ 	<p>ကောင်းမွန်စွာ ကိုင်တွယ်မှုရှိမည် ဖြစ်သောကြောင့် ထိခိုက်မှုနည်းပါးမည်</p>
<p>၇။ စက်ပစ္စည်းများကိုင်တွယ်ခြင်းဆိုင်ရာဘေးအန္တရာယ်</p>			
<p>လုပ်ငန်းခွင်လုပ်သားများ၏ ကျန်းမာရေးနှင့် ဘေးအန္တရာယ်</p>	<p>လုပ်ငန်းခွင် လုပ်သားများ ကျန်းမာရေးနှင့် ဘေးအန္တရာယ် အပေါ် သက်ရောက်ခြင်း</p>	<ul style="list-style-type: none"> • အန္တရာယ်ဖြစ်နိုင်စေသော စက်ပစ္စည်းကို အကာအကွယ်တပ်ဆင်ခြင်း နှင့်လုပ်ဆောင်မှုစနစ်ပုံမှန်စစ်ဆေးခြင်း • သက်ဆိုင်ရာဝန်ထမ်းများကို ဘေးအန္တရာယ် ကင်းဝေးရေးသင်တန်းပို့ချခြင်း • မလိုလားအပ်သော မတော်တဆမှုများကို ရှောင်ကြဉ်ခြင်း 	<p>စက်ရုံနှင့်အနီး ပတ်ဝန်းကျင်သက်ရောက်မှု အတွက်လျော့နည်း စေပါသည်။</p>

၈။ မီးဘေးအန္တရာယ်			
သတိမမူကိုယ်တွယ်ခြင်း၊ မှ လောင်စာဆီ မတော်တဆယိုဖိတ်ခြင်း၊ မီးဘေးအန္တရာယ်ကို ပေါ့ဆခြင်း၊ ကုန်ကြမ်းနှင့် ကုန်ချောပစ္စည်းများ မှားယွင်းစွာ သိုလှောင် မှုများ	စက်ရုံဧရိယာနှင့် ပတ်ဝန်းကျင်	<ul style="list-style-type: none"> • မီးလုန့်ဇာတ်တိုက်မှု ကောင်းမွန်စွာ လုပ်ဆောင်ခြင်း။ • စက်ရုံရှိ လိုအပ်သောနေရာတိုင်းတွင် မီးသတ်ဆေးဘူးများထားရှိခြင်း။ • မီးသတ်ဆေးဘူးများသက်တမ်းကုန်ဆုံးမှု နှင့်လုပ်ဆောင်မှုများကို ပုံမှန်စစ်ဆေးခြင်း • အလွယ်တကူမီးလောင်လွယ်သောပစ္စည်း များနှင့်ဝေးရာတွင် ဆေးလိပ်သောက်ခြင်း နေရာ သီးသန့် သတ်မှတ်ထားခြင်း။ 	စက်ရုံနှင့်အနီးပတ် ဝန်းကျင် သက်ရောက်မှု အတွက်လျော့နည်း စေပါသည်။
၉။ စိမ်းလန်းစိုပြေမှုအစီအစဉ်			
စိမ်းလန်းစိုပြေမှု အစီအစဉ်များ	စက်ရုံဧရိယာနှင့် ပတ်ဝန်းကျင်	စက်ရုံဧရိယာနှင့်ပတ်ဝန်းကျင်တွင် စိမ်းလန်းစိုပြေမှုအစီအစဉ်များကို ဖွံ့ဖြိုးစေရန်ဆောင်ရွက်ခြင်း	လေထု၊ မြေထု နှင့် ဆူညံသံ သက်ရောက်မှု လျော့နည်းမည်။
၁၀။ လူမှုစီးပွားပတ်ဝန်းကျင်			
အလုပ်အကိုင် အခွင့်အလမ်း	လူမှုရေး၊ စီးပွားရေး	<ul style="list-style-type: none"> • ဒေသခံပြည်သူများ၏ အလုပ်အကိုင် • ဝန်ဆောင်မှုကဏ္ဍနှင့်ထောက်ပံ့သူများထံ သို့သွယ်ပိုက်သော အလုပ်အကိုင်များ • မတူညီသော ဝန်ဆောင်မှုများအတွက် ဒေသခံဒေဂျင်စီများအား စာချုပ်ပုံစံကဲ့သို့ အကျိုးခံစားခွင့်များ • ကျွမ်းကျင်ဝန်ထမ်းများ၊ အလယ်အလတ် နှင့်အခြားဝန်ထမ်းများ 	စီးပွားရေးနှင့်လူမှုရေးဆိုင်ရာများ အကျိုးဖြစ်ထွန်း စေမည်။

ပတ်ဝန်းကျင်စီမံခန့်ခွဲမှုအစီအစဉ်

Thai Faster Products and M.K Company Limited သည် အောက်ဖော်ပြပါ ပတ်ဝန်းကျင် စီမံခန့်ခွဲမှုအစီအစဉ်များအတိုင်း လိုက်နာလုပ်ဆောင်မည် ဖြစ်ပါသည်။

ဇယား (၁၅) ပတ်ဝန်းကျင်စီမံခန့်ခွဲမှုအစီအစဉ် (လုပ်ငန်းလည်ပတ်ခြင်းကာလ)

လေထုညစ်ညမ်းမှုစီမံခန့်ခွဲမှုအစီအစဉ်

ရည်ရွယ်ချက်	လေထုအရည်အသွေးညစ်ညမ်းမှုအတွက် ညစ်ညမ်းစေသည့် အရင်းအမြစ်နှင့်ပမာဏကို လျော့ချရန် နိုင်ငံတော်မှ ထုတ်လွှတ်မှုလမ်းညွှန်ချက်များကို လိုက်နာရန်
စီမံခန့်ခွဲမှု အစီအစဉ်	လေထုအရည်အသွေးကောင်းမွန်စေရန် စိမ်းလန်းစိုပြေဧရိယာ ထားရှိရန် စက်ယန္တရားများနှင့်မီးစက်များကို ပုံမှန်စစ်ဆေးခြင်းနှင့်စီစဉ်ထိန်းသိမ်းရန် အမှုန်အမွှားထွက်ရှိမှု လျော့ချရန် စက်ရုံအတွင်း ကောင်းမွန်သော ထိန်းသိမ်းမှုများထားရှိရန် မီးလောင်ကျွမ်းခြင်းမရှိစေရန် စွန့်ပစ်ပစ္စည်းများကိုဖွင့်ထားခြင်းမပြုရ လေဝင်လေထွက်စနစ်နှင့် အမှုန်ထွက်ရှိမှုစနစ်ကို ကောင်းမွန်စွာတပ်ဆင်ထားရန် အမှုန်အမွှားထွက်ရှိသော နေရာတွင် လုပ်ကိုင်သောဝန်ထမ်းများအား နှာခေါင်းစည်း တပ်ဆင်

	<p>ပေးပါ။ အမှုန်များကိုအလေးချိန်ချိန်တွယ်ရာတွင် ဂရုတစိုက် ကိုင်တွယ်စေရန် ညွှန်ကြားရန်။ မြေလွတ်နေရာများကို မြက်ခင်းများ (သို့) ကွန်ကရစ်များဖြင့် ထားရှိရန်။ ဂျင်နရေတာ (မီးစက်) အိတ်ဖောက် လူများနေထိုင်ရာနှင့်ဝေးရာသို့ဦးတည်ထားရန် ဘွိုင်လာခေါင်းတိုင်မှ အမှုန်အမွှားထွက်ရှိမှုနည်းစေရန် ခေါင်းတိုင်တွင် ရေဖြန်းခြင်း ကဲ့သို့သော စနစ် ဆောင်ရွက်ရမည်။ ဘွိုင်လာမှထွက်ရှိလာသောပြာများကို ပြန့်လွှင့်မှုမရှိစေရန် စနစ်တကျစုဆောင်းရမည်။</p>
တာဝန်ရှိအဖွဲ့	ပတ်ဝန်းကျင်ဆိုင်ရာစီမံခန့်ခွဲမှုအဖွဲ့နှင့်အဖွဲ့ဝင်များ
တာဝန်	<p>လေထုညစ်ညမ်းမှုစီမံခန့်ခွဲရေးအစီအစဉ်ကို အကောင်အထည်ဖော် ဆောင်ရွက်ရန် သတ်မှတ်ထားသည့် လေထုအရည်အသွေးကို စောင့်ကြည့်ရန်အတွက် ပတ်ဝန်းကျင်ဆိုင်ရာ ကန်ထရိုက်တာများထံဆက်သွယ်ရန် လေထုအရည်အသွေး စောင့်ကြည့်ခြင်းရလဒ်များကို စီမံခန့်ခွဲသူများထံ သတင်းပို့ပြီး မှတ်တမ်း များကို သိမ်းဆည်းရန် သင့်လျော်သောအချိန်တွင် လေထုအရည်အသွေးနှင့်ပတ်သက်၍ အများပြည်သူများကို အသိ ပေးရန်</p>

စွန့်ပစ်ပစ္စည်းစီမံခန့်ခွဲမှုအစီအစဉ်

ရည်ရွယ်ချက်	<p>မြေထုနှင့်ရေထုညစ်ညမ်းမှုမှ ကာကွယ်ရန် ထွက်ရှိလာသော အစိုင်အခဲစွန့်ပစ်အမှိုက်များကို စနစ်တကျစွန့်ပစ်ရန် နိုင်ငံတော်အစိုးရမှ အမှိုက်စွန့်ပစ်မှုဆိုင်ရာမူဝါဒကို လိုက်နာရန်</p>
စီမံခန့်ခွဲမှု အစီအစဉ်	<p>အန္တရာယ်ရှိစွန့်ပစ်ပစ္စည်း သိုလှောင်ခြင်း</p> <ul style="list-style-type: none"> • အန္တရာယ်ဖြစ်စေနိုင်သည်ဖြစ်စေ မရှိသည်ဖြစ်စေ အမှိုက်များလွှင့်စင်သွားခြင်းနှင့် မြေမျက်နှာပြင် (သို့) မြေအောက်ရေထဲသို့ စိမ့်ဝင်ခြင်းမှ ကာကွယ်ရန် အမှိုက်အားလုံးကို ထိန်းသိမ်းရပါမည်။ အန္တရာယ်ရှိသောစွန့်ပစ်ပစ္စည်းများသည် " အန္တရာယ်ရှိသောအမှိုက်" ဟူသော စကားလုံးဖြင့် ရှင်းလင်းစွာ တံဆိပ်ကပ်ထားသော အမှိုက်ထည့်စရာများ (သို့) သိုလှောင်ကန်များတွင် ဖြစ်ရမည်။ လုပ်ငန်းခွင်တွင် အန္တရာယ်ရှိသော စွန့်ပစ်ပစ္စည်းများ သိမ်းဆည်းရန်အတွက် ပမာဏ နှင့် အချိန်ကန့်သတ်ချက်များသည် မျိုးဆက် အမျိုးအစား အလိုက် ကွဲပြားသည်။ <p>ကိုင်တွယ်ခြင်း</p> <ul style="list-style-type: none"> • ဝန်ထမ်းများအားလုံးကို ဘေးအန္တရာယ်ကင်းရှင်းရေးကိုင်တွယ်ပုံလမ်းညွှန်ချက် (Safety Data Sheet) ပါအတိုင်း အန္တရာယ်ရှိပစ္စည်းများ ကိုင်တွယ်သည့်အခါတွင် သင့်လျော်သော တစ်ကိုယ်ရည်သုံးအကာအကွယ်ပစ္စည်း (PPE) ဝတ်ဆင်ရမည်။ <ul style="list-style-type: none"> • စွန့်ပစ်ခြင်း • အန္တရာယ်ရှိသော စွန့်ပစ်အမှိုက်များကို တရားဝင်ခွင့်ပြုထားသော အဖွဲ့အစည်း/ ရန်ကုန် မြို့တော်စည်ပင်သာယာရေးကော်မတီ ကဲ့သို့သော အဖွဲ့အစည်းများထံ စွန့်ပစ်ရမည်။ စွန့်ပစ်အမှိုက်ပမာဏကိုလည်း မှတ်တမ်းတင်ထားရမည်။
စီမံခန့်ခွဲမှု အစီအစဉ်	<p>ဘေးအန္တရာယ်မရှိသောစွန့်ပစ်ပစ္စည်း သိုလှောင်ခြင်း</p> <ul style="list-style-type: none"> • အန္တရာယ်မရှိသော စွန့်ပစ်အမှိုက်များကို ပတ်ဝန်းကျင်သို့ စွန့်ထုတ်ခြင်းမှ ကာကွယ်ရန် လုပ်ငန်းခွင်အတွင်း စွန့်ပစ်အမှိုက်ပမာဏများ နောက်ထပ်သိမ်းဆည်းနိုင်ရန်အတွက် အချိန်မီ စွန့်ပစ်ရမည်။ အန္တရာယ်မရှိသော စွန့်ပစ်ပစ္စည်းများနှင့်အသုံးပြုခြင်းမရှိသော ပစ္စည်းများကို

	<p>လေထု၊ ပတ်ဝန်းကျင်မြေထု (သို့) ရေထုအတွင်းယိုစမ်းခြင်းမရှိစေရန် အကာကွယ်ထားရမည်။</p> <p>စွန့်ပစ်ခြင်း</p> <ul style="list-style-type: none"> • အန္တရာယ်မရှိသော စွန့်ပစ်အမှိုက်များကို ရန်ကုန်မြို့တော်စည်ပင်သာယာရေးကော်မတီ ကဲ့သို့သော ခွင့်ပြုထားသည့်အဖွဲ့အစည်းများထံ စွန့်ပစ်ရမည်။ အမှိုက်ပမာဏကို မှတ်တမ်းတင်ရမည်။
<p>တာဝန်ရှိအဖွဲ့</p>	<p>ပတ်ဝန်းကျင်ဆိုင်ရာစီမံခန့်ခွဲမှုအဖွဲ့နှင့်အဖွဲ့ဝင်များ</p>
<p>တာဝန်</p>	<ul style="list-style-type: none"> • စွန့်ပစ်အမှိုက်စီမံခန့်ခွဲမှုအစီအစဉ်ကို အကောင်အထည်ဖော်ရန်သေချာစေရန်။ • စွန့်ပစ်အမှိုက်များကို သင့်လျော်စွာ ခွဲခြားထားခြင်း ရှိ/ မရှိ စောင့်ကြည့်စစ်ဆေးရန်။ • စွန့်ပစ်ပစ္စည်းများ စွန့်ပစ်မှုကို စစ်ဆေးရန်နှင့် မှတ်တမ်းတင်ထားရန်။ • စွန့်ပစ်ပစ္စည်းများကြောင့် ပတ်ဝန်းကျင်ကို ညစ်ညမ်းမှုမဖြစ်စေရန်။

ဆူညံသံညစ်ညမ်းမှုစီမံခန့်ခွဲမှုအစီအစဉ်

<p>ရည်ရွယ်ချက်</p>	<ul style="list-style-type: none"> • စက်ရုံဧရိယာနှင့်ပတ်ဝန်းကျင်၏ ဆူညံသံကို လျော့ချရန်။ • အမျိုးသားပတ်ဝန်းကျင်ဆိုင်ရာအရည်အသွေး(ထုတ်လွှတ်မှု)လမ်းညွှန်ချက်များနှင့် လုပ်ငန်းခွင်ကျန်းမာရေးနှင့်ဘေးအန္တရာယ်ကင်းရှင်းရေး လမ်းညွှန်ချက်များအတိုင်း လိုက်နာရန်။
<p>စီမံခန့်ခွဲမှုအစီအစဉ်</p>	<ul style="list-style-type: none"> • လုပ်ငန်းခွင်အတွင်း သင့်လျော်သော နေရာတွင် အကာများ၊ လျှပ်ကာအပြားများ၊ ဒန်ပါကဲ့သို့သော ဆူညံသံလျော့ချစေသည့် ပစ္စည်းများကို အသုံးပြုပါ။ • မီးစက်ကို အသံလုံအခန်းတွင် ထားရှိရမည်။ • ဆူညံသံမြင့်သောနေရာတွင် လုပ်ကိုင်ရသော ဝန်ထမ်းများအတွက် အလှည့်ကျစနစ်ဖြင့် လုပ်ကိုင်စေရမည်။ • ဂျင်နရေတာနှင့်ပန်းများကဲ့သို့သော စက်ယန္တရားများကို ပုံမှန်စစ်ဆေး ထိန်းသိမ်းရမည်။ • ဆူညံသံမြင့်သောနေရာတွင် လုပ်ကိုင်ရသောဝန်ထမ်းများကို အနားအကာအကွယ်ပစ္စည်းများ အလုံအလောက်နှင့် နားကြပ်များ တပ်ဆင်စေရပါမည်။ • ယာဉ်မောင်းများအနေဖြင့် မောင်းနှင်ခြင်းမရှိပါက ယာဉ်အင်ဂျင်များကို ပိတ်ထားရပါမည်။
<p>တာဝန်ရှိအဖွဲ့</p>	<p>ပတ်ဝန်းကျင်ဆိုင်ရာစီမံခန့်ခွဲမှုအဖွဲ့နှင့်အဖွဲ့ဝင်များ</p>
<p>တာဝန်</p>	<ul style="list-style-type: none"> • အထက်ဖော်ပြပါ ဆူညံသံညစ်ညမ်းမှုစီမံခန့်ခွဲမှုအစီအစဉ်ကို အကောင်အထည်ဖော်ရန်။ • လုပ်ငန်းလည်ပတ်ချိန်တွင် ဆူညံသံအဆင့်ကို စောင့်ကြည့်ရန်အတွက် ပတ်ဝန်းကျင်ဆိုင်ရာ ကန်ထရိုက်တာများထံ ဆက်သွယ်ဆောင်ရွက်ရန်။ • ဆူညံသံအဆင့်စောင့်ကြည့်ခြင်း၏ ရလဒ်များကို စီမံခန့်ခွဲသူများထံ သတင်းပို့ပြီး မှတ်တမ်းများ ကို သိမ်းဆည်းထားရန်။ • ဆူညံသံနှင့်ပတ်သက်၍ အများပြည်သူများအား သင့်လျော်သောအချိန်တွင် အသိပေးရန်။

ရေထုညစ်ညမ်းမှုစီမံခန့်ခွဲမှုအစီအစဉ်

<p>ရည်ရွယ်ချက်</p>	<p>ရေထုညစ်ညမ်းမှုကိုကာကွယ်ရန်နှင့်လျော့ချရန်။ မြေအောက်ရေ အရင်းအမြစ်များ ညစ်ညမ်းမှုကို ကာကွယ်ရန်။</p>
<p>စီမံခန့်ခွဲမှုအစီအစဉ်</p>	<p>ရေမြောင်းများအားလုံးကိုအဖုံး ဖုံးအုပ်ထားရန် လိုအပ်ပါသည်။ နွန်းနှင့်အညစ်အကြေးများအတွက် ဇကာများ ထားရှိရမည်။ အသုံးပြုပြီးသော ဆီများကို ရေမြောင်းအတွင်းတိုက်ရိုက်စွန့်ပစ်ခြင်းမှ ရှောင်ကြည်ရမည်။ ထုတ်လုပ်မှုလုပ်ငန်းစဉ်မှ ထွက်ရှိလာသော စွန့်ပစ်ရည်များကို စွန့်ပစ်ရည်သန့်စင်ကန်တွင် သန့်စင်ပြီးမှ စည်ပင်မြောင်းသို့ စွန့်ထုတ်ရမည်။</p>

	စွန့်ပစ်ရည်နှင့်ပတ်သက်၍ အသိပညာဆိုင်ရာများ ဝန်ထမ်းများကို ထောက်ပံ့ပေးရမည်။ ရေအရည်အသွေးရလဒ်များကို စောင့်ကြည့်ရန်နှင့်၎င်း၏ မှတ်တမ်းများကို သိမ်းဆည်းရမည်။
တာဝန်ရှိအဖွဲ့	ပတ်ဝန်းကျင်ဆိုင်ရာစီမံခန့်ခွဲမှုအဖွဲ့
တာဝန်	ပတ်ဝန်းကျင်စီမံခန့်ခွဲမှုအစီအစဉ်များအတိုင်းလိုက်နာဆောင်ရွက်ရန်။ ပတ်ဝန်းကျင်စီမံခန့်ခွဲမှုအစီအစဉ်၏အကျိုးသက်ရောက်မှုများကို စောင့်ကြည့်ရန်။ ကိစ္စရပ်တစ်ခုခုဖြစ်လာလျှင် အရေးတယူဆောင်ရွက်မှုပြုလုပ်ရန်။

အရင်းအမြစ်အသုံးချမှုစီမံခန့်ခွဲမှုအစီအစဉ်

ရည်ရွယ်ချက်	လျှပ်စစ်စွမ်းအင်နှင့်ရေသုံးစွဲမှုများကိုလျှော့ချရန်
စီမံခန့်ခွဲမှု အစီအစဉ်	<p><u>စွမ်းအင်သုံးစွဲမှု</u> စွမ်းအင်သက်သာသော မီးအိမ်နှင့်စက်ပစ္စည်းများကို အသုံးပြုပါ။ ၎င်းသည် ကြိုတင်ကုန်ကျ စရိတ်ပိုများသော်လည်း နှစ်များကြာလာသည်နှင့်အမျှ ၎င်းသည် ငွေနှင့်စွမ်းအင်ကို ပိုမို သက်သာစေပါသည်။ နေ့အလင်းရောင်ကို အများဆုံးအသုံးပြုပါ။ လေအေးပေးစက်၊ မိုက်ခရိုဝေ့၊ ပန်ကာများ၊ ပရင်တာများ၊ ကွန်ပျူတာများနှင့် အခြား စက်ပစ္စည်းများကဲ့သို့သော လျှပ်စစ်ပစ္စည်းများ၏ စွမ်းအင်ချွေတာရေးနှင့်ပတ်သက်၍ ဝန်ထမ်း များအား စွမ်းအင်အသုံးပြုမှုလျှော့ချခြင်းဆိုင်ရာ အသိပညာပေးခြင်း ပြုလုပ်ရပါမည်။ အဆောက်အဦအတွင်း အပူဒဏ်မှ ကာကွယ်ရန် အဆောက်အဦအပြင်ဘက်တွင် အရိပ်ရ အပင်များ စိုက်ပျိုးရမည်။ အသုံးပြုခြင်းမရှိသော ကိရိယာများကို ပိတ်ထားရမည်။</p> <p><u>ရေသုံးစွဲမှု</u> ရေသုံးစွဲမှုနည်းသော အိမ်သာသုံးပါ။ သန့်စင်ပြီးရေများကို စိမ်းလန်းစိုပြေရေး၊ ဥယျာဉ်စိုက်ပျိုးခြင်းနှင့် မီးငြိမ်းသတ်ခြင်းဆိုင်ရာ လိုအပ်ချက်များအတွက် အသုံးပြုရပါမည်။ အထွေထွေသုံးစွဲရေများကို မိလ္လာကန်ထဲသို့စွန့်ပစ်ရပါမည်။ စွန့်ပစ်ရည်ထွက်ရှိမှုပမာဏကို မှတ်တမ်းတင်ထားရပါမည်။ ယိုစိမ့်မှုကိုသိရှိပါက ချက်ခြင်းပြုပြင်ရမည်။</p>
တာဝန်ရှိအဖွဲ့	ပတ်ဝန်းကျင်ဆိုင်ရာစီမံခန့်ခွဲမှုအဖွဲ့နှင့်အဖွဲ့ဝင်များ
တာဝန်	လျှပ်စစ်သုံးစွဲမှုနှင့်အခြားစွမ်းအင်ပြဿနာဆိုင်ရာများကို စီမံခန့်ခွဲသူများထံ သတင်းပို့ရမည်။ လျှပ်စစ်သုံးစွဲမှုဆိုင်ရာများကို စောင့်ကြပ်ကြည့်ရှုရမည်။ အကြောင်းတစ်စုံတစ်ရာ ကိစ္စများရှိလာလျှင် စီမံခန့်ခွဲသူများထံ တင်ပြရန် လိုအပ်ပါကအရေးယူဆောင်ရွက်မှုများကိုဆောင်ရွက်ရမည်။

လုပ်ငန်းခွင်ကျန်းမာရေးနှင့်ဘေးအန္တရာယ်ကင်းဝေးရေးအစီအစဉ်

Thai Faster Products and M.K Company Limited သည် လက်ရှိတွင် လုပ်ငန်းခွင် ကျန်းမာရေးနှင့်ဘေးအန္တရာယ်ကင်းဝေးရေးအတွက် လုပ်ငန်းခွင်ရှိ ဝန်ထမ်းများမှ ကောင်းမွန်စွာ လိုက်နာလုပ်ဆောင်လျက်ရှိပါသည်။ ဝန်ထမ်းများအတွက် ဘေးအန္တရာယ်ကင်းရှင်းရေးနှင့်ကျန်းမာရေး စီမံခန့်ခွဲမှုများကို အကောင်အထည်ဖော်ရန်အတွက် လုပ်ငန်းခွင် ကျန်းမာရေးနှင့်ဘေးအန္တရာယ် ကင်းဝေးရေး စီမံခန့်ခွဲမှုအဖွဲ့ကို ဖွဲ့စည်းထားပါသည်။

လုပ်ငန်းခွင်ကျန်းမာရေးနှင့်ဘေးအန္တရာယ်ကင်းဝေးရေးစီမံခန့်ခွဲမှုကော်မတီ၏ လုပ်ငန်းနှင့်တာဝန်များမှာ အောက်ပါအတိုင်းဖြစ်ပါသည်။

၁။ ဘေးအန္တရာယ်ကင်းရှင်းရေးနှင့်မတော်တဆမှု ကာကွယ်ရေးအတွက် စစ်ဆေးရန်စာရင်းများနှင့် အတူလုပ်ငန်းဆောင်ရွက်မှုကို ပုံမှန်စစ်ဆေးရန်။

၂။ မတော်တဆမှု၊ နာမကျန်းမှု (သို့) အခြားအရေးပေါ်အခြေအနေများ ဖြစ်ပေါ်လာသည့်အခါ လျင်မြန်စွာတုံ့ပြန်ရန်။

၃။ လုပ်ငန်းခွင်ကျန်းမာရေးနှင့်ဘေးကင်းရေးအခြေအနေ၊ မတော်တဆမှုများ၊ အရေးပေါ်အခြေအနေ၊ အခြားသော ထုတ်လုပ်မှုဆိုင်ရာကိစ္စများနှင့် ထိခိုက်မှုလျော့ပါးစေရေး အစီအမံများကို ဆွေးနွေးရန်အတွက် လစဉ်ကော်မတီအစည်းအဝေးခေါ်ယူ ကျင်းပပါရန်။

၄။ လစဉ်အစည်းအဝေးမှ တွေ့ရှိချက်များနှင့်သဘောထားများကို အကောင်အထည်ဖော်ရန် အုပ်ချုပ်ရေးအဖွဲ့ထံသို့ အစီရင်ခံတင်ပြရန်။

၅။ ဘေးအန္တရာယ်ကင်းဝေးရေးနှင့်ကျန်းမာရေး၊ ကြိုတင်ကာကွယ်ရေးအတွက် သင်တန်းများ ပို့ချရန်။

၆။ လုပ်ငန်းခွင်စစ်ဆေးခြင်း၊ မတော်တဆမှုများနှင့်အစည်းအဝေးမှတ်တမ်းများကို သိမ်းဆည်းရန်။

၇။ စီမံကိန်းအဆိုပြုသူမှ လုံလောက်သော ဘတ်ဂျက်လျာထားမှု ပြဌာန်းချက်များကို ပြုလုပ်ထားခြင်းသည် ပတ်ဝန်းကျင်စီမံခန့်ခွဲမှုကို အကောင်အထည်ဖော်ရန်အတွက် စီမံခန့်ခွဲမှု သတ်မှတ်ချက်ထားသင့်ပါသည်။ နှစ်စဉ်ဘတ်ဂျက်ကို ညစ်ညမ်းမှုထိန်းချုပ်ရေး/ စောင့်ကြည့်ရေး ကိရိယာများအသုံးပြုခြင်းဆိုင်ရာများ၊ အဆောက်အဦနှင့်ပြုပြင်ထိန်းသိမ်းမှုအတွက် လျာထားရန်။

လုပ်ငန်းခွင်ကျန်းမာရေးနှင့် ဘေးအန္တရာယ်ကင်းဝေးရေးစီမံခန့်ခွဲမှုအစီအစဉ်သည် ဝန်ထမ်းများ၏ ကျန်းမာရေးအခြေအနေများ၊ ရုပ်ပိုင်းဆိုင်ရာအခြေအနေများ၊ စိတ်ပိုင်းဆိုင်ရာအခြေအနေများနှင့် လူမှုဘဝ သာယာရေးကို မြှင့်တင်ရန်နှင့် လုပ်ငန်းခွင်အန္တရာယ်နှင့်အဖြစ်အပျက်များမှ ကာကွယ်ရန် အကောင်အထည်ဖော် ဆောင်ရွက်ရန်ဖြစ်ပါသည်။

ကူးစက်ရောဂါထိန်းချုပ်ရေးအစီအစဉ်

- အိမ်သာနှင့် စားသောက်ဆောင်စရိယာနှင့် ရုံးစရိယာများကို ပုံမှန်သန့်ရှင်းရေးပြုလုပ်ပါ။
- ယင်ကောင်များနှင့်အခြားသော အင်းဆက်ပိုးမွှားများ မပေါက်ပွားစေရန် အမှိုက်ပုံးများကို ဖုံးအုပ်ထားပါ။
- ခြင်မပေါက်ပွားစေရန် ဧရိယာအတွင်း ရေဝပ်နေရာများ မရှိရပါ။
- Covid-19 ကဲ့သို့ကူးစက်ရောဂါအတွက် ဘေးကင်းသော လူမှုရေးအရ ခပ်ခွာခွာနေထိုင်ခြင်း၊ နှာခေါင်းစဉ်အကာများတပ်ဆင်ခြင်းနှင့် လက်ဆေးခြင်းစသည့် အချက်များအား ဝန်ထမ်းများကို အသိပညာပေးခြင်းများ ဆောင်ရွက်ရမည်။

လူမှုစီးပွားဝန်းကျင်ဆိုင်ရာစီမံခန့်ခွဲမှုအစီအစဉ်

- ကုမ္ပဏီသည် လူမှုစီးပွားတာဝန်သိအစီအစဉ် (CSR) ရန်ပုံငွေအဖြစ် အမြတ်၏ ရာခိုင်နှုန်းကို ဖယ်ထားရပါမည်။
- စီမံကိန်းအဆိုပြုသူသည် ဒေသခံအများပြည်သူများ၏ ကျန်းမာရေး စောင့်ရှောက်မှုနှင့် ပညာရေး အဆင့်မြှင့်တင်ရန်အတွက် ၎င်း၏ CSR ရန်ပုံငွေကို အသုံးပြုရပါမည်။
- ဒေသခံအလုပ်သမားများ ခေါ်ယူမှုအတွက် ဒေသဆိုင်ရာ အလုပ်အကိုင်မူဝါဒကို ချမှတ်သင့်ပါသည်။
- ပတ်ဝန်းကျင်စီမံခန့်ခွဲမှုအစီအစဉ် (EMP) ကို လိုက်နာဆောင်ရွက်ခြင်းဖြင့် ဒေသခံ အများ ပြည်သူများ အပေါ် သက်ရောက်မှုများကို လျော့ချနိုင်မည်ဖြစ်သည်။
- အခါအားလျော်သော အချိန်တွင် အများပြည်သူနှင့်တွေ့ဆုံဆွေးနွေးပွဲများကို စီစဉ်ပေးခြင်း အားဖြင့် စက်ရုံလုပ်သားများနှင့် ဒေသခံများအကြား ဆက်ဆံရေးကို တိုးမြှင့်လုပ်ဆောင်ပါ။
- ဒေသတွင်း စီးပွားရေး ဖွံ့ဖြိုးတိုးတက်မှုကို ပံ့ပိုးပေးရန်အတွက် ဒေသခံ ကန်ထရိုက်တာများ အတွက် အခွင့်အလမ်းများ ရရှိစေပါသည်။

အရေးပေါ်တုံ့ပြန်မှုနှင့်ဘေးအန္တရာယ်စီမံခန့်ခွဲမှုအစီအစဉ်

- အထိတ်တလန့်မဖြစ်စေရန်နှင့် အရေးပေါ်အချိန်အတွင်း အခြေအနေကို ထိထိရောက်ရောက် ကိုင်တယ်ဖြေရှင်းရန် အရေးပေါ်တုံ့ပြန်ရေးနှင့်သဘာဝ ဘေးအန္တရာယ် စီမံခန့်ခွဲမှုအစီအစဉ် လိုအပ်ပါသည်။ အစီအစဉ်တွင် အရေးပေါ်အချိန်အခါ၌ ဆောင်ရွက်ရမည့် အရေးပေါ်တုံ့ပြန်ရေး လှုပ်ရှားမှုများ ပါဝင်ပါသည်။
- အရေးပေါ်တုံ့ပြန်ရေးအစီအစဉ် (ERP) တွင် အောက်ပါတို့ကို ဖော်ပြထားပါသည်။
- အရေးပေါ်တုံ့ပြန်ရေးအဖွဲ့ ဖွဲ့စည်းခြင်း
- ဝန်ထမ်းများ၏ တာဝန်ယူမှုအခန်းကဏ္ဍများနှင့်ပုံစံရေးကဏ္ဍများ
- အရေးပေါ်အချိန်အတွင်းအသုံးပြုနိုင်သော ဝန်ထမ်းများနှင့် စက်ကိရိယာများ ကဲ့သို့သော အရင်းအမြစ်များ
- အရေးပေါ်တုံ့ပြန်မှုဆိုင်ရာ လုပ်ဆောင်ချက်များကို စစ်ဆေးရန်အချက်များ။

ဂလျင်အတွက်အရေးပေါ်တုံ့ပြန်မှုအစီအစဉ်

- ဂတ်စ်နှင့်လျှပ်စစ်ခါတ်အားဖွင့်ပါ။ ဖိနပ်ကောင်းစွာဝတ်ဆင်ထားပါ။ ခါတ်မီးဆောင်ထားပါ။
- အရာဝတ္ထုများပြုတ်ကျခြင်းနှင့် အဆောက်အဦပြိုကျနိုင်သည့် အန္တရာယ်များ ရှိနေသောကြောင့် ဝန်ထမ်းများအား ဘေးလွတ်ရာသို့ ရွှေ့ပြောင်းပါ။
- အတွင်းနှင့် အပြင်ဘက်တွင် ဘေးကင်းသော နေရာများကို ခွဲခြားသတ်မှတ်ပါ။
- အတွင်းပိုင်းတွင် ခိုင်ခံ့သော စားပွဲခုံ (သို့) စားပွဲအောက်များ ကဲ့သို့သော ဘေးကင်းသော နေရာများကို ရှာဖွေပါ။ မှန်ပြတင်းပေါက်များ၊ မှန်များနှင့် လေးလံသော ဝိဒိုများနှင့်ဝေးဝေးနေပါ။

- အပြင်ဘက်တွင် အဆောက်အဦများ၊ သစ်ပင်များ၊ တယ်လီဖုန်းလှိုင်းများ၊ လျှပ်စစ်လှိုင်းများအနီးမှ ထွက်ခွာပါ။
- မြေငလျင်လှုပ်နေစဉ် ဘေးကင်းစေရန် ဝပ်နေပြီး အကာတစ်ခုခုဖြင့်ဖုံးထားရမည်။
- မြေပေါ်တွင်ထိုင်ချ၍ စားပွဲ (သို့) ပရိဘောဂများကဲ့သို့ ခိုင်ခံ့သော အရာများအောက်တွင် တစ်ခုခုဖြင့် ဖုံးအုပ်ပြီး တုန်ခါမှုရပ်သွားသည်အထိ နေပါ။
- ငလျင်လှုပ်ချိန်အတွင်း တတ်နိုင်သမျှ ဘေးကင်းစွာနေ၍ လှုပ်ခြင်းမပြုမချင်း အနည်းဆုံး လှုပ်ရှားမှု ပြုလုပ်ပါ။
- ပိတ်မိနေပါက အရေးပေါ် ဝီစီကို အသုံးပြုပါ။

ရေလှမ်းမိုးမှုထိန်းချုပ်ရေးအစီအစဉ်

- ပဲခူးမြစ်ရေသည် ရေကြီးနိုင်သည့်အလားအလာရှိနိုင်ပြီး ရေကြီးနေချိန်တွင် ဘေးကင်းရေး ရှုထောင့်မှ အလုပ်သမားများအားလုံး သတိထားသင့်သည့် အချက်များ။
- စီးဆင်းနေသောရေကို လမ်းမလျှောက်ပါနှင့်။
- ရေ၏အတိမ်အနက်ကို သိရှိနိုင်ပါရန် တိုင်ကို အသုံးပြု၍ စမ်းသပ်ပါ။
- ရေမြုပ်နေသည့်နေရာကို ကားများ ဖြတ်မမောင်းပါနှင့်။ ရေအနက် ၂ ပေခန့်ရှိသော ရေသည် ကားများကို ရွေ့လျားသွားစေနိုင်ပါသည်။
- ဓါတ်အားလှိုင်းများနှင့် လျှပ်စစ်ဝါယာကြိုးများနှင့် ဝေးဝေးနေပါ။
- အဆောက်အဦမြေပြင်နေပါက လျှပ်စစ်မီးအားလုံးကို ပိတ်ထားပါ။
- တိရစ္ဆာန်များ ပုန်းအောင်းနိုင်ပါသဖြင့် ကြည့်ရှုပါ။
- လမ်းလျှောက်ရန် ရွှံ့များဖြင့် ချောနိုင်သောကြောင့် မြေလှမ်းမစတင်မီ ကြည့်ရှုပါ။
- ဓါတ်ငွေ့ယိုစိမ့်မှုများကို သတိထားပါ။ ဓါတ်ငွေ့မီးခိုးငွေ့များ အနံ့ရပါက ထိုနေရာမှ ချက်ချင်း ထွက်ခွာပါ။

မီးဘေးကာကွယ်ရေးအစီအစဉ်

မီးဘေးအန္တရာယ်သည် စက်မှုလုပ်ငန်းများ အများစုတွင် အမြဲရှိနေသော ပြဿနာတစ်ခု ဖြစ်ပါသည်။ မီးဘေးကြိုတင်ကာကွယ်ရေး နှင့် ကာကွယ်ရေးအစီအမံများ တပ်ဆင်ရန်အတွက် သိသာထင်ရှားသော အရင်းအနှီးအသုံးစရိတ်များ လိုအပ်ပါသည်။ စက်ရုံရှိ မတော်တဆ မီးလောင်မှုသည် စီးပွားရေးလုပ်ငန်းများကို ထိခိုက်စေရုံသာမက အနီးအနားရှိ အိမ်ရာများနှင့် နေထိုင်ရာများကိုလည်း သိသိသာသာ ပျက်စီးစေပါသည်။

- စက်ရုံလုပ်ငန်းများအနေဖြင့် အောက်ပါအချက်များကို လုပ်ဆောင်ရန် လိုအပ်ပါသည်။
- စက်ရုံအဆောက်အဦ၏ကြမ်းပြင်အားလုံးကို ဆက်သွယ်ထားသော လှေကားတစ်ခုပါသော အခြားရွေးချယ်စရာ ထွက်ပေါက်တစ်ခုအနည်းဆုံးထားရှိရန်
- အလုပ်ချိန်အတွင်း ထွက်ပေါက်ကို လော့ခ်ချခြင်း သို့မဟုတ် ချိတ်ပိတ်၍ မရပါ။
- မီးဘေးအန္တရာယ်သတိပေးသည့် ထိရောက်ပြီး ပြတ်ပြတ်သားသားကြားနိုင်စေရန်။

- လွတ်မြောက်လမ်းကြောင်းတစ်ခုစီသို့ ဝင်ရောက်ခွင့်ပေးသည့် လမ်းကြောင်းများကို ရှင်းလင်းထားရန်။
- အလုပ်သမား (၅၀) ကျော် အလုပ်ခန့်ထားသော စက်ရုံတစ်ခုသည် အနည်းဆုံး တစ်နှစ်လျှင် (၁) ကြိမ် မီးလေ့ကျင့်မှု လုပ်ဆောင်ရန်။
- မီးငြိမ်းသတ်လေ့ကျင့်ရေးနှင့် ကာကွယ်ရေးဆောင်ရွက်ချက်များထားရှိရန်
- "ဆေးလိပ်မသောက်ရ" ဆိုင်းဘုတ်များကို စက်ရုံရှိ အရေးကြီးသည့်နေရာတိုင်းတွင် အထင်အရှားပြသထားရမည်။
- မီးလောင်မှု သို့မဟုတ် မတော်တဆမှု တစ်ခုခုဖြစ်ပွားသည့်အခါတိုင်း အနီးဆုံးမီးသတ်စခန်းကို အကြောင်းကြားရန်။

မီးသတ်ဆေးဘူးများအသုံးပြုခြင်း

- မှန်ကန်သောမီးသတ်ဆေးဘူးများအသုံးပြုစေရန်
- အရေးပေါ်ထွက်ပေါက်ကို အမြဲထားရှိရန် (မီးဘေး)
- မီးခိုး/ အပူရှိန်သက်ရောက်မှုများအတွက် အနိမ့်တွင်ထားရှိရန်
- မီးတောက်အောက်ခြေကို တိုက်ရိုက်ဖြန်းရန်
- မီးသတ်ဆေးဘူးကို ဘယ်ညာဝှေ့ရမ်းကာဖြန်းရန်
- မီးမထိန်းနိုင်တော့သော နေရာကို ရောက်ပါက အနောက်ဆုတ်ပြီး တံခါးများကို ပိတ်ရန် (သော့မခတ်ပါနှင့်)

မီးငြိမ်းသတ်ရေပိုက်များအသုံးပြုခြင်း

- stop valve ကို ဖွင့်ထားရန်
- ရေဖြန်းပိုက်ကို စစ်ဆေးရန်
- ရေပိုက်နှော်ငယ်ခေါင်းကို ဖွင့်ပြီးမီးငြိမ်းသတ် ခြေရင်းတွင်းစမ်းသပ်ရန်
- အရေးပေါ် ထွက်ပေါက် တံခါး/ အထွက်လမ်းကြောင်းကြားတွင် တိုက်ရိုက်ထွက်ပေါက် လမ်းကြောင်းကို သေချာဆောင်ရွက်ရန်။

ပတ်ဝန်းကျင်စောင့်ကြပ်ကြည့်ရှုမှုအစီအစဉ်

ပတ်ဝန်းကျင်စောင့်ကြပ်ကြည့်ရှုခြင်းသည် အဆိုပြုထားသော သဘာဝပတ်ဝန်းကျင်လျော့ပါးရေး အစီအမံများကို အကောင်အထည်ဖော်ခြင်း၏ မရှိမဖြစ် လိုအပ်သော အစိတ်အပိုင်းတစ်ခု ဖြစ်ပါသည်။ ပတ်ဝန်းကျင်စောင့်ကြပ်ကြည့်ရှုခြင်းသည် အသုံးဝင်သော အချက်အလက်များကို ထုတ်ပေးပြီး လျော့ပါးရေး အစီအမံများ အကောင်အထည်ဖော်မှုအရည်အသွေးကို မြှင့်တင်ပေးပါသည်။

စောင့်ကြည့်လေ့လာခြင်းတွင် စည်းမျဉ်းစည်းကမ်းစံနှုန်းများနှင့် ဆိုးကျိုးသက်ရောက်မှုများကို လျော့ချရန် ပြုလုပ်ထားသော အကြံပြုချက်များကို လိုက်နာကြောင်း သေချာစေရန် လုပ်ဆောင်မှုများကို စောင့်ကြပ်ကြည့်ရှုခြင်း၊ သုံးသပ်ခြင်းနှင့် အကဲဖြတ်ခြင်းတို့ ပါဝင်ပါသည်။ အစီအစဉ်သည် ကျယ်ကျယ် ပြန့်ပြန့်ဖြစ်ပြီး အကြိမ်ရေအပေါ် မူတည်၍ စည်းမျဉ်းစည်းကမ်းဆိုင်ရာ အစီရင်ခံချက်အစိတ်အပိုင်းနှင့်အတူ

သက်ဆိုင်ရာ ပြဿနာများကို ကိုင်တွယ်ဖြေရှင်းရမည်ဖြစ်ပါသည်။ အနည်းဆုံး တစ်နှစ် (၂) ကြိမ် စောင့်ကြပ်ကြည့်ရှုမှု အစီရင်ခံစာကို အာဏာပိုင်များထံ တင်ပြရန် အကြံပြုထားပါသည်။
 ဇယား (၁၆) ပတ်ဝန်းကျင်စောင့်ကြပ်ကြည့်ရှုမှုအစီအစဉ်

ပတ်ဝန်းကျင် ဆိုင်ရာ	အမျိုးအစား	နေရာ	အကြိမ်ရေ	တာဝန်ရှိသူ
လေထု အရည်အသွေး	PM ₁₀ , PM _{2.5} , O ₂ , CO, CO ₂ , NH ₃ , NO ₂ , SO ₂ , O ₃ , VOC	ပတ်ဝန်းကျင်လေထုအရည်အသွေး	နှစ်စဉ်	သတ်မှတ်ထားသော ပတ်ဝန်းကျင်ဆိုင်ရာ စီမံခန့်ခွဲမှု အဖွဲ့အစည်း
	PM ₁₀ , PM _{2.5} , VOC, O ₂ , CO, CO ₂ , NO ₂ , SO ₂	ဘွိုင်လာနှင့် မီးစက်မှ ထုတ်လွှတ်မှု	တစ်နှစ် (၂) ကြိမ်	
	PM ₁₀ , PM _{2.5} , SO _x , NO _x	လုပ်ငန်းခွင် (ရောနှောအခန်း)	နေ့စဉ်	
	လောင်ကျွမ်းမှုများအတွက် ပုံမှန်ပြုပြင်မှုများကို စစ်ဆေးရန်	ဘွိုင်လာ	နေ့စဉ်	
ဘေးအန္တရာယ်မရှိ စွန့်ပစ်ပစ္စည်း	ပမာဏအလိုက် အမှိုက်လျော့ချရေးများ (ထုထည်၊ အလေးချိန် (သို့) ကုန်ကျစရိတ်) သတ်မှတ်ရန်	လုပ်ငန်းခွင်နှင့်စက်ရုံ ဧရိယာ	လိုအပ်သလို	ပတ်ဝန်းကျင်ဆိုင်ရာစီမံခန့်ခွဲမှု အဖွဲ့အစည်း/ လုပ်ငန်းခွင်ကြီးကြပ်သူ/ အလုပ်သမားများ
	အမှိုက် အမျိုးအစား ခွဲခြားစွန့်ပစ်ရန်	လုပ်ငန်းခွင်နှင့်စက်ရုံ ဧရိယာ	နေ့စဉ်	
ဘေးအန္တရာယ်ရှိ စွန့်ပစ်ပစ္စည်း	ဝန်ထမ်းများအား အန္တရာယ်ရှိသော ပစ္စည်းများ စွန့်ပစ်ခြင်းဆိုင်ရာ သင်တန်းပို့ချခြင်း	လုပ်ငန်းခွင်နှင့်စက်ရုံ ဧရိယာ	ဝန်ထမ်းအသစ်	မန်နေဂျာ
	အန္တရာယ်ရှိသော ကုန်ပစ္စည်းများအတွက် MSDS ဖြင့်အသုံးပြုနိုင်စေရန်	လုပ်ငန်းခွင်နှင့်စက်ရုံ ဧရိယာ	လစဉ်	ပတ်ဝန်းကျင်ဆိုင်ရာစီမံခန့်ခွဲမှုအဖွဲ့
ရေအရည်အသွေး	Aluminum, Chloride, copper, cyanide, Manganese, pH, Sulfate, Total Alkalinity, TDS, Hardness, Total Iron, Turbidity	အစိစိတွင်းရေ	တစ်နှစ် (၃) ကြိမ်	ပတ်ဝန်းကျင်စီမံခန့်ခွဲမှုအဖွဲ့
		သောက်ရေ		

ပတ်ဝန်းကျင် ဆိုင်ရာ	အမျိုးအစား	နေရာ	အကြိမ်ရေ	တာဝန်ရှိသူ
စွန့်ပစ်ရေ အရည်အသွေး	BOD ₅ , COD, Oil & Grease, pH, Total Nitrogen, Total Phosphorous, TSS, Coliform, temperature	ထုတ်လုပ်မှုထွက်ရှိမှု	တစ်နှစ် (၃) ကြိမ်	ကြီးကြပ်သူ/ ပတ်ဝန်းကျင်စီမံ ခန့်ခွဲမှုအဖွဲ့
		စွန့်ပစ်ရေသန့်စင်ကန် အဝင်		
		စွန့်ပစ်ရေသန့်စင်ကန် အထွက်		
ဆူညံသံ				
ပတ်ဝန်းကျင် ဆူညံသံ	ဆူညံသံအဆင့်သတ်မှတ်ချက်	စက်ရုံ ပရဂျက်	တစ်နှစ် (၁) ကြိမ်	ပတ်ဝန်းကျင်စီမံ ခန့်ခွဲမှုအဖွဲ့
လုပ်ငန်းခွင်ဆူညံသံ	ဆူညံသံအဆင့်သတ်မှတ်ချက်	စက်ပစ္စည်းလုပ်ဆောင် မှုကောင်းမွန်စေရန် ထိန်းသိမ်းခြင်းများ	အပတ်စဉ်/ လိုအပ်ပါက	စက်ရုံမန်နေဂျာ
		ဆူညံသံမြင့်မားသည့် နေရာတွင်လုပ်ကိုင် ရသည့်ဝန်ထမ်းများ	နေ့စဉ်	
လုပ်ငန်းခွင် ဆူညံသံ	ဆူညံသံအဆင့်သတ်မှတ်ချက်	ရောနှောအခန်း မီးစက်နှင့်ဘွိုင်လာ	တစ်နှစ် (၂) ကြိမ်	ပတ်ဝန်းကျင်စီမံ ခန့်ခွဲမှုအဖွဲ့
အရေးပေါ် တုံ့ပြန်မှုဆိုင်ရာ ကိရိယာများ	မီးငြိမ်းသတ်ရေးကိရိယာ (မီးသတ်ဆေးဘူး၊ မီးသတ် ပိုက်၊ မီးသတ်ရေငုတ်များ)	စက်ရုံပရဂျက်၊ လုပ်ငန်းခွင်၊ မီးစက် အခန်း၊ လောင်စာဆီ သိုလှောင်နေရာ	နေ့စဉ်	မီးဘေး အန္တရာယ် ဆိုင်ရာအရာရှိ
	မီးသတ်ဂုတ်စစ်ဆေးခြင်း	စက်ရုံ ပရဂျက်	လစဉ်	
	မီးငြိမ်းသတ်ရေးဆိုင်ရာ ကိရိယာများ	မီးငြိမ်းသတ် ကိရိယာများ	တစ်နှစ် (၄) ကြိမ်	လုပ်ငန်းခွင် ကျန်းမာရေးနှင့် ဘေးကင်းရေး ဆိုင်ရာ အရာရှိ
	စက်ရုံနှင့်အနီးပတ်ဝန်းကျင် မတော်တဆမှုများ မှတ်တမ်းတင်ထားရှိခြင်း လုပ်ငန်းခွင်ကျန်းမာရေးနှင့် ဘေးကင်းရေးသင်တန်း	- စက်ရုံ ပရဂျက်	တစ်နှစ် (၂) ကြိမ်	
လုပ်ငန်းခွင်ကျန်းမာ ရေးနှင့်ဘေးအန္တ ရာယ် ကင်းဝေးရေး	သန့်စင်ခန်းများအသုံးပြုမှု သန့်ရှင်းရေးနှင့် ထိန်းသိမ်း ရေးဆောင်ရွက်ခြင်း	စက်ရုံ ပရဂျက်	အပတ်စဉ်	အထွေထွေ မန်နေဂျာ/ လုပ်ငန်းခွင်
	စွန့်ပစ်အမှိုက်များ စနစ် တကျ စွန့်ပစ်မှုနှင့် သုံးစွဲမှု ပစ္စည်းများ	စက်ရုံ ပရဂျက်	နေ့စဉ်	ကျန်းမာရေးနှင့် ဘေးအန္တရာယ်

ပတ်ဝန်းကျင် ဆိုင်ရာ	အမျိုးအစား	နေရာ	အကြိမ်ရေ	တာဝန်ရှိသူ
	ရှေးဦးသူနာပြုဆေးသေတ္တာ ထောက်ပံ့ခြင်း၊ ဆေးခန်း တွင် သူနာပြုထားရှိခြင်း ပတ်ဝန်းကျင်စီမံခန့်ခွဲမှုဆိုင်ရာ အသိပညာ ဝန်ထမ်းများ သိရှိစေခြင်း။	စက်ရုံ ပရဂျက်	နေ့စဉ်	ကင်းဝေးရေးအဖွဲ့
	လိုအပ်သည့်ဝန်ထမ်းများကို PPE ထားထောက်ပံ့ခြင်း	စက်ရုံ ပရဂျက်	လိုအပ်သလို	
	လုပ်ငန်းခွင်ကျန်းမာရေးနှင့် ဘေးကင်းလုံခြုံရေး၊ ရှေးဦးသူနာပြုခြင်း သင်တန်းများ.	စက်ရုံ ပရဂျက်	လိုအပ်သလို	
စွမ်းအင်သုံးစွဲမှု	ဒီဇယ်အသုံးများမှတ်တမ်း	ဂျင်နရေတာနှင့် ကွန်ပရက်ဆာ	လစဉ်	အထွေထွေ မန်နေဂျာ/ သက်ဆိုင်ရာအ လိုက်
	လျှပ်စစ်သုံးစွဲမှုမှတ်တမ်း	လျှပ်စစ်မီတာ	လစဉ်	
အရင်းမြစ်သုံးစွဲမှု	အသုံးပြုခြင်းမရှိပါက ခလုပ်များပိတ်ထားရန်	လျှပ်စစ်ဖြန့်ဖြူးရေး	နေ့စဉ်	တာဝန်ခံများ
	အသုံးမပြုပါက ရေပိုက် ခေါင်းများ ပိတ်ထားရန်	ရေပိုက်ခေါင်းများ	နေ့စဉ်	

ပတ်ဝန်းကျင်စီမံခန့်ခွဲမှုအစီအစဉ်အတွက်ဘတ်ဂျက်ငွေထောက်ပံ့မှုအစီအစဉ်

စီမံကိန်းအဆိုပြုသူမှ လုံလောက်သော ဘတ်ဂျက်ပြဌာန်းချက်များ ချမှတ်ခဲ့ပါသည်။ ပတ်ဝန်းကျင် စီမံခန့်ခွဲမှုအစီအစဉ်များကို အကောင်အထည်ဖော်ရန်အတွက် စီမံခန့်ခွဲမှုကို သတ်မှတ်ထားသင့်ပါသည်။ အသေးစိတ်ရင်းနှီးမြှုပ်နှံမှုများနှင့် နှစ်တိုင်း (တစ်နှစ်လျှင်) ဘတ်ဂျက်ငွေကို ညစ်ညမ်းမှုထိန်းချုပ်ရေး/ စောင့်ကြည့်ရေးကိရိယာများ၊ လုပ်ငန်းလည်ပတ်ခြင်းနှင့်ပြုပြင်ထိန်းသိမ်းမှုများအတွက် လျာထားသင့် ပါသည်။

ဤ EMP အစီရင်ခံစာကို ပြင်ဆင်သောအခါ စီမံကိန်းသည် လုပ်ငန်းလည်ပတ်မှုအဆင့်တွင် လုပ်ဆောင်နေပါသည်။ ထို့ကြောင့် EMP ခန့်မှန်ချေး ဘတ်ဂျက်ငွေသည် လုပ်ငန်းဆောင်ရွက်မှုအဆင့် အတွက် အလေးထားပါသည်။ စီမံကိန်းသည် လုပ်ငန်းလည်ပတ်မှုအဆင့်အတွင်း သက်ရောက်မှု စောင့်ကြည့်ခြင်းကို ဆောင်ရွက်မည် ဖြစ်ပါသည်။ အောက်ပါဇယားသည် လုပ်ငန်းဆောင်ရွက်မှု အဆင့် အတွက် သက်ရောက်မှုစောင့်ကြည့်ခြင်းကို တစ်နှစ်လျှင် (၂) ကြိမ် ပတ်ဝန်းကျင်စီမံခန့်ခွဲမှုအစီအစဉ်ကို အကောင်အထည်ဖော်ရန် ခန့်မှန်ခြေ အသုံးစရိတ်များကို ပြသထားပါသည်။ အခြေအနေအရ ပြောင်းလဲ နိုင်ပါသည်။ စီမံကိန်းအဆိုပြုသူသည် လုပ်ငန်းဆောင်ရွက်မှုအဆင့်အတွင်း သက်ရောက်မှုများကို

စောင့်ကြည့် စစ်ဆေးမည် ဖြစ်ပါသည်။ အောက်ဖော်ပြပါ ဇယားသည် Thai Faster Products and M.K Co., Ltd. အတွက် Environmental Monitoring အတွက် ခန့်မှန်းကုန်ကျစရိတ်များကို ဖော်ပြထားပါသည်။

ဇယား (၁၇) ပတ်ဝန်းကျင်စောင့်ကြည့်ကြည့်ရှုမှုအတွက်ခန့်မှန်းကုန်ကျစရိတ်

စဉ်	စောင့်ကြည့်ကြည့်ရှုခြင်း	စောင့်ကြည့်ရမည့်အရာ	(က) စောင့်ကြည့်မည့်နေရာ	(ခ) အကြိမ်ရေ	(ဂ) ငွေကျပ်နှုန်း	(ကxခxဂ) စုစုပေါင်းပမာဏ (ကျပ်)
လုပ်ငန်းလည်ပတ်ခြင်းကာလ						
၁။	လေထုအရည်အသွေး	ဘိုင်းလာနှင့်ဂျင်နရေတာမှ ထွက်ရှိခြင်း	2	တစ်နှစ် (၂) ကြိမ်	300,000	1,200,000
		လုပ်ငန်းခွင်လေထုအရည်အသွေး	1	တစ်နှစ် (၂) ကြိမ်	200,000	400,000
		ပတ်ဝန်းကျင်လေထုအရည်အသွေး	1	တစ်နှစ် (၁) ကြိမ်	1,000,000	1,000,000
စုစုပေါင်း						2,600,000
၂။	ရေထု အရည်အသွေး	အဝီစိတွင်း	1	တစ်နှစ် (၃) ကြိမ်	150,000	450,000
		ဘိုင်းလာအနီးရေမြောင်း	1		150,000	450,000
		ထုတ်လုပ်မှုစွန့်ပစ်ရည်	1		150,000	450,000
		စွန့်ပစ်ရည်သန့်စင်ကန်အဝင်	1		150,000	450,000
		စွန့်ပစ်ရည်သန့်စင်ကန်အထွက်	1		150,000	450,000
စုစုပေါင်း						2,250,000
၃။	ဆူညံသံ	လုပ်ငန်းခွင်	3	တစ်နှစ် (၂) ကြိမ်	50,000	300,000
		ပတ်ဝန်းကျင်ဆူညံသံ	1	တစ်နှစ် (၁) ကြိမ်	50,000	50,000
စုစုပေါင်း						350,000
၄။	အထွေထွေ					
	စွန့်ပစ်ရည်စီမံခန့်ခွဲမှုအစီအစဉ်				တစ်ပေါင်း တည်း ကုန်ကျငွေ	500,000
	လေထုညစ်ညမ်းမှုထိန်းချုပ်ရေးအစီအစဉ်					500,000
	စွန့်ပစ်အမှိုက်စီမံခန့်ခွဲမှုအစီအစဉ်					700,000
	စိမ်းလန်းစိုပြေရေးအစီအစဉ်					200,000
	လုပ်ငန်းခွင်ဘေးကင်းရေးဆိုင်ရာဘုတ်များ					1,000,000
	အရေးပေါ်ဆိုင်ရာစီမံချက်များ					100,000
	မီးဘေးဆိုင်ရာစီမံချက်များ					500,000
တစ်ကိုယ်ရည်အကာကွယ်သုံးပစ္စည်းများ				500,000		
သင်တန်းများ				500,000		

စဉ်	စောင့်ကြပ်ကြည့်ရှုခြင်း	စောင့်ကြည့်ရမည့်အရာ	(က) စောင့်ကြည့်မည့်နေရာ	(ခ) အကြိမ်ရေ	(ဂ) ငွေကျပ်နှုန်း	(ကxခxဂ) စုစုပေါင်းပမာဏ (ကျပ်)
						4,500,000
						97,00,000

အများပြည်သူနှင့်တိုင်ပင်ဆွေးနွေးခြင်းနှင့်သတင်းအချက်အလက်များထုတ်ပြန်ခြင်း

ပတ်ဝန်းကျင်ဆန်းစစ်ခြင်းဆောင်ရွက်ရာတွင် အများပြည်သူနှင့်တွေ့ဆုံဆွေးနွေးခြင်းများ ပြုလုပ်ရခြင်းသည် စီမံကိန်းဆိုင်ရာ အကြောင်းအရာများကို အမှန်တကယ် သိရှိနားလည် သဘောပေါက်စေရန်၊ လုပ်ငန်းများလည်ပတ်လုပ်ဆောင်မှုကြောင့် ပတ်ဝန်းကျင်အပေါ်သက်ရောက်နိုင်မှုများနှင့် အဆိုပြုလုပ်ငန်းများကြောင့် အလုပ်အကိုင်အခွင့်အလမ်းများ တိုးတက်လာခြင်းများကို အများပြည်သူများ အနေဖြင့် သိရှိစေရန် ရည်ရွယ်ပါသည်။ အဆိုပြုစီမံကိန်းကြောင့် ထိခိုက်နိုင်သည့်သူများနှင့် အခြားမည်သည့်သူများမဆို တွေ့ဆုံဆွေးနွေးခြင်း လုပ်ငန်းစဉ်များတွင် ပူးပေါင်းပါဝင်ဆွေးနွေးကြခြင်းဖြင့် လုပ်ငန်းရှင်များ အနေဖြင့် ဖြစ်ပေါ်လာနိုင်သည့် ပြဿနာများကို ကြိုတင်ကာ ဖြေရှင်းနိုင်သွားမည် ဖြစ်ပါသည်။

လုပ်ဆောင်မည့်နည်းလမ်းနှင့်ချဉ်းကပ်ခြင်း

စီမံကိန်းမြန်မာပတ်ဝန်းကျင်ဆိုင်ရာဝန်ဆောင်မှုလုပ်ငန်း ကုမ္ပဏီလီမိတက်အနေဖြင့် အဆိုပြုစက်ရုံနှင့် ပတ်သက်၍ အများပြည်သူများထံမှသဘောထားရယူခြင်းနှင့် သတင်းအချက်အလက်ထုတ်ပြန်ရာတွင် အောက်ပါလုပ်ငန်းစဉ် (၂) ရပ်ဖြင့် ဆောင်ရွက်ခဲ့ပါသည်။

- (က) စက်ရုံဝန်ထမ်းများနှင့်တွေ့ဆုံဆွေးနွေး၍လုပ်ငန်းခွင်ဆိုင်ရာအကြံပြုချက်များရယူခြင်း
- (ခ) စက်ရုံအနီးပတ်ဝန်းကျင်ဒေသခံအများပြည်သူများနှင့်တွေ့ဆုံဆွေးနွေးခြင်း

စက်ရုံဝန်ထမ်းများနှင့်တွေ့ဆုံဆွေးနွေး၍လုပ်ငန်းခွင်ဆိုင်ရာအကြံပြုချက်များရယူခြင်း

Thai Faster Products and M.K ကုမ္ပဏီလီမိတက် ၏ "ဂျပန်အမျိုးမျိုးထုတ်လုပ်ခြင်းလုပ်ငန်း" စက်ရုံအတွက် ပတ်ဝန်းကျင်စီမံခန့်ခွဲမှုအစီအစဉ် (Environmental Management Plan – EMP) အစီရင်ခံစာ ရေးဆွဲခြင်း နှင့်ပတ်သက်၍ ဝန်ထမ်းများ၏ လုပ်ငန်းခွင်ဆိုင်ရာဘေးအန္တရာယ်ကင်းရှင်းရေးနှင့် လုပ်ငန်းခွင်သုံး အကာ အကွယ်ပစ္စည်းများအသုံးပြုမှု၊ သောက်သုံးရေစနစ်၊ ဆေးကြောရေးအသုံးပြုမှုစနစ်၊ သန့်စင်ခန်း များသန့်ရှင်းမှုစနစ်၊ လုပ်ငန်းခွင်အတွင်း ဆူညံသံ၊ အမှုန်အမွှား၊ အနံ့အသက်၊ အခိုးအငွေ့၊ အလင်းရောင် လုံလောက်မှုရှိ/မရှိ၊ လေဝင်လေထွက်စနစ်၊ လုပ်ငန်းခွင် လူမှုဆက်ဆံရေးအခြေအနေများကို သိရှိနိုင်ပါရန် ဝန်ထမ်းများနှင့် တွေ့ဆုံဆွေးနွေးခဲ့ပါသည်။ တွေ့ဆုံဆွေးနွေးပွဲသို့ စုစုပေါင်းဝန်ထမ်း (၂၁) ဦးခန့် တက်ရောက်ခဲ့ပြီး အကြံပြုချက်စာရွက် (၂၁)စောင် ရရှိခဲ့ပါသည်။ တက်ရောက်သူများစာရင်းကို နောက်ဆက်တွဲ (၁၉)နှင့် အကြံပြုစာရွက်များကို နောက်ဆက်တွဲ (၂၀)တွင် ဖော်ပြထားပါသည်။

- နည်းလမ်း - တွေ့ဆုံဆွေးနွေးခြင်း
- ရက်စွဲ - 29.3.2018
- တက်ရောက်သူဦးရေ - စက်ရုံဝန်ထမ်း (၂၁) ဦး
- နေရာ - အစည်းအဝေးခန်း

ဇယား (၁၈) စက်ရုံဝန်ထမ်းများ၏အကြံပြုချက်များ

အကြံပြုချက်
လုပ်ငန်းခွင်ကျန်းမာရေးနှင့်ဘေးအန္တရာယ်ကာကွယ်ရေးပစ္စည်းများနှင့်စပ်လျဉ်း၍အကြံပြု
လုပ်ငန်းခွင်အကာအကွယ်ပစ္စည်းများအသုံးပြုခြင်း- လုပ်ငန်းခွင်သုံး အကာအကွယ်ပစ္စည်းများ ထောက်ပံ့ထားကြောင်းကို တွေ့ဆုံဆွေးနွေးပွဲသို့ တက်ရောက်လာသူ ဝန်ထမ်းများအားလုံး ဖော်ပြထားပါသည်။
လုပ်ငန်းခွင်သောက်သုံးရေ- သောက်ရေသန့်သောက်သုံးကြောင်းကို တွေ့ဆုံဆွေးနွေးပွဲတက်ရောက်သူဝန်ထမ်းများအားလုံးဖော်ပြထားပါသည်။
သန့်စင်ခန်းများအသုံးပြုခြင်း- သန့်စင်ခန်းများမှာ သန့်ရှင်းပြီး ပြည့်စုံလုံလောက်မှုရှိကြောင်းကို တွေ့ဆုံဆွေးနွေးပွဲသို့ တက်ရောက်လာသူ ဝန်ထမ်းများ အားလုံး ဖော်ပြထားပါသည်။
ဆေးကြောသန့်ရှင်းရေးစနစ်- ဆေးကြောသန့်ရှင်းရေးမှာ ပြည့်စုံလုံလောက်ပြီး အဆင်ပြေကောင်းမွန်ကြောင်းကို တွေ့ဆုံဆွေးနွေးပွဲသို့ တက်ရောက် လာသူ ဝန်ထမ်းများအားလုံး ဖော်ပြထားပါသည်။
လုပ်ငန်းခွင်အလင်းရောင်ရရှိမှုအခြေအနေ- လုပ်ငန်းခွင်အတွင်းအလင်းရောင် ကောင်းမွန်စွာရရှိပြီး လုံလောက်မှုရှိကြောင်းကို ဆွေးနွေးပွဲတက်ရောက်လာသူ ဝန်ထမ်းများအားလုံး ဖော်ပြထားပါသည်။
လုပ်ငန်းခွင်လေဝင်လေထွက်စနစ်- လုပ်ငန်းခွင်အတွင်း လေဝင်လေထွက်စနစ်မှာ ကောင်းမွန်ကြောင်းကို ဆွေးနွေးပွဲတက်ရောက်လာသူ ဝန်ထမ်းများ အားလုံး ဖော်ပြထားပါသည်။
လုပ်ငန်းခွင်အလုပ်လုပ်ကိုင်မှုအခြေအနေနှင့်စပ်လျဉ်း၍အကြံပြုချက်
လုပ်ငန်းခွင်ဆူညံသံများအခြေအနေ- လုပ်ငန်းခွင်အတွင်း ဆူညံသံမရှိကြောင်းကို ဆွေးနွေးပွဲတက်ရောက်လာသူ ဝန်ထမ်းများအားလုံးဖော်ပြထားပါသည်။
လုပ်ငန်းခွင်အနံ့အသက်/အခိုးအငွေ့များအခြေအနေ- ဆွေးနွေးပွဲတက်ရောက်သူအားလုံးမှာ လုပ်ငန်းခွင်အနံ့အသက်/အခိုးအငွေ့များမရှိကြောင်းကိုဖော်ပြထားပါသည်။
လုပ်ငန်းခွင်အမှုန်အမွှားအခြေအနေ- ဆွေးနွေးပွဲတက်ရောက်လာသူ အားလုံးမှာ လုပ်ငန်းခွင်အမှုန်အမွှား မရှိကြောင်းကို ဖော်ပြထား ပါသည်။
လုပ်ငန်းခွင်လူမှုဆက်ဆံရေးအခြေအနေနှင့်စပ်လျဉ်း၍အကြံပြုချက်
လုပ်ငန်းခွင်လူမှုဆက်ဆံရေးအနေဖြင့် လုပ်ငန်းခွင်ကြီးကြပ်သူများမှာကောင်းမွန်ပြီး၊ လုပ်ဖော်ကိုင်ဖက်များလည်း အချင်းချင်း ရိုင်းပင်ကူညီမှုရှိကြောင်းကို ဆွေးနွေးပွဲတက်ရောက်လာသူ ဝန်ထမ်းများအားလုံး ဖော်ပြထားပါသည်။

စက်ရုံအနီးပတ်ဝန်းကျင်ဒေသခံအများပြည်သူများနှင့်တွေ့ဆုံဆွေးနွေးခြင်း

တွေ့ဆုံဆွေးနွေးခြင်းကိုနည်းလမ်း (၂) မျိုးဖြင့်စီစဉ်ခဲ့ပါသည်။ တစ်မျိုးမှာ တွေ့ဆုံဆွေးနွေးပွဲအတွင်း ကိုယ်တိုင်ကိုယ်ကျဆွေးနွေးခြင်းနှင့် အခြားတစ်မျိုးမှာ ဖြန့်ဝေထားသော အကြံပြုစာရွက်များဖြင့်ရေသား အကြံပြုနိုင်ပါသည်။

ဆွေးနွေးပွဲတက်ရောက်သူများအနေဖြင့် စက်ရုံလုပ်ငန်းနှင့်ပတ်သက်၍ ရှင်းလင်းပြီးနောက် သိရှိလိုသည်များကို မေးမြန်းဆွေးနွေးအကြံပြုနိုင်ပါသည်။ တွေ့ဆုံဆွေးနွေးချိန်တွင်းတက်ရောက်သူများ အနေဖြင့် အကြံပြုစာရွက်များဖြင့်လည်း အကြံပြုနိုင်ပါသည်။

တွေ့ဆုံဆွေးနွေးပွဲကို ၂၀၁၈ ခုနှစ် ဩဂုတ်လ (၅) ရက်နေ့တွင် ကစင်ကျေးရွာအုပ်စု အုပ်ချုပ်ရေး မှူးရုံး၊ လှိုင်သာယာမြို့နယ်တွင် ကျင်းပခဲ့ပါသည်။ အများပြည်သူနှင့်တွေ့ဆုံဆွေးနွေးပွဲတွင် ပူးပေါင်းပါဝင်သူများထံမှ အကြံပြုချက်များ တောင်းခံခဲ့ပြီး အများပြည်သူနှင့်တွေ့ဆုံ ဆွေးနွေးပွဲသို့ တက်ရောက်သူ (၃၀) ဦးရှိခဲ့ပြီး အကြံပြုစာရွက် (၂၀) ရရှိခဲ့ပါသည်။ တက်ရောက်သူများစာရင်းကို အစီရင်ခံစာ၏နောက်ဆက်တွဲ (၁၇) နှင့် အကြံပြုချက်စာရွက်များကို နောက်ဆက်တွဲ (၁၈) တွင် ဖော်ပြထားပါသည်။

- နည်းလမ်း - တွေ့ဆုံဆွေးနွေးခြင်း
- ရက်စွဲ - 5.8.2018
- တက်ရောက်သူများ - ဒေသခံအများပြည်သူများ၊ အုပ်ချုပ်ရေးအဖွဲ့အစည်းဝင်များ၊ စက်ရုံမှတာဝန်ရှိသူများ၊ တတိယအဖွဲ့အစည်း။
- နေရာ - ကစင်ကျေးရွာအုပ်စု အုပ်ချုပ်ရေးမှူးရုံး၊ လှိုင်သာယာမြို့နယ်။

တွေ့ဆုံဆွေးနွေးပွဲတွင် အဓိကထားဆွေးနွေးချက်များနှင့်အကြံပြုချက်များကို အောက်ပါဇယား တွင် ဖော်ပြထားပါသည်။

ဇယား (၁၉) အများပြည်သူနှင့်တွေ့ဆုံဆွေးနွေးပွဲမှ အကြံပြုချက်များ

စဉ်	တက်ရောက်သူ	အကြံပြုချက်များ
၁	ဦးမျိုးတင့်	ပတ်ဝန်းကျင် လေထု၊ ရေထု၊ မြေထုကို သန့်ရှင်းအောင် ဆောင်ရွက်ပေးပါရန်
၂	ဦးသန်းဇော်ဦး	
၃	မအေးအေးထက်	
၄	ဒေါ်သူဇာညွန့်	ပတ်ဝန်းကျင်ကို ဆိုးကျိုးသက်ရောက်မှုမရှိစေပဲ ကောင်းကျိုးဖြစ်စေရန် ဝန်ထမ်းများ၏ ရပိုင်ခွင့်များအား ထောက်ပံ့ပေးပါရန်
၅	ဒေါ်ခင်အုန်းမြင့်	ဂျယ်လီထုတ်လုပ်ခြင်းလုပ်ငန်းကြောင့် ပတ်ဝန်းကျင်အပေါ် ဆိုးကျိုးမရှိစေပဲ လုပ်ဆောင်ပေးပါရန်
၆	ဦးတိတ်စိန်	နိုင်ငံတော်အစိုးရ၏ လမ်းညွှန်မှုဖြင့်လုပ်ဆောင်ပြီး စက်ရုံပတ်ဝန်းကျင် လူမှုရေး၊ ကျန်းမာရေး ထိခိုက်မှုမရှိစေရန် လုပ်ဆောင်ပေးပါရန်
၇	ဦးစိန်သောင်း	စက်ရုံပတ်ဝန်းကျင်သန့်ရှင်းစေရန် လုပ်ဆောင်ပေးစေချင်ပါသည်။
၈	ဦးစိုးမြင့်	
၉	ဦးမြသွင်	
၁၀	ဦးမျိုးသူ	ကောင်းသောလုပ်ဆောင်ခြင်းကြောင့်ကျေးဇူးတင်ပါသည်။
၁၁	မမြင့်မြင့်အေး	ကလေးများကျန်းမာရေးအတွက် ဆိုးဆေးသုံးစွဲမှုလျော့ချပေးစေချင်ပါသည်။

၁၂	ဦးကြည်စိုး	စက်ရုံပတ်ဝန်းကျင်ကိုသန့်ရှင်းအောင်ဆောင်ရွက်ပေးပါရန်
၁၃	ဒေါ်အေးသန္တာ	စက်ရုံမှ စွန့်ပစ်ရေဆိုးများကြောင့် ပတ်ဝန်းကျင်အပေါ် ဆိုးကျိုးသက်ရောက်မှု မရှိစေရန်ဆောင်ရွက်ပေးစေချင်ပါသည်။
၁၄	ဒေါ်ဝေဝေခင်	ဂျယ်လီစားသုံးမှုမှာကလေးများ အများဆုံးဖြစ်နေပါသဖြင့် ကျန်းမာရေးနှင့် ညီညွတ်စေရန် ဆောင်ရွက်ပေးစေချင်ပါသည်။
၁၅	ဒေါ်ဇာဇာထက်	လုပ်ငန်းခွင်ရှိဝန်ထမ်းများ၏ကျန်းမာရေးနှင့်ဘေးကင်းရေးဆောင်ရွက်ပေးပါရန်
၁၆	ဒေါ်အေးမီ	ဂျယ်လီထုတ်လုပ်ခြင်းကြောင့် ပတ်ဝန်းကျင်ညစ်ညမ်းမှုမရှိစေရန် ဆောင်ရွက်ရန်
၁၇	မခင်ဝင်းမော်	ကလေးများကျန်းမာရေးအတွက် ဆိုးဆေးသုံးစွဲမှုလျော့ချပေးစေချင်ပါသည်။ စက်ရုံ၏ထုတ်လုပ်မှုဧရိယာသန့်ရှင်းမှုရှိစေရန် ဂျယ်လီထုတ်လုပ်မှုအတွက် ကျန်းမာရေးမထိခိုက်စေပဲ ထုတ်လုပ်စေချင်ပါသည်။
၁၈	မသီတာ	ပတ်ဝန်းကျင်ကိုသန့်ရှင်းအောင်ဆောင်ရွက်ပေးပါရန် စက်ရုံဝန်ထမ်းများ၏ကျန်းမာရေးထိခိုက်မှုမရှိစေရန် ဂျယ်လီစားသုံးမှုမှာကလေးများ အများဆုံးဖြစ်နေပါသဖြင့် ကျန်းမာရေးနှင့် ညီညွတ်စေရန် ဆောင်ရွက်ပေးစေချင်ပါသည်။
၁၉	ဒေါ်စုဝေ	ပတ်ဝန်းကျင်ကိုသန့်ရှင်းအောင်ဆောင်ရွက်ပေးပါရန် ဂျယ်လီထုတ်ပိုးမှုများကို သန့်ရှင်းစေရန်ဆောင်ရွက်ပေးပါရန် ဓါတုဆိုးဆေးများမသုံးစွဲစေရန် ပတ်ဝန်းကျင် လေထု၊ ရေထု၊ မြေထုကို ညစ်ညမ်းမှုမရှိစေရန် ဆောင်ရွက်ပါရန် ကလေးများကျန်းမာရေးနှင့်ညီညွတ်သောအစားအစာဖြစ်စေရန်အကြံပြုပါသည်။ စက်ရုံပတ်ဝန်းကျင်သန့်ရှင်းအောင်ဆောင်ရွက်ပေးပါရန်
၂၀	ဒေါ်ဆွေဆွေဦး	ဓါတုဆိုးဆေးများသုံးစွဲခြင်းမပြုရန် ဂျယ်လီထုတ်ပိုးမှုများကို သန့်ရှင်းသပ်ရပ်စွာပြုလုပ်ပေးပါရန် ကလေးများ၏ကျန်းမာရေးနှင့်ညီညွတ်သောအစားအစာဖြစ်စေရန်အကြံပြုပါသည်။

အကြံပြုချက်များအပေါ် စက်ရုံမှဆောင်ရွက်ပေးမည့်အစီအစဉ်

Green Myanmar Environmental Services (GMES) Co., Ltd မှ လုပ်ငန်းရှင်ထံသို့ တောင်းခံသောစာကို ၂၀၁၈ ခုနှစ်၊ ဩဂုတ်လ (၁၇) ရက်နေ့တွင် ပေးပို့ခဲ့ပြီး Thai Faster Products & M.K Co., Ltd မှ အများပြည်သူများ၏ အကြံပြုချက်များအပေါ် ဆောင်ရွက်ပေးမည့်အချက်များကို အီးမေးလ်ဖြင့် ၂၀၁၈ ခုနှစ် ဩဂုတ်လ (၁၇) ရက်နေ့တွင် ပေးပို့ခဲ့ပါသည်။ ၎င်းတို့ကို အစီရင်ခံစာ၏ နောက်ဆက်တွဲ (၂၁)နှင့် (၂၂) တွင် ဖော်ပြထားပါသည်။

နိဂုံး

ယခုကနဦးပတ်ဝန်းကျင်ဆန်းစစ်ခြင်းအစီရင်ခံစာ လေ့လာမှုသည် အခြေခံအချက်အလက်များ၊ ဆင့်ပွားအချက်အလက်များ၊ စီမံကိန်းအဆိုပြုသူမှပံ့ပိုးသောအချက်အလက်များ၊ စီမံကိန်းနှင့် သက်ဆိုင်သည့် လက်ရှိလေ့လာမှုများနှင့်အစီရင်ခံစာ၊ ပတ်ဝန်းကျင်ဆိုင်ရာစောင့်ကြပ်ကြည့်ရှုရေးနှင့် ပူးပေါင်းဆောင်ရွက်သူများအပေါ် အခြေခံထားပါသည်။ လုပ်ငန်းဆောင်ရွက်မှုအဆင့်တွင် စီမံကိန်းအကောင်အထည်ဖော်ဆောင်ရွက်မှုကြောင့် ဖြစ်နိုင်ချေရှိသော ပတ်ဝန်းကျင်ဆိုင်ရာသက်ရောက်မှုများ၏ အကဲဖြတ်ခြင်းများကို အဖြစ်နိုင်ဆုံး အရည်အသွေးနှင့်ပမာဏအလိုက် ဆောင်ရွက်ခဲ့ပါသည်။ ဤ ကနဦးပတ်ဝန်းကျင်ဆန်းစစ်ခြင်းအစီရင်ခံစာသည် အဆိုပြုစီမံကိန်းနှင့်ဆက်စပ်သော ဖြစ်နိုင်ချေရှိမည့် ပတ်ဝန်းကျင်ဆိုင်ရာ

ထိခိုက်နိုင်မှုများကို ဖော်ပြထားပြီး ဆိုးကျိုးသက်ရောက်မှုများအတွက် ကာကွယ်မှုများနှင့်လျော့နည်းစေရေး အစီအမံများအတွက် အကြံပြုချက်များကို လုပ်ဆောင်ထားပါသည်။

တွေ့ရှိချက်

လေထုညစ်ညမ်းခြင်း

ပတ်ဝန်းကျင် လေထုအရည်အသွေးတွင် အမှုန်အမွှားများ (PM10 & PM2.5) တို့သည် အမျိုးသား ပတ်ဝန်းကျင်ဆိုင်ရာအရည်အသွေး (ထုတ်လွှတ်မှု) လမ်းညွှန်ချက်များထက် မြင့်မားနေသည်ကို တွေ့ရှိရပါသည်။ ဆာလဖာဒိုင်အောက်ဆိုဒ်တန်ဖိုးသည် အနည်းငယ်မြင့်မားနေပြီး အခြားသော ပါရာမီတာ များသည် လမ်းညွှန်ချက်အတွင်း ရှိနေပြီး လုပ်ငန်းခွင်လေထုအရည်အသွေးတွင် အမှုန်အမွှားများ (PM10 & PM2.5) တို့သည် လမ်းညွှန်ချက်အတွင်းရှိပါသည်။

ရေထုညစ်ညမ်းမှု

စွန့်ပစ်ရည်နှင့်အစိစိတွင်းရေများ ညစ်ညမ်းမှုသည် လမ်းညွှန်ချက်တန်ဖိုးထက်အနည်းငယ် ပိုများ နေပါသည်။ သောက်သုံးရေ အရည်အသွေးသည် ကမ္ဘာ့ကျန်းမာရေးအဖွဲ့အစည်း၏ လမ်းညွှန်ချက် အတွင်း ရှိနေပါသည်။ အခြားသော ရေအရည်အသွေးတန်ဖိုးများသည် လမ်းညွှန်ချက်အတွင်းတွင် ရှိနေပါသည်။

ဆူညံသံ

ပတ်ဝန်းကျင်ဆူညံသံအဆင့်သည် ခွင့်ပြုနိုင်သော အဆင့်အတွင်းဖြစ်သည်။ လုပ်ငန်းခွင်တွင် ဆူညံသံအဆင့်ကို စောင့်ကြည့်စစ်ဆေးခြင်းလုပ်ဆောင်ပြီး လုပ်ငန်းခွင်တွင် ခွင့်ပြုနိုင်သော ကန့်သတ်ချက် များအတွင်း ရှိနေပါသည်။ အရည်အသွေးအရ အကျိုးသက်ရောက်မှုများ၏ အရေးပါမှုကို အကဲဖြတ်ခြင်း အပေါ် အခြေခံ၍ ၎င်းတို့သည် တွေ့ရှိချက်များ၏ အကျဉ်းချုပ်တင်ပြထားခြင်းဖြစ်ပါသည်။

စွန့်ပစ်အမှိုက်များထွက်ရှိမှု

စွန့်ပစ်ပစ္စည်းများ စွန့်ပစ်မှုတွင် အရေးကြီးသော ပြဿနာများမရှိကြောင်းနှင့် သတ်မှတ် လမ်းညွှန်ချက်များနှင့်အညီ အမှိုက်များကို စနစ်တကျစွန့်ပစ်သည်ကို တွေ့ရှိရပါသည်။

လုပ်ငန်းလည်ပတ်ခြင်းအဆင့်အတွက် လေထုညစ်ညမ်းခြင်း၊ ရေထုညစ်ညမ်းခြင်း၊ မြေထု ညစ်ညမ်းခြင်း၊ လူမှုစီးပွားဆိုင်ရာကဏ္ဍများနှင့် ကျန်းမာရေးနှင့်ဘေးအန္တရာယ်ကင်းဝေးရေးတို့သည် အလယ် အလတ်အန္တရာယ်ရှိနိုင်ပြီး မီးဘေးအန္တရာယ်သည် အဓိကအန္တရာယ် ဖြစ်ပါသည်။ သို့သော် လျော့နည်း သက်သာစေရေး အစီအမံများကို အကောင်အထည်ဖော်ပြီးနောက် ကျန်ရှိသော ကြွင်းကျန်သက်ရောက်မှု များသည် အန္တရာယ်နည်းပါးပြီး လက်ခံနိုင်ဖွယ်ရှိပါသည်။

အကြံပြုချက်များ

လုပ်ငန်းလည်ပတ်မှုအဆင့်တွင် ဖြစ်နိုင်ချေရှိသော အကျိုးသက်ရောက်မှုများအပေါ် အခြေခံ၍ သဘာဝပတ်ဝန်းကျင်၊ လူမှုရေးနှင့် ကျန်းမာရေး၊ ဘေးအန္တရာယ်ကင်းဝေးစေရေးတို့အတွက် ပတ်ဝန်းကျင် ဆိုင်ရာစီမံခန့်ခွဲမှုအစီအစဉ်ကို ယခုအစီရင်ခံစာတွင် တင်ပြထားပါသည်။ ပတ်ဝန်း ကျင်စီမံခန့်ခွဲမှု အစီအစဉ်ကို ပြည်ထောင်စုသမ္မတမြန်မာနိုင်ငံတော်၏ တည်ဆဲ ပတ်ဝန်းကျင် ဆိုင်ရာမူဝါဒ၊ ဥပဒေများ၊ နည်းဥပဒေများနှင့် ညွှန်ကြားချက်များနှင့်အညီ ရေးသားထားပါသည်။ သက်ရောက်မှုများကို သက်ဆိုင်ရာ

အလိုက် သတ်မှတ်ထားပါသည်။ စီမံကိန်းလုပ်ငန်းတွင် မီးဘေး အန္တရာယ်ကို ဂရုပြုရပါမည်။ အခြားအချက် များအနေဖြင့် ရေအရင်းအမြစ်များ၊ လျှပ်စစ်အားသုံးစွဲမှု တို့ဖြစ်ပါသည်။ မီးဘေးအန္တရာယ်ကို လျော့ချနိုင်ရန် အကြံပြုချက်များအနေဖြင့်-

- မီးဘေးအန္တရာယ်ကိုလျော့ချရန်အတွက် မီးဘေးကြိုတင်ကာကွယ်ရေးစီမံချက်များကို (EMP) တွင် ပါရှိသည့်အတိုင်း အကောင်အထည်ဖော်ပြီး ၎င်းကို လိုက်နာရန်လိုအပ်ပါသည်။
- ရေသုံးစွဲမှုကို လျော့ချနိုင်ရန် ရေမီတာနှင့် ရေချွေတာနိုင်ရေးကိရိယာများကို တပ်ဆင်ရန် အကြံ ပြုပါသည်။
- လျှပ်စစ်အားသုံးစွဲမှုကို လျော့ချနိုင်ရန်အတွက် နေအချိန်တွင် တတ်နိုင်သမျှ သဘာဝအလင်းရောင်၊ စွမ်းအင်ချွေတာသော မီးချောင်းများ၊ အော်တိုပန်းများနှင့် ပြောင်းလဲနိုင်သော အမြန်နှုန်း မောင်းနှင် သော မော်တာနှင့်အင်ဗာတာ အစား လေအေးပေးစက်များကို အသုံးပြုရန် အကြံပြုပါသည်။
- ဆာလဖာဒိုင်အောက်ဆိုဒ် ထုတ်လွှတ်မှုအဆင့် လျော့ချရန် ဆာလဖာပါဝင်မှုနည်းသော ဒီဇယ်ကို မီးစက်များအတွက် အသုံးပြုသင့်ပါသည်။
- စက်ရုံဝန်းအတွင်း PM2.5 နှင့် PM10 ထုတ်လွှတ်မှုကို လျော့ချရန်အတွက် အပင်များကို ပိုမိုစိုက်ပျိုးရန်၊ ကောင်းမွန်သော သန့်ရှင်းရေးလုပ်ငန်းများထိန်းသိမ်းရန်အကြံပြုပါသည်။ ဖုန်မထ စေရန် အခါအားလျော်စွာ ရေဖြန်းသင့်ပါသည်။
- စွန့်ပစ်ရေ၏နောက်ကျိုမှုကို လျော့ချရန်အတွက် အသုံးမပြုမီ သိုလှောင်ကန်အတွင်း ဦးစွာ အထည်ကျစေရန် အမှုန်အမွှားများကို အနည်ထိုင်စေပါ။
- စွန့်ပစ်ရေ၏ညစ်ညမ်းမှုကို လျော့ချရန်အတွက် စွန့်ပစ်ရေသန့်စင်ကန်တွင်သန့်စင်ပြီးမှ စွန့်ထုတ်ရန်။
- မတော်တဆဖြစ်ပွားမှုအန္တရာယ်များ၊ ကျန်းမာရေး၊ ဘေးအန္တရာယ်ကင်းဝေးရေးနှင့် မီးဘေး အန္တရာယ်ဆိုင်ရာများကို ကြိုတင်ကာကွယ်ရေးအစီအမံများကို ဝန်ထမ်းများအားလုံး လိုက်နာ ဆောင်ရွက်ရပါမည်။
- စီမံကိန်းအဆိုပြုသူသည် ပြည်ထောင်စုမြန်မာနိုင်ငံ၏ သဘာဝပတ်ဝန်းကျင်ဆိုင်ရာမူဝါဒ၊ ဥပဒေများ၊ နည်းဥပဒေများနှင့် ညွှန်ကြားချက်များကို လိုက်နာဆောင်ရွက်ရပါမည်။
- သက်ဆိုင်ရာအာဏာပိုင်များမှ အတည်ပြုပြီးလျှင် ပတ်ဝန်းကျင်စီမံခန့်ခွဲမှုအစီအစဉ်ကို အကောင်အထည်ဖော်ရပါမည်။
- ပတ်ဝန်းကျင်စာရင်းစစ်အတွက် EMP ၏ မှတ်တမ်းများကို သိမ်းဆည်းထားရပါမည်။
- နှစ်စဉ် ပတ်ဝန်းကျင်ဆိုင်ရာအစီရင်ခံစာကို ပြန်လည် သုံးသပ်ပြီး ပေါ်ပေါက်လာသော စိုးရိမ်ပူပန်မှုများအတွက် လိုအပ်သော ဆောင်ရွက်မှုများ ပြုလုပ်ရပါမည်။
- ဒေသတွင်းပတ်ဝန်းကျင်၏ လူမှုဖူလုံရေးမြှင့်တင်ရန်အတွက် ထိရောက်သော CSR ကို ဖွံ့ဖြိုး တိုးတက်စေရန် အကောင်အထည်ဖော်သင့်ပါသည်။
- EMP ကို ထိထိရောက်ရောက် အကောင်အထည်ဖော်ခြင်းနှင့်လိုက်နာဆောင်ရွက်ခြင်းသည် ပတ်ဝန်းကျင်နှင့်လူမှုဝန်းကျင်အပေါ် ဆိုးကျိုးသက်ရောက်နိုင်မှုများကို လက်ခံနိုင်သောအဆင့်အထိ လျော့ချရန်အတွက် အထောက်အကူ ဖြစ်စေနိုင်မည် ဖြစ်ပါသည်။

1.0 INTRODUCTION

1.1 Background

Thai Faster Products and M.K. Company Limited is located at Plot No. 467/A, Ka Naung Min Thar Gyi Street, Shwe Lin Pan Industrial Zone, Hlaing Thar Yar Township, Yangon Region, Myanmar. It is the joint venture company formed in accordance with the provision of Myanmar Company Act and the total investment is US \$ 2,000,000. It aims to achieve economic, environmental and social sustainability throughout the business and supply chain, improving the use of raw materials and, in turn, increasing the efficiency and profitability.

Thai Faster Products and M.K Co., Ltd. is a joint-venture company between Thai Faster Product Co., Ltd. (60 %), Mantakanok Co., Ltd. (30 %), and M.K Co., Ltd. (10 %).

Thai Faster Products Company Limited., a private company duly incorporated and organized under the laws of Thailand, Registration No. 0745555004749 having its registered address located at 99/99 Moo.7, Aom-Noy Sub-district, Kratumban District, Samutsakorn Province, Thailand.

Mantakanok Company Limited., a private company duly incorporated and organized under the laws of Thailand, Registration No. 0575541000136 having its registered address located at 106/2, Charoen-rad Road, Bangklo Sub-district, Bangkolam District, Bangkok, Thailand.

M.K Company., a private company duly incorporated and organized under the laws of Myanmar, Registration No. 644 having its registered address located at No.333, Pyay Road, Sanchaung Township, Yangon, Myanmar.

1.2 Salient Features of the Project

Thai Faster Products and M.K. Company Limited is planning to manufacture and distribute various types of jellies and salient features of the project are presented in Table 1.1.

Table 1.1 Salient Features of the Project

Project Name	Manufacturing and Distribution of Various Types of Jellies
Company name	Thai Faster Products and M.K. Company Limited (TFPMK)
Company Registration No.	No. 855 FC, 2013 ~ 2014
Project Address	Plot No. 467/A, Ka Naung Min Thar Gyi Street, Shwe Lin Pan Industrial Zone, Hlaing Thar Yar Township, Yangon Region, Myanmar
Type of Land	Industrial Zone
Area of Land	2.036 Acres (87694.214 sq. ft.)
Duration of Investment	50 years and Extendable 10 years two times
Period of Land and Building Lease	5 years (initial) and extendable for a further period up to 70 years
Leaseholder	U Pyae Phyoo
Established	5.2.2014
Test Run	2.1.2015

Commercial Run	4.1.2017
Type of Business	Manufacturing and Distribution
Company Address	Plot No. 467/A, Ka Naung Min Thar Gyi Street, Shwe Lin Pan Industrial Zone, Hlaing Thar Yar Township, Yangon Region, Myanmar
Surrounding Environment	Right Side: Wet Ma Sut Wun Htauk Street Left Side: Garment Factory (Myanmar Yoo Ho Co., Ltd)
Nearest Residential Places	Alae Village
Nearest Water Bodies	Hlaing River
Topography	Flat and Mainly Alluvium Area
Contact Person Designation Contact Numbers	Daw Win Sanda Accountant Ph: 09455640300 E-mail: thaifaster.mm@gmail.com
Company Investment	US \$ 2,000,000
Form of Investment	Thai Faster Products Co., Ltd from Thailand 60 % Mantakanok Co., Ltd from Thailand 30 % M.K Co., Ltd from Myanmar 10 %
Water Resources	2 unit of 2- inch Tube well, depth 100 ft
Water Consumption	60,000 liter/day
Energy Source Annual Electricity Consumption	Three-Phase Power Supply 912,000 kWh
Annual Fuel Consumption	Diesel 15,850 Gallon Paddy Husk 842.40 Ton
Finished Product	Various Types of Jellies Local Sales 90 % Export Sales 10 %
Estimated Employees	Male : 25 persons Female : 43 persons Total : 68 persons (Permanent 64 / Temporary 4)
Operating Time	Working Hours Monday to Friday 07:00 to 16:00 and 07:00 to 17:30 (Overtime) Saturday 07:00 to 11:00 No. of Working Days per Month : 26 days No. of Working Days per week : 6 days (Monday to Saturday) Shift : 1

1.3 Need of the Project

Jelly products bring pleasure, fun and enjoyment to the consumers. They are produced on home scale as well as industrial level and provide the consumers with more value and great taste.

Thai Faster Products and M.K. Company Limited own and operates the factory for the production of various types of jellies in Hlaing Thar Yar Township, Yangon. The main aim

of the project is to produce safer and reliable products with human-centered, environment-oriented mind with safe materials and hygienic production.

Thus the project needs to prepare Environmental Management Plan (EMP) report. It is not only to obtain Environmental Clearance Certificate from Ministry of Natural Resources and Environmental Conservation, but also to understand the most likely impacts, to take environmental measures and to mitigate during operation phases of the project.

1.4 Objectives of EMP

EMP reflects the commitment of the management to protect the environment within and outside the project area. The objectives of the EMP are to

- Identify, access, analyze and evaluate the potential positive and negative impacts of the project on the biophysical, cultural and socioeconomic environment;
- Recommend appropriate environmental management measures for mitigation of negative impacts emanating from the project;
- Adequately describe all components of the project, so that the Authority can consider approval of a well-defined project;
- Propose mitigation measures of potential negative impacts and environmental disruption by the project activities;
- Propose EMP compliance monitoring and auditing.

1.5 Methodology Adopted

The report has been prepared on the basis of information on the factories activities supplied by the project proponent

The methodologies adopted for conducting this EMP are as follows;

- Desktop Research

Desktop research was used to establish an environmental information for the EMP. Consulted materials include articles, maps, internet and photographs

- Consultation with Stakeholders

Experts in relevant fields, leaders of thought in environmental matters, Non-Governmental Organizations, local communities have been consulted for their opinions on issues relating to the potential ecological and socio-economic impacts of the proposed project.

- Field Research

The fieldwork covered all relevant components of ecological, socio-economic and health components of the environments.

- Laboratory Analysis

Samples collected during the one-season field sampling were analyzed in GMES Co., Ltd laboratory

1.6 Details of the Project Proponent

Thai Faster Products and M.K Co., Ltd. is a joint-venture company between Thai Faster Product Co., Ltd. (60 %), Mantakanok Co., Ltd. (30 %), and M.K Co., Ltd. (10 %). The factory building has been in place since Thai Faster Products and M.K Company Limited's initial investment. Therefore, some minor prepared for the building. The lease agreement is as attached to Appendix (27) of EMP the report.

Table 1.2 List of Investor

Sr. No.	Name	Citizenship & Passport No.	Address
1	Thai Faster Product Co., Ltd.	Incorporated in Thai	99/ 99 Moo,7 AomNoy sub-district, Kratungban District, Samutsakorn Province, Thailand
	. Mr. Wichian Chaisathaporn	Thai PP No. Z110742	99/ 99 Moo,7 AomNoy sub-district, Kratungban District, Samutsakorn Province, Thailand
	B. Mr. Varith Bawonsakulwong	Thai PP No. T 810962	59/251 Klongkwang sub-district, Pasricharoen District, Bangkok, Thailand
2	Mantakanok Co., Ltd	Incorporated in Thai	106/2, Charoen-rad Road, Bangklo Sub-district, Bangkoklam District, Bangkok, Thailand
	A. Mr. Paradorn Kunkongkaphan	Thai PP No. AA1092866	1349/35 Charoennakorn Road, banglamphulang, Klongsan, Bangkok, Thailand
3	M.K Co., Ltd	Incorporated in Myanmar	333, Pyay Road, Sanchaung Township, Yangon, Myanmar.
	U Myint Oo	9/ Ma Ma Na (N) 088757	333, Pyay Road, Sanchaung Township, Yangon, Myanmar.

1.7 Details of Environmental Team

Details of the EMP team are presented in the following Table.

Table 1.3 Details of the EMP Team

No	Title of Post	Term of Reference	Nominee, Organization, Transitional Consultant Registration Number
1	Chief Technical Manager	<ul style="list-style-type: none"> Advise on the design of EMP Technical meeting & Workshop Monitoring of EMP process Public consultation Quality Control and Check Data compilation & analysis 	Engr. U Kyaw Soe Win Green Myanmar Environmental Services Experience in IEE processing No.0019
2	Air Quality Management Consultant	<ul style="list-style-type: none"> Advise on Air Quality measuring Advise on Technical Advise on Air pollution analysis and mitigation measure Advise on Assessment and 	Engr. U Sein Thaug Oo Green Myanmar Environmental Services Professional Engineer

		<p>Calculation of base on air quality result</p> <ul style="list-style-type: none"> • Advise on preparation of report 	No.0023
3	Environmental Consultant	<ul style="list-style-type: none"> • Advise on the design of EMP • Develop term of reference for duty & responsibility among EMP team • Advise on the environmental baseline • Advise on the field survey • Facilitate technical analysis • Streamline the Environmental Management Plan 	<p>Engr. Daw Khin Swe Aye Former Lecturer. Department of Chemical Engineering, Rangoon Institute of Technology</p> <p>No.0021</p>
4	Consultant on Environmental Baseline	<ul style="list-style-type: none"> • Design of environmental baseline; methodology, sampling framework, field testing method, and analytical tool • Training of field staff for baseline data collection • Analysis and Report Preparation for Industrial Process, Potential Impact, Alternative Design, and Pollutant Control • Brainstorming for Environmental Monitoring and Management 	<p>Engr. Dr. Maung Maung Win, Retired Professor and Head, Chemical Engineering Dept. YTU and Consultant for Environmental Management in Myanmar, Thailand and USA</p> <p>No.0027</p>
5	Consultant on Environmental Quality Management	<ul style="list-style-type: none"> • Assist in preparation of guideline for environmental sampling of air and water quality • Monitor the sample collection • Register and inspect the sample collected • Assist in report preparation for environmental baseline 	<p>Daw Khin Shwe Htay, Former Lecturer, Chemical Engineering Dept., YTU. Environmental Engineer</p> <p>No.0022</p>
6	Environmental and Social Operation and Field Coordinator	<ul style="list-style-type: none"> • Develop operational checklist for Environmental Survey • Facilitate technical meeting and record keeping • Assist in data mining and secondary data collection • Supervise field survey • Coordinate with local authority and village level meeting 	<p>U Khin Aung General Manager, Green Myanmar Environmental Services</p> <p>No.0025</p>
7	Consultant for Laboratory Analysis	<ul style="list-style-type: none"> • Advise on data processing and laboratory testing • Prepare instruction for laboratory testing • Check the result of environmental laboratory testing • Compare the laboratory result and 	<p>U Myo Myint Retired Factory Manager of Alcohol Distillery Beelin, Ministry of Industry (1)</p> <p>No.0026</p>

		verification	
8	Specialist on waste management	<ul style="list-style-type: none"> Collecting field data for industrial and municipal waste Assist in Laboratory Testing Data processing, computing, projection, modeling and analysis Assist in report preparation 	Engr. Daw Tin May Soe, Retired Professor & Head, Chemical Engineering Dept., MTU. No.0028
9	Environmental Consultant	<ul style="list-style-type: none"> Advise on the preparation of EMP Develop terms of reference for duty and responsibility among EMP team Advise on the environmental baseline and field survey 	Engr. U Maung Maung Aye Construction Coordinator Badamyar Topside Construction, Total E&P Myanmar)
10	Environmental Operation and Team Leader	<ul style="list-style-type: none"> Develop operational checklist for Environmental Study In charge for preliminary field visit Supervise field survey Checking to the final report 	U Kyi Han Bo Quality Engineer Green Myanmar Environmental Services
11	Technician	<ul style="list-style-type: none"> Environmental and Social Survey Data analysis Report preparing and formatting 	U Myo Thet Naung Team leader U Aung Kyaw Than Monitoring Technician U Myo Min Htun Assistant Monitoring Technician Green Myanmar Environmental Services Co., Ltd

1.8 Structure of Report

The issue and the corresponding section of the report where it has been addressed is summarized in the following table.

Table 1.4 Structure of the Report

Sr. No.	EMP Review Issues	Sections where Addressed
1	Introduction	Chapter 1
2	Policy, Legal and Institutional Framework	Chapter 2
3	Description of the Project and Production Process	Chapter 3
4	Governing Parameters and Surrounding Environment	Chapter 4
5	Potential Impacts Assessment and Mitigation Measure	Chapter 5
6	Environmental Management Plan and Monitoring Program	Chapter 6
7	Capacity Development and Training	Chapter 7
8	Public Consultation and Information Disclosure	Chapter 8
9	Conclusion and Recommendation	Chapter 9

2.0 POLICY, LEGAL AND INSTITUTIONAL FRAMEWORK

In this section, policy, legal and institutional framework for the proposed project is discussed. The laws and rules considered in this chapter are related to the environmental, social, health and economic conditions. The discussed laws and rules are needed to be abided by the proponent for development of the proposed project.

2.1 Myanmar Regulatory Framework in Environmental Assessment

The Ministry of Natural Resources and Environmental Conservation (MONREC) has established environmental policies which broadly aimed at:

- Encourage respect for the environment by taking care of the environment;
- Ensuring environmental issues are integrated with economic matters to attain sustainable development;
- Reviewing and evaluating development plans to ensure the project developer follow the set environmental guidelines and polities;

MONREC issued the Environmental Impact Assessment Procedure on 29 December 2015, which defines detailed legal process regarding with EIA/IEE procedures. MONREC also issued the draft administrative instruction of environmental impact assessment procedure, hereafter called as the Instruction. The Instruction covers all process and documents defined in IEE/EIA procedures such as Project Proposal, Terms of Reference (TOR) for IEE/EIA, Initial Environmental Examination (IEE) Report, and Environmental Management Plan (EMP).

Myanmar Government issued the following environmental related laws.

- Environmental Policy in 2019,
- Myanmar Agenda 21 in 1997,
- National Sustainable Development Strategy in 2009,
- The Environmental Conservation Law in 2012,
- The Environmental Conservation Rules in 2014,
- The Environmental Impact Assessment Procedure and National Environmental Quality (Emission) Guidelines in 2015.

2.2 Myanmar Environmental Policy

The new Myanmar Environmental Policy provides long-term, strategic guidance for achieving a sustainable future of Myanmar. It requires the environmental protection into planning and decision-making at all levels of government and in all sectors. The detailed principles of the policy are aimed to achieve in harmony and balance between livelihood needs and development objectives and at the same time recognizing the value of Myanmar's ecosystems and the implications of climate change. This Policy ensures that environmental awareness and protection will be a central objective in Myanmar's sustainable development pathway.

Every nation has the sovereign right to utilize its natural resources in accordance with its environmental policies, but great care must be taken not to exceed its jurisdiction. It is the

responsibility of the state and citizen to preserve its natural resources for the benefit of present and future generations.

2.3 Existing Myanmar Laws

2.3.1 National Laws and Regulations

The following table 2.1 highlights a list of existing laws and regulations in Myanmar.

Table 2.1 Existing Laws and Regulations in Myanmar

Sectors	Laws and Regulations
Administrative	<ul style="list-style-type: none"> • The Explosive Act, 1887 • The Village Act, 1907 • The Essential Supplies and Services Act, 1947 • The Emergency Provision Act, 1950 • The Penal Code ,1961 (Amendment 2016) • The Archive Properties (Amendment) Act, 1962 • The Territorial Sea and Maritime Zone Law, 1977 • The Explosive Substances Act, 1989 • The Yangon Police Act, 1899 • The Constitution of the Union of Myanmar, 2008 • The City of Yangon Municipal Act, 1922 (Amendment 1961) • (Amendment, 1991) • The Constitution of the Union of Myanmar, 2008 • The Ward or Village Tracts Administration Law, 2012 • (mendment, 2012, 2016) • The Myanmar Fire-brigade Law, 2015 • Yangon City Development Committee Law, 2018
Public Health	<ul style="list-style-type: none"> • The Poison Act, 1919 • The Penal Code of Offences Affecting the Public Health, Safety Convenience, Decency and Morals, 1961 • The Union of Myanmar Public Health Law, 1972 • The Narcotic Drugs and Psychotropic Substances Law, 1993 • The Prevention and Control of Communicable Disease Law, 1995 (Amendment, 2011) • The Control of Smoking and Consumption of Tobacco Product Law, 2006 • The Law Relating to Private Health Care Services, 2007 • (Amendment, 2013) • Occupational Health and Safety Law, 2019
Environment, Natural Resources	<ul style="list-style-type: none"> • The Yangon Water-works Act, 1885 • The Embankment Act, 1909 • The Underground Water Act, 1930 • The Underground Water Act, 1930 • The Conservation of Water Resources and Rivers Law, 2006 • The Environmental Conservation Law, 2012 • The Conservation of Water Resources and Improvement of

	<ul style="list-style-type: none"> • River Systems Rule, 2013 • The Prevention of Hazard from Chemical and Related Substances Law, 2013 • The Environmental Conservation Rules, 2014 • Ozone Depleting Substances: Notification No.37/2014 • The Environmental Impact Assessment Procedures, 2015 • The National Environmental Quality (Emission) Guidelines, 2015 • The Forest Law, 2018 • Protection of Biodiversity and Protected Area Law, 2018
Labor, Social and Welfare	<ul style="list-style-type: none"> • The Workmen's Compensation Act, 1923 (Amendment, 2005) • The Leave and Public Holidays Act, 1951 (Amendment, 2014) • The Labor Organization Law, 2011 • The Settlement of Labor Disputes Law ,2012(Amendment, 2014) • The Minimum Wages Law, 2013 • The Minimum Wages Rules, 2013 • The Natural Disaster Management Law, 2013 • The Development of Employment and Skill Law, 2013 • The Social Security Law, 2014 • The Social Security Rules, 2014 • The Payment of Wage Law, 2016
Science and Technology	<ul style="list-style-type: none"> • The Science and Technology Development Law, 1994
Industrial and Trade	<ul style="list-style-type: none"> • The Factories Act, 1951 (Amendment, 2016) • The Private Industrial Enterprise Law, 1991 • The Export and Import Law, 2012 • The Standardization Law, 2014 • Consumer Protection Law, 2019 • Industrial Design Rights Law, 2019 • The Prevention of Hazard from Chemical and Related Substances Law, 2013 • The Prevention of Hazardous form Chemical and Related Substances Rules, 2016
Economic and Finance	<ul style="list-style-type: none"> • The Myanmar Insurance Law, 1993 • The Myanmar Foreign Investment Law, 2012 (Amendment, 2015) • The Myanmar Foreign Investment Rules, 2013 • The Myanmar Citizen Investment Law, 2013 (Amendment, 2015) • Myanmar Investment Commission Notification No.1/2013 and 50/2014 • Ministry of National Planning and Economic Development: Notification No.81/2014 • The Myanmar Investment Law, 2016 (Amendment 2019) • The Myanmar Investment Rules, 2017 • Union Tax Law, 2018
Agriculture and Aquaculture	<ul style="list-style-type: none"> • The Law Relating to Aquaculture, 1989 • The Plant Pest Quarantine Law, 1993 • The Farmland Law, 2012 • The Farmland Rules, 2012

Transportation	<ul style="list-style-type: none"> • The Obstruction in Fairway Act, 1881 • The Yangon Port Act, 1905 (Amendment, 1959) • The Defile Traffic Act, 1907 • The Ports Act, 1908 • The Highway Law, 2000 (Amendment, 2015) • The Inland Steam Vessels Act, 1917 • The Motor Vehicle Rules, 1989 • The Motor Vehicles Law, 2015
Culture and Heritage	<ul style="list-style-type: none"> • The Protection and Preservation of Cultural Heritage Region Law, 1998 (Amendment, 2009)
Energy	<ul style="list-style-type: none"> • The Electricity Law, 2014 • The Oilfields Act, 1918 (Amendment, 2010) • The Petroleum Act, 1934 (Amendment, 2010) • The Petroleum Rule, 1937

2.4 International Conventions, Treaties and Agreements

Myanmar has signed a number of international treaties related to the environment which may have implications for the project. The following table presents a list of the conventions signed by Myanmar to date that are potentially relevant to the Project.

Table 2.2 International Conventions, Treaties and Agreements

1	Convention Concerning the Protection of the World Cultural and Natural Heritage
2	Montreal Protocol on Substances that Deplete the Ozone Layer & all amendments
3	Stockholm Convention on Persistent Organic Pollutants
4	Convention on Biological Diversity
5	Cartagena Protocol on Biosafety
6	International Tropical Timber Agreement
7	Ramsar Convention on Wetlands
8	Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES)
9	ASEAN Agreement on the Conservation of Nature and Natural Resources
10	United Nations Convention to Combat Desertification
11	United Nations Framework Convention on Climate Change (UNFCCC) and Kyoto Protocol
12	ASEAN Agreement on Trans-boundary Haze
13	Vinnea Convention for the Protection of the Ozone layer, 1985 (Reified 1993)
14	Basel Convention on the Control of Trans boundary Movements of Hazardous Wastes and their Disposal at 22 March 1989 (Reified 2015)
15	London Amendment to the Montreal Protocol on Substances that Deplete the Ozone Layer, 1990 (Ratified 1993)
16	Global Tiger Forum, India in August 1994.

2.5 Overview Myanmar Legislation Relevance to the Project

The overview of Myanmar legislation relevance to the project is as follows:

Table 2.3 Myanmar Legislation Relevance of the Project

I. Administrative Sector
<p><i>The Penal Code (1861)</i> The insight of relevant provisions to the project</p> <ul style="list-style-type: none"> • Voluntarily corrupts or fouls the water of any public spring or reservoir, so as to render it less fit for the purpose for which it is ordinarily used shall be punished. [section 277] • Voluntarily vitiates the atmosphere in any place, so as to make it noxious to the health of persons in general dwelling or carrying on business in the neighborhood or passing along a public way shall be punished. [section 278] • Doing any act so rashly or negligently as to endanger human life or to be likely to cause hurt or injury to any other person with any explosive substance or machinery or, fails to guard sufficiently against any probable danger to human life from that substance or such machinery, shall be punished. [section 286, 287]
<p><i>The Ward or Village Tract Administration Law (2012)</i></p> <ul style="list-style-type: none"> • The ward or village tract administrator shall cause the residents in ward of village tract to work and live peacefully and tranquilly. [section 12 (c)]
<p><i>The Myanmar Fire Brigade Law (2015)</i></p> <ul style="list-style-type: none"> • Factory, industry, the business owner or manager of endangered from fire safety shall form the reserved fire brigade and shall keep the equipment related to fire safety. [section 25]
II. Environmental Conservation Sector
<p><i>The Environmental Conservation Law (2012)</i> The following provisions are particularly relevant to Environmental Impact Assessment requirements and this project:</p> <p><i>For waste disposal,</i></p> <ul style="list-style-type: none"> • A person causing a point source of pollution shall treat, emit, discharge and deposit the substances which cause pollution in the environment in accord with stipulated environmental quality standards. [section 14] • The owner or occupier of any business, material or place which causes a point source of pollution shall install or use an on-site facility or controlling equipment in order to monitor, control, manage, reduce or eliminate environmental pollution. If it is impracticable, it shall be arranged to dispose the wastes in accord with environmentally sound methods. [section 15] <p><i>For prior permission,</i></p> <ul style="list-style-type: none"> • No one shall, without the prior permission operate business, work-site or factory, workshop which is required to obtain the prior permission under this law. [section 28]

The Environmental Conservation Rules (2014)

MOECA (Now in MONREC) launched Environmental Conservation Rules on June 5th, 2014. The Rules reinforce the obligation for project developers to submit an EIA or an IEE. It aims to establish and adopt the necessary programs for the conservation and enhancement of environment, protection, control and reduction of pollution in environment, and conservation.

The Environmental Conservation Rules stipulate the following relevant articles under Chapter (XI) Environmental Impact Assessment.

- The Ministry shall determine the categories of project, business, service or activity which shall conduct environmental impact assessment. [section 52]
- The government department, organization or an individual who would develop the categories of project, business, service or activity stipulated under section 52:
 - a. Shall carry out environmental impact assessment for his project, business, service or activity;
 - b. Shall submit that the environmental impact assessment is intended to conduct by which third party or an organization to the Ministry in advance;
 - c. Shall submit the environmental impact assessment report to the Ministry. [section 54]
- The person who carries out any project, business or activity shall arrange and carry out for conducting the environmental impact assessment for any project, business or activity by a qualified third person or organization accepted by the Ministry. [section 56]
- The Ministry shall, on submission that the environmental impact assessment is intended to conduct by which third party or an organization under section 54 (b) to the Ministry in advance, determine and decide after making scrutiny whether or not it is a suitable third party or an organization to conduct the environmental impact assessment. The decision of the Ministry relating to such matter is final and conclusive. [section 57]
- The Ministry shall form the environmental impact assessment report Review Body with experts from relevant Government departments and organizations. [section 58]
- If private experts are included in the environment impact assessment report Review Body, honorariums, expenses and allowances for them shall be borne from the environmental management fund. [section 59]
- The Ministry may assign the Department to scrutinize the report of environmental impact assessment prepared and submitted by a third party or an organization and report to the Ministry through the environmental impact assessment Review Body. [section 60]
- The Ministry may approve and reply the environmental impact assessment report or environmental management plan with the guidance of the Committee. [section 61]

The Environmental Impact Assessment Procedure (2015)

The Environmental Impact Assessment Procedure stated that:

- All projects department, organization, local and organization, government or authority, company, cooperative, institution, Project expansions corporation, undertaken board, by development committee and organization, local government or authority, company, cooperative, institution, enterprise, firm, partnership or individual (and/or all Projects, field sites, factories and businesses including expansions of such Projects, field sites, factories and businesses identified by the Ministry, which may cause impact on environmental quality and are required to obtain Prior Permission in accordance with Section 21 of the Law, and Article 62 of the Rules) having the potential to cause Adverse Impacts, are required to undertake IEE or EIA or to develop an EMP, and to obtain an ECC in accordance with this Procedure.

The National Environmental Quality (Emission) Guidelines (2015)

These national Environmental Quality (Emission) Guidelines (hereafter referred to as Guidelines) provide the basis for regulation and control of noise and vibration, air emissions, and liquid discharges from various sources in order to prevent pollution for purposes of protection of human and ecosystem health.

- Para 4 states that these Guidelines refer to emission sources, and are intended to prevent or minimize adverse impacts to environmental quality or human health by ensuring that pollutant concentrations do not reach or exceed ambient guidelines and standards. The Guidelines apply to projects that generate noise or air emissions, and/or that have either direct or indirect discharge of process water, wastewater from utility operations or storm water to the environment.
- Para 6 mentions the provisions of the general and applicable industry-specific Guidelines shall be reflected in project environmental management plan (EMP) and environmental compliance certificate (ECC) and together constitute a project's commitment to take necessary measures to avoid, minimize and control adverse impacts to human health and safety, and the environment through reducing the total amount of emissions generation; to adopting process modifications, including waste minimization to lower the load of pollutants requiring treatment; and as necessary, to apply treatment techniques to further reduce the load of contaminants prior to release or discharge.
- Para 7 states recognizing that these Guidelines are intended to prevent pollution through reducing the mass of pollutants emitted to the environment, dilution of air emissions and effluents to achieve maximum permitted values is not acceptable. Specified guideline values should be achieved, without dilution, at least 95 percent of the time that a project is operating, to be calculated as a proportion of annual operating hours.

The Conservation of Water Resources and Rivers Law (2006)

- No person shall dispose of engine oil, chemical, poisonous material and other materials which may cause environmental damage, or dispose of explosives from the bank or from a vessel which is plying, vessel which has berthed, anchored, stranded or sunk. [section 11 (a)]

III. City Development Sector

The Underground Water Act (1930)

- Digging tube wells shall be done only with the license issued by prescribing terms and conditions. [section 3]
- Digging underground water or attempt to do so shall be informed to the authorized official determined by the president. [section 5]

Yangon City Development Committee Law (2018)

Provisions relating to environmental sanitation, pollution of air and water, and public health.

IV. Finance and Revenue Sector

The Myanmar Insurance Law (1993)

- An entrepreneur or an organization operating an enterprise which may cause damage to the life and property of the public or which may cause pollution to the environment shall affect compulsory General Liability Insurance with the Myanmar Insurance. [section 16]

Union Tax Law (2018)

- The taxes received by the Union contained in the laws relating to expenditure under the budget are the taxes earmarked for collection in table (1) of this law for the

<p>relevant financial year. [section 3]</p> <ul style="list-style-type: none"> • If the Tax Rates contained in this law should be amended, supplemented or substituted, the Union Government shall submit the matter to the Pyidaungsu Hluttaw so that it is decided after discussion. [section 4]
V. Biodiversity and Ecosystem Sector
<p><i>The Forest Law (2018)</i></p> <p>Provision to conserve water, soil, biological diversity and the environment; sustain forest produce yields; protect forest cover; establish forest and village firewood plantations; sustainably extract and transport forest products.</p>
<p><i>Protection of Biodiversity and Protected Area Law (2018)</i></p> <p>The objective of this Law is to provide opportunities for more effective conservation of forests while recognizing the rights and the potential roles of local communities.</p>
VI. Health Sector
<p><i>The Public Health Law (1972)</i></p> <p>Includes a general provision that empowers Union Government to carry out measures relating:</p> <ul style="list-style-type: none"> • To protect environment from gas, odor, dust, sound and radio activity which is endanger in the public environment. [section 3 (1) (c)] • To keep the factory, industry, work site produced and sell food clean. [section 3 (2) (d)] • Examine if necessary, in the government lab. [section 3 (2) (h)] • To be cautions to be in conformity with the standard prescribed by the Union Government from time to time. [3 (2) (i)]
<p><i>The Prevention and Control of Communicable Disease Law (1995)</i></p> <ul style="list-style-type: none"> • For prevention of the outbreak of Communicable Disease and effective control of Communicable Disease when it occurs, the public shall, under the supervision and guidance of the Health Officer of the relevant area, undertake the responsibility of carting out the following environmental sanitation measures; <ul style="list-style-type: none"> (a) in-door, out-door sanitation or inside the fence, outside the fence sanitation; (b) well, ponds and drainage sanitation; (c) proper disposal of refuse and destruction thereof by fire; (d) construction and use of sanitary latrines; (e) other necessary environmental sanitation measures. [section 8]
<p><i>The Control of Smoking and Consumption of Tobacco Product Law (2006)</i></p> <ul style="list-style-type: none"> • This law aims to protect from the danger which affects public health adversely by creating tobacco-free environment and to up lift the health, economy, and social standard of the public through control of smoking and consumption of tobacco product. [section 3] • The responsible person shall arrange the written statements that state non-smoking area in the prescribed places. [section 9 (a)] • Smoking area shall be arranged and statements that show specific places for smoking area in non-smoking area provided in section 7. [section 9 (b)] • No one shall smoke in no-smoking area. [section 9 (c)]No-smoking areas are prescribed and smoking, burning, carrying, holding are liable to a fine. [section 7+17]
<p><i>Consumer Protection Law (2019)</i></p> <p>To regulate the liability of manufacturers, wholesalers, distributors and others involved in the supply chain for defective goods, which until now has been largely regulated by colonial era tort law which in large part was un-enforced and insufficient to appropriately protect the rights of consumers in the modern economy?</p>

VII. Industrial Sector
<p><i>The Petroleum Act (1934)</i></p> <ul style="list-style-type: none"> • Import, transport or storage of petroleum shall be abided by the rules made under section and terms and conditions of the license that requires obtaining under the rules. [section 3] • Dangerous petroleum (petroleum lower than 76°F which is flammable) shall be warned as a duty. [section 6]
<p><i>The Private Industrial Enterprise Law (1990)</i></p> <ul style="list-style-type: none"> • The salient basic principles to operate the industrial business are provided in section 3. • To develop production in each and every economic business connected to industrial business. • To avoid or decrease utility of technology which causes environmental pollution. • To use energy in the least way.
<p><i>The Export and Import Law (2012)</i></p> <ul style="list-style-type: none"> • No person shall export or import restricted, prohibited and banned goods. [section 5] • Without obtaining license, no person shall export or import the specified which is to obtain permission. [section 6]
<p><i>Prevention of Hazard from Chemical and Related Substances Law (2016)</i></p> <ul style="list-style-type: none"> • No one shall produce, treat and formulate, use, possess, store, distribute, sell, transport, import or export the chemical or related substances prohibited by the Central Leading Board. [section 33] • No one shall operate the chemical and related substances business without license. [section 34] • No one shall use the chemical or the related substances which are unregistered or annulled from the registered list or not met to the quality and norm in the chemical and related substance business. [section 35] • A person who has obtained a license, shall put the insurance in accordance with the prescriptive stipulations to be able to pay the compensation, if the impact and damage is occurred on the Human Being and Animals or the environment in respect of the chemical and related substances business. [section 17] • A person who has obtained a license shall apply the related chemical and related substances that will be used in his chemical and related substances business in accordance with the stipulations to the Central Supervisory Board. (section 20)
<p><i>The Standardization Law (2014)</i></p> <p>The aims of this Law are also related to this project.</p> <ul style="list-style-type: none"> • To enable to protect the consumers and users by guaranteeing imports and products are not lower than prescribed standard, and safe from health hazards. [section 3 (c)] • To enable to protect manufacturing, distributing and importing the disqualified goods which do not meet the prescribed standard and those which are not safe and endangered to the environment. [section 3 (e)] • The person who obtains the certificate of certification whose representative and successors shall oblige the mandatory standards. [section 29]
<p><i>The Electricity Law (2014)</i></p> <ul style="list-style-type: none"> • No electrical business shall be operated other than the business contained in the permit by any permit holder. [section 45] • No one shall produce, transmit, connect, contact and use the electric power without

<p>electric safety certificate. [section 47]</p> <ul style="list-style-type: none"> • No one shall connect, waste, and utilize the electric power without the permission of the permit holder. [section 52] • No one shall cut off the electric power line, transfer electricity, destroy electrical equipment and used in any electrical business. [section 53]
<p><i>The Boiler Law (The Pyidaungsu Hluttaw Law No.39, 2015)</i></p> <ul style="list-style-type: none"> • A boiler shall be manufactured in accord with Myanmar standards and international standards. [section 6] • The owner shall submit the certificate or provisional order when so requested by the respective government department and organization as may be necessary. [section 15] • The owner shall inform immediately to the inspector if any accident occurs. [section 18] • The owner shall not use boiler without certificate or provisional order. [section 20 (a)] • The owner shall not use boiler of which certificate or provisional order is void. [section 20 (b)] • The owner shall not use boiler of which certificate or provisional order is revoked. [section 20 (c)] • The owner shall not assign any person to charge the boiler used in the work except the person who operates and maintains the boiler. [section 24 (b)] • The boiler importer shall import the only boilers which are consistent with Myanmar standards and international standards when importing boilers. [section 26] • A boiler attendant shall comply with the terms and conditions contained in boiler attendant certificate. [section 29 (b)] • The boiler attendant shall not operate the boiler which is not issued the certificate or provisional order with his own volition or under the entrustment of the owner. [section 30 (b)] • The boiler attendant shall not use the boiler at more than allowable pressure. [section 31]
<p><i>Prevention of Hazard from Chemical and Related Substances Rules (2016)</i></p> <ul style="list-style-type: none"> • If the relevant Board of Inspection finds the violation on any prohibition in the law and rules, the Board of Inspection shall submit to the respective Supervisory Board for taking action under the law. [section 47] • The relevant Board of Inspection shall carry out the regular inspection, surprise check and inspection due to information to chemical and related substances businesses. [section 48]
<p><i>Industrial Design Rights Law (2019)</i></p> <p>The objectives of this Law are as follows:</p> <p>(a) To protect the rights and interests of the owner of the industrial design and the inventors in accordance with this Law;</p> <p>(b) To support the development of industrial businesses by providing protection for industrial design creations;</p> <p>(c) To support the development and spread of industrial design technology.</p>
<p>VIII. National Planning and Economic Development Sector</p>
<p><i>The Myanmar Investment Law (2016)</i></p> <ul style="list-style-type: none"> • The objectives are to protect the inventors and their businesses in accordance with law, to create job opportunities for the people, to develop high functioning production, service, and trading sectors. [sections 3 (b), (c) and (e)] • An investor who obtains permit or endorsement under this Law has the right to obtain

a long-term lease of land or building from the owner if it is private land or building, or from the relevant government departments or government organization if it is land managed by the government, or land or building owned by the Union in accordance with the stipulations in order to do investment. Citizen investors may invest in their own land or building in accordance with relevant laws. [section 50 (a)]

- The Government guarantees not to nationalize any investment carrying out in accordance with the law. Except under the following conditions, the Government guarantees not to take any measures which expropriate or indirectly expropriate or is likely to effect a result in the termination of an investment:
 - (a) actually necessary for the interest of the Union or its citizen;
 - (b) non-discriminatory manner;
 - (c) measures in accordance with the applicable Laws;
 - (d) Prompt, fair and adequate payment of compensation. [section 52]
- The investor shall abide by applicable laws, rules, procedures and best standards practiced internationally for this investment so as not to cause damage, pollution, and loss to the natural and social environment and not to cause damage to cultural heritage. [section 65 (g)]

The Myanmar Investment Rules (2017)

- After obtaining the permit, the investor who requires environmental and social impact assessment shall submit the required performances on environmental and social impact assessments to the Commission along the course of operating business. [section 189]

IX. Transportation Sector

The Motor Vehicle Law (2015)

- No one is allowed to drive, request someone to drive, or park, motor vehicles in public places under the following conditions;
 - (a) The motor vehicle is not registered.
 - (b) The registration has been suspended, revoked or expired; the registration card is not displayed.
 - (c) The registration card has been revoked or is expired. [section 45]
- No one is allowed to drive, or allow to drive, motor vehicles in public places without risk insurance for others. This prohibition does not extend to passengers. [section 46]
 - (a) No one is allowed to drive a motor vehicle in public places without carrying the driving license with him/her.
 - (b) No one is allowed to drive a motor vehicle in public places without a driving license.
 - (c) The owner of, and the person responsible for, motor vehicles are not allowed to give permission to someone without a driving license to drive in public places.[section 47]
- No one is allowed to do the following in public places;
 - (a) Driving above the speed limit or below the minimum speed.
 - (b) Driving a motor vehicle which endangers others.
 - (c) Driving a motor vehicle after the consumption of narcotic drugs or alcohol. [section 49]

The Motor Vehicle Rules (1989)

- No vehicles shall carry more than the number or weight of goods which is permitted according to registration. [section 138]

X. Workforce Sector
The Workmen's Compensation Act (1923)

- This law is for factories which have failed to register with the Social Security Office and to subscribe to the 2012 Social Security Law and Rules.
- Required to employees who become injured or who die in any accidents arising during and in consequence of their employment. Such compensation also must be made for diseases which arise as a direct consequence of employment, such as carpal tunnel syndrome. [section 3]

The Factories Act (1951)

Working hours

- Shall not exceed 8 working hours per day or 44 hours per week [section 59+62]
- Shall not exceed 48 hours per week for the work which has to be done continuously [section 59]
- There must be a minimum 30 minutes interval after each 5 working hours [section 63]
- The combined working hours and interval time shall not exceed 10 hours per day [section 64]
- The working days shall not exceed 6 days per week
- There must be one day holiday each week (Sunday). If Sunday service is required, there must be a substitution of another day. There must be substituted an alternative day-off. [section 61]

Overtime

- Shall not exceed more than 16 hours per week or, for continuous work, 12 hours per week
- The overtime wage shall be calculated as double the basic wage
- Permission of Factories and the General Labor Law Inspection Department must be obtained for an approval of a constant overtime policy

Calculation of Overtime Wages

- For salary earners: Overtime wage per hour = $\{(\text{salary} \times 12 \text{ month}) / 52\text{-week} \times 44 (48) \text{ hrs}\} \times 2$
- For daily wages worker: Overtime wage per hour = $\{(\text{daily wage} \times 6 \text{ day}) / 44 (48) \text{ hrs}\} \times 2$
- Piece-work laborers: Overtime wage per hour = $\{(\text{daily average wage} \times 6 \text{ day}) / 44 (48) \text{ hrs}\} \times 2$

Worksite Safety and Health Measures

- The factory must be kept clean and the workspace must be situated away from drains, latrines or other things which create a bad or unhealthy smell. [section 13]
- Wastes must be disposed systematically. [section 14]
- There must be proper ventilation, light and heat. [section 15+19]
- There must be no dust or smoke in the hall or factory. [section 16]
- There must be clean drinking water in proper places for all workers. [section 20]
- Population of workers must not be dense & there must be sufficient light. [section 19]
- The latrines must be in suitable places. [section 21]
- The generators and other auxiliary units must be kept undercover. [section 23, 24]
- There must be arrangements made for any emergency cut out of electricity service. [section 26]
- In weaving or spinning machines, any female workers and any children must not be allowed to handle. [section 28]

- Females and young workers are not allowed to lift heavy loads.
- Floors, stairs and paths must be well-built and hand rails are to be built and necessary covers must be placed. [section 34]
- Explosive and flammable substances should be covered and protected. [section 39]
- In every factory, the arrangement of escape routes and fire alarms must be kept. [section 40]

Welfare

- There must be washing and cleaning facilities for workers. [section 44+45]
- There must be sufficient seats for workers if a chance is given for sitting. [section 46]
- There must be sufficient First Aid Boxes. [section 47]
- If the workers in a factory exceed 250, doctors or nurses in clinic are to be appointed. [section 48]
- If the workers of a factory exceed 100, recreation centers and canteens are to be kept for food. [section 49]
- For factories with over 50 female workers, there must be a child nursery center available for the children under 6 year of age. [section 50]

The Leave and Holiday Act (1951)

The objectives are:

- To allow worker for leave and holiday allowances, religious or social activities with earn allowance, and benefits for Health allowances. Concerned workers: Daily wage workers/temporary workers/permanent workers.
- Causal Leave (6) days [section 5]
 - (a) Casual leave of 6 days with wages is to be provided
 - (b) Causal leave can be taken a maximum of 3 days at a time except in special cases
 - (c) Causal leave cannot be joined with any other leave
 - (d) Leave will be cancelled if it has not been used within a year.
- Earned Leave (10) days [section 4]
 - (a) For continuous service of 12 months and above, 10 days of earned leave shall be entitled
 - (b) If the service day is not 24 days, 1 day deduction from earned Leave is made,
 - (c) Can be accumulated for up to 3 years.
- Medical Leave (30) days [section 6]
 - (a) Workers are entitled to 30 days of medical leave with full pay if 6 months service has been completed
 - (b) If 6 months service has not been completed, ‘leave without pay’ can be granted for medical needs
 - (c) If not taken within a year, medical leave is void or cancelled.
- Maternity Leave [section 7-A]
 - (a) 6 weeks maternity leave before confinement and at least (8) weeks after confinement
 - (b) Entitled jointly with medical leave.
- Public Holidays (21) days [section 3]
 - (a) Workers can enjoy time off with full pay
 - (b) If work is given on a public holiday, twice the rate of regular wages is required.

Constitution of the Republic of the Union of Myanmar (2008)

- The Union shall enact necessary laws to protect the rights of workers. [section 24]
- The Citizens shall enjoy equal opportunity in carrying out occupation. [section 349 (b)]
- The Union prohibits forced labor except hard labor as punishment for crime duly convicted and duties assigned by the Union in accord with law in the interest of public. [section 359]

Employment and Skill Development Law (2013)

The facts required to be included & specified in the employment agreement [section 5]

- (1) Type of employment
 - (2) Probation period
 - (3) Wage, salary
 - (4) Location of establishment
 - (5) Term of agreement
 - (6) Working hours
 - (7) Days-off, holidays and leave
 - (8) Working overtime
 - (9) Meal arrangements within working hour
 - (10) Accommodation
 - (11) Medical treatment
 - (12) Travel arrangements to/from work
 - (13) Regulations to be followed by the employee
 - (14) If the employee is sent to attend training, limitation agreed by the employee to continue his duty after the training
 - (15) Employee resignation and termination of establishment
 - (16) Termination of agreement
 - (17) Obligations under the conditions of agreement
 - (18) Termination of employment agreement by the mutual understanding of employer and employee
 - (19) Any other matters
 - (20) Specifying, amending and adding the conditions of agreement
 - (21) Miscellaneous
- Aforesaid specifications shall not be less than the benefits of existing laws
 - The employer shall send a copy of the employment agreement entered into by the employer and employee to the relevant employment exchange office within the stipulated period and shall obtain its approval.
 - An employment agreement concluded before the entering into force of this law shall continue to be valid until the end of the term of the original agreement.
 - Counterfeiting the certificate shall be punished. [section 34]

The Minimum Wages Law (2013) and The Minimum Wages Rules (2013)

As to the preamble of this law, the objectives are:

- To fulfill the basic needs of the workers and their families who are working in commercial establishments, production and servicing establishments, agriculture and livestock.
 - And, to develop the work performance and competitiveness of workers.
- The minimum wages law was passed by parliament in late 2013 and amounts were specified/ finalized by a national tripartite committee in mid-2015. Implementation of the new wage rates was required to start on 1 September 2015.

Duties of the Employer

- 3,600 Kyats per 8-hour working day (450 Kyat/hour) shall be the minimum wage paid to skilled employees of companies with more than 15 employees in all industries, throughout all of Myanmar.
- 50% of the minimum – 1,800 Kyats per 8-hour working day (225 Kyats/hour) – may be paid to completely unskilled newly hired workers engaged in a training/induction program up to a maximum of 3 months.
- 75% of the minimum – 2,700 Kyats per 8-hour working day (338 Kyats/hour) – may

be paid to newly hired employees during their 2nd 3 months of employment, regarded as a 'probationary period'.

The Social Security Law (2012) and the Social Security Rules (2014)

- The objective is benefit for sickness, maternity, death, employment injury, invalidity benefit, superannuation benefit by: giving medical treatment, providing cash benefit or granting a right to residency. [section 3]
- All establishments shall contribute to the social security fund from the salary of insured workers as follows:
 - (a) Health and social care fund: 2% from employer, 2% from employee
 - (b) Injury fund: 1% from employer
 - (c) The accepted maximum salary per month to qualify for participation in the social security fund is currently set at 300,000 kyats.
- kinds of social security funds are:
 - (a) Health and social care fund
 - (b) Family assistance fund
 - (c) Injury fund
 - (d) Invalidity benefit, superannuation benefit, and survivors' benefit fund
 - (e) Unemployment benefit fund
 - (f) Other social security fund (e.g. housing plan).

For medical treatment and cash benefit for sickness;

- Beneficiaries have the right to take medical treatment at the permitted hospital or clinic for a period up to 26 weeks. [section 22 (a)]
- When the insured person/beneficiary is retired, 50% payment of medical treatments is entitled if social security contributions have been paid for more than 180 months. [section 29]
- Beneficiaries have the right to enjoy 60 percent of average wages, calculated against the most recent four-month working period, as a cash benefit, during a period of illness lasting up to maximum 26 weeks. [section 23]

For maternity benefits: [section 25, 26, and 27]

- (a) Benefits are allowed to be taken if the prior working period of an employee has been a minimum of one year and if there have been paid social security contributions by the worker for a minimum of six months.
- (b) Maternity leave may total six weeks before confinement and eight weeks after confinement, up to 14 weeks in total.
- (c) An additional four weeks are allowed for maternity leave if twins have been delivered
- (d) Up to a maximum of six weeks total leave is allowed to be taken in cases of miscarriage
- (e) Full wages may be taken for prenatal examination at the rate one day per time and up to a maximum of seven times
- (f) 70% of average wages of the previous year can be taken as maternity leave compensation before the birth
- (g) An additional 50% of wages which can be taken once the child is born (additional 75% for twins, 100% for triplets). Hence, 120% of average wages will be administered for the eight weeks of maternity leave which may be taken after birth
- (h) Has the right to take leave for medical treatment for their child up until one year after birth
- (i) A father is entitled to take up to 15-days unpaid leave for infant care upon

<p>confinement of his wife.</p> <p>For funeral expenses</p> <ul style="list-style-type: none"> • If a Social Security insured person passes away, his or her beneficiary is entitled to receive five times their average month's wage. This is determined as the average wage of the last four working months of the deceased person. • The obligations of employers are: <ul style="list-style-type: none"> (a) To inform immediately to the Social Security Office when an injury has happened to an employee. [section 54 (a)] (b) To register their business in the Social Security Office within 30 days from the day of first business operations. [Rules] (c) To register every newly appointed employee with Social Security Office. [Rules] • The employer who registered in accordance with the Social Security Law has the right to be exempted from the Workmen's Compensation Act.
<p><i>The Payment of Wage Law (2016)</i></p> <ul style="list-style-type: none"> • Receipt of wages is made regularly when the work is completed or the time of agreed period. Unlawful deductions are not to be made. • Resignation or own volition, dismiss or decrease of the employee shall be paid according to the provisions of section 4.
<p>XI. Disaster Sector</p>
<p><i>Natural Disaster Management Law (2013)</i></p> <ul style="list-style-type: none"> • The objectives are to implement natural disaster management programs systematically and expeditiously in order to reduce disaster risks, to conserve and restore the environmental affected by natural disasters and to provide health, education, social and livelihood programed in order to bring about living conditions for victims. [section 3 (a), (d) & (e)] • Organization or person that has been assigned responsibility under this law: [section 13 (a)-i, ii & iii] • Preparatory and preventive measures for natural disaster risk reduction in pre-disaster period • Emergency responses including search and during natural disaster • Conservation of the environment that has been affected by natural disaster • Applying knowledge and innovation to be a habit of safety and resilience at every level from National level to the ward or village tract level [section 14 (c)] • When the natural disaster strikes, emergency responses including search and rescue include the following: [section 17 (h), (i)] <ul style="list-style-type: none"> ➤ Conducting emergency response including search and rescue according to the type of natural disaster ➤ Performing other duties assigned by this Law in respect of emergency responses including search and rescue. • Rehabilitation and reconstruction activities to be carried out after disaster include the following: [section 18 (a)] <ul style="list-style-type: none"> ➤ Data collection and confirmation of damage and losses due to natural disaster ➤ Aggrieved person who has been directly affected in any of the private own properties and has been loss of life or has been affected to the member due to any of the disaster risk reduction activities is entitled to compensation in accord with the stipulations. [section 37]
<p>XII. Labor Sector</p>
<p><i>The Labor Organization Law (2011) and The Labor Organization Rules (2012)</i></p> <p>As to the preamble of this law, the objectives are:</p>

- To protect the rights of the workers in accordance with section 24 of the Constitution
- To promote good relations between the employer and the worker
- To enable to workers to form an The Settlement of Labor Disputes Law d carry out the labor organizations systematically and independently.

Rights and Responsibilities of the Labor Organization

- The labor organizations shall have the right to carry out freely in drawing up their constitution and rules, in electing their representatives, in organizing their administration and activities or in formulating their programs
- The labor organizations have the right to negotiate and settle with the employer if the workers are unable to obtain and enjoy the rights of the workers contained in the labour laws and to submit demands to the employer and claim in accord with the relevant law if the agreement cannot be reached
- The labor organization has the right to demand the relevant employer to re-appoint a worker if such worker is dismissed by the employer and if there is cause to believe that the reasons of such dismissal were based on labor organization membership or activities, or were not in conformity with the labor laws
- The labor organizations have the right to send representatives to the Conciliation Body in settling a dispute between the employer and the worker
- In discussions with the Government between the employer and the complaining workers, the representatives of the labor organization also have the right to participate and discuss Have the right to participate in solving the collective bargaining of the workers
- Shall carry out peacefully the holding of meetings, strikes and the carrying out any other collective activities
- Shall assist in making agreements between the employer and the workers. [section 17 to 23]

Duties of the Employer

The employer shall:

- Recognize the labor organizations
- Allow the member of executive committee assigned by the labor organization to perform their duty not exceeding two days per month
- Shall assist as much as possible if the labor organizations requests help which is in the interest of the factory's workers. [section 29 to 31]

Prohibitions

No employer shall

- Lock-out any service without the permission of relevant conciliation body
- Lock-out any work during the settlement of dispute period
- Carry out an illegal lock-out; dismiss a worker for his membership in a labour organization or for the exercise of organizational activities or participating in a strike. [section 43+44]
- No worker shall
 - (a) Go on strike without informing in advance the relevant employer or the relevant conciliation body
 - (b) Go on strike during the settlement of dispute period
 - (c) Go on an illegal strike [section 45+46]

The Settlement of Labor Disputes Law (2012)(Amendment in 2016)

As to the preamble of this law, the objectives are:

- To safeguard the rights of workers

- To promote a good relationship between employer and workers and creating a peaceful workplace
- To obtain the rights fairly, rightfully and quickly by settling disputes between employer and worker justly.

Forming Workplace Coordinating Committee

The employer shall, in an establishment which has 30 employees and above and if there is a labor organization,

- Allow 2 nominated workers for each labor organization
- Assign employer representatives who are the same number as the representatives of the workers

If there is no labor organization,

- Organize election of 2 representatives of the workers
- Appoint 2 representatives of the employer

The term of such committees is one year.

Settlement of Dispute

- A party, employer or worker, may complain to the conciliation body.
- If he is not satisfied with the conciliation of Conciliation Body, may apply to the court. [section 23]
- The Conciliation Body shall refer the collective dispute which does not reach settlement to the relevant Arbitration Body. [section 25]
- No party shall be barred to proceed with the right to institute criminal or civil proceedings in respect of such dispute during conciliation or arbitration. [section 52]
- As a strike suspends the employment agreement temporarily, the employer shall not be liable to pay salary or allowance during such period to the workers who go on strike. [section 54]

XIII. Laws related to Occupational Health and Safety including Communicable Diseases

Occupational Safety and Health Law (2019)

The objectives of this law are:

- (a) to implement Occupational Safety and Health matters effectively in the respective industries/ businesses;
- (b) to determine the duties of relevant persons applicable under this law including employers and workers of lessen and mitigate occurrence of occupational diseases and occupational accidents;
- (c) to cause relevant persons applicable under this law, employers and workers to take precaution and prevention against occupational hazards and occupational diseases;
- (d) to improve the productivity and health of workers by preventing the occurrence of occupational accidents and occupational diseases for their safety;
- (e) to create workplaces that are safe and good for health by prescribing the occupational safety and health standards relevant to the Union's status after considering international and regional standards; and
- (f) to support and help research activities carried out for the development of occupational safety and health matters. [section 3]
- Any person who is currently conducting or wants to conduct any industry/ business to which this law applies shall, in accordance with the stipulations, apply to the Department for registration to enable to conduct occupational safety and health matters. [section 8(a)]

2.6 Institutional Framework of Myanmar Government Responsible for Project

(1) Myanmar Investment Commission (MIC)

The Myanmar Investment Commission is a government-appointed body which is responsible for verifying and approving investment proposals and regularly issues notifications about sector-specific developments. The MIC is comprised of representatives and experts from government ministries, departments and governmental and non-governmental bodies. It has been formed under the Foreign Investment Law and the Myanmar Citizen Investment Law. Objectives of MIC are as follows:

- To protect investors according to the new investment law promulgated by Union Hluttaw (Parliament)
- To safeguard environmental conservation
- To deeply emphasize on social impact
- To practice accounting and auditing in accordance with international standard in financial matters including transparency and accountability
- To create job opportunities
- To abide existing labor law
- To support corporate social responsibilities
- To transfer technology

The MIC issued a Notification on 30th June 1994 on the Protection of Environment stating that:

The Myanmar Investment Commission, at its meeting 8/94 held on 17th June 1994 has resolved that all projects established with the permission of the Commission shall be responsible for the preservation of the environment at and around the area of the project site. The enterprises are entirely responsible that they shall be able to control pollution of air, water and land, and other environmental degradation, and that they keep the project site environmentally friendly.

Consequently, it is hereby notified that the treatment plant, industrial wastewater treatment plant and other pollution control procedures should be promptly implemented and complies with the sanitary and hygienic rules and regulations set by the relevant authorities.

In the future proposals that are to be submitted to the Commission, either under the Union of Myanmar Foreign Investment Law or the Myanmar Citizens Investment Law, shall incorporate the provision in their contracts that they will undertake proper sewage and industrial wastewater treatment systems and other environmental control systems. The system used shall be in accordance with the rules and regulations specified by the respective development committees and local authorities.

(2) Directorate of Investment and Company Administration (DICA)

The Directorate of Investment and Company Administration (DICA) was formed under the Ministry of National Planning and Economic Development on October 13, 1993.

As the primary interface between businesses and the government, DICA is mandated to promote private sector development and to boost domestic and foreign investment by creating a conducive investment climate. DICA is taking several functions-

- as a regulator on investment and companies
- as a company registrar
- as the secretariat of MIC.

Furthermore, DICA is also responsible for drafting, negotiating and approving bilateral Investment Promotion and Protection Agreements and serves as a focal department for all ASEAN investment related affairs (e.g. ASEAN Comprehensive Investment Agreement, bilateral ASEAN Investment Agreements).

(3) Environmental Conservation Department (ECD)

The Environmental Conservation Department, one of the departments under the Ministry of Natural Resources and Environmental Conservation (MONREC) is responsible for implementing National Environmental Policy, strategy, framework, planning and action plan for the integration of environmental consideration into the national sustainable development process. The Objectives of ECD are as follows:

- To implement the National Environment policy
- To develop short, medium and long-term strategy, policy and planning for the integration of environmental consideration into the sustainable development process
- To manage natural resources conservation and sustainable utilization
- To manage the pollution control on water, air and land for environmental sustainability
- To cooperate with government organization, civil societies, private and international organizations for the environmental affairs.

(4) Directorate of Industrial Supervision and Inspection (DISI)

Since 2nd December 2011, Ministry of Industry was newly reorganized with the combination of Ministry of Industry No.1 and Ministry of Industry No.2 to strengthen the organizations and effective managements.

The ministry organized with two Directorates, six Enterprises and one Central Research & Development Center as follows:

- Union Ministerial Office
- Directorate of Industry (DI) Directorate of Industrial Supervision and Inspection (DISI)
- No.1 Heavy Industrial Enterprise (HIE-1)
- No.2 Heavy Industrial Enterprise (HIE-2)
- No.3 Heavy Industrial Enterprise (HIE-3)
- Textile Industries (TI)
- Pharmaceutical and Foodstuff Industries (PFI)
- Paper and Home Utility Industries (PHUI)
- Central Research and Development Center (CR & DC)

One of the policies of ministry is “To initiate green industries in order to ensure sustainable development without environmental impact and to utilize energy efficiently and renewable energy”.

The tasks of DISI are:

- To inspect the industries according to the Private Industrial Enterprise Law (1990), to fulfill their requirements and to supply for development
- To inspect and register the boilers according to the boiler law (2012)
- To generate, distribute, and use the electrical power in state own, corporative or private section according to the electrical power law (2014) and also to do electrical inspection for these cases.

(5) Departmental Cooperation Team

The Departmental Cooperation Team was formed to provide the field inspection of the operation of business in accordance with section 14 of the Foreign Investment Law.

The objectives of the Departmental Cooperation Team are as follow:

- To enhance foreign direct investment
- To facilitate business process
- To make field inspection to the business operations
- To provide one stop service

The structure of Departmental Cooperation Team is composed by representatives from the governmental departments:

- Directorate of Investment and Company Administration
- Customs Department
- Department of Commerce
- Directorate of Labor
- Department of Immigration and National Registration
- Ministry of Hotel and Tourism
- Internal Revenue Department
- Central Bank of Myanmar
- Ministry of Electricity and Energy
- Directorate of Industrial Supervision and Inspection
- Ministry of Natural Resources and Environmental Conservation
- Ministry of Agriculture, Livestock and Irrigation

2.7 Occupational Health and Safety Standards

At present, there are five Legal Instruments in Industrial Sector in Myanmar as follows:

1. The Private Industrial Enterprise Law, 1990.
2. The Factories Act, 1951
3. The Oilfield (Workers and Welfare) Act, 1951.
4. The Petroleum Act, 1934
5. The Oilfields Act, 1918

The OSH legislative framework in Myanmar is embodied in the Factories Act of 1951 and the Oilfield (Labor and Welfare) Act of 1951. The primary OSH regulator is the Factories and General Labor Laws Inspection Department (FGLLID). Other agencies involved in regulating OSH standards include:

- the Boiler and Electric Inspection Division (Ministry of Industries);
- Planning and Inspection Department (Ministry of Mines);
- Occupational Health Division (Ministry of Health);
- the Ministry of Construction;
- the Ministry of Agriculture and Irrigation; and
- the Yangon City Development Committee

Myanmar has a policy framework such as National Strategic Policy Document on workers' health. The framework includes elements such as:

- enactment of legislation,
- establishment of mechanisms for inter-sectorial coordination of activities,
- funding and resource mobilization for workers' health,
- strengthening the role and capacities of Ministries of Health and
- integration of objectives and actions for workers' health into national strategies

Aspects of Workers' Health covered by this policy framework are:

- Occupational Health
- Occupational Safety
- Workplace Health Promotion
- Provision of Occupational Health Services
- Chemical Safety
- Environmental Health
- Prevention of Communicable Diseases at the work-place (HIV/AIDS, TB, malaria, avian influenza)
- Prevention of Non-communicable Diseases at the work-place (cancer, cardiovascular diseases)

2.7.1 Strategy to raise Occupational Safety and Health Standard

1. Set up National OSH Committee
2. Assist SME to Improve Work Conditions
3. Develop Capabilities of Inspectors
4. Upgrade Occupation Hygiene Laboratory
5. Upgrade Internal OSH Capabilities
6. Establish OSH Training Centre
7. International Collaboration to learn experiences

2.7.2 Roles of Stakeholders in Myanmar OSH Framework

Developer / Client

Developer Profile

- A ‘Developer / Client is anyone having construction or building work carried out as part of their business.

- This could be an individual, partnership or company and includes property developers or management companies for domestic properties.

- The developer or client, being the pay master at the top of the value chain, is in the best position to influence the Occupational Safety and Health (OSH) performance of the project.

- Depending on the objectives and requirements developers set the suppliers and contractors they decide to engage, and the resources they provide,

The eventual outcome can vary greatly.

Role of the Developer / Client

Developer / Client’s Duties

On all projects, developer / client will need to:

- Check competence and resources of all potential contractors and suppliers.
- Ensure there are suitable management arrangements for the project including welfare facilities.
- Allow sufficient time and resources for all stages.
- Provide pre-construction information to designers and contractors.
- Must lead in Design for Safety (DfS). DfS refers to active identification and addressing of WSH risks right from the conceptual and design phase of construction projects.
- Appoint a principal contractor.
- Make sure that construction work does not start unless a construction phase plan is in place and there are adequate welfare facilities on site.

Designer

Designer Profile

- The term ‘Designer’ has a broad meaning and relates to the function performed, rather than the profession or job title.
- Designers are those who, as part of their work, prepare design drawings, specifications, bills of quantities and the specification of articles and substances.
- This could include architects, engineers and quantity surveyors.

Role of the Designer

Designer’s Duties

On all projects, Designer will need to:

- Eliminate hazards and risks during design stage.
- Provide information about remaining risks.

Where projects are notifiable under the Regulations, designers must also:

- Check that the client is aware of their duties and that a site representative has been appointed.
- Provide information needed for the health and safety of the all personnel involved in the project.

Contractors

Contractors Profile

- A ‘Contractors’ are those who are involved in construction, alteration, maintenance or demolition work. This could involve building, civil engineering, mechanical, electrical, demolition and maintenance companies, partnerships and the self-employed.
- All those who work in the construction industry have their part to play looking after their own health and safety and in improving the industry’s health and safety record.

Role of the Contractor

Contractor’s Duties

On all projects contractors will need to:

- Plan, manage and monitor their own work and that of their workers.
- Check the competence of all their appointees and workers.
- Train their own employees.
- Provide work related information to their workers.
- Ensure that there are adequate welfare facilities for their workers.

In addition, where projects are modifiable under the Regulations, Contractors must also:

- Co-operate with the principal contractor in planning and managing work, including reasonable directions and site rules.
- Provide details to the principal contractor of any contractor engaged in connection with carrying out work.
- Inform the principal contractor of reportable accidents, diseases and dangerous occurrences.

2.7.3 Short Term / Long Term Plan for Effective Implementation

Occupational Safety and Health Management System (OSHMS) requires a 'Plan - Do – Check- Act' approach, based on the principle of continual improvement. OSHMS is structured into 14 distinct sections as follows:

1. Occupational Safety and Health Policy
2. Identification of Hazards
3. Assessment of Risks
4. Establishments of Occupational Safety and Health Objectives
5. Development of OSH Plan
6. Implementation of OSH Plan
7. Routine Monitoring and Improvement
8. Investigation of Work Related Accidents, Incidents and Diseases
9. Emergency Prevention, Preparedness and Response
10. Performance Monitoring and Measurement
11. Audit
12. Preventive and Corrective Action
13. Management Review
14. Continual Improvement

2.8 Environmental Commitment

The general commitments by Thai Faster Products and M.K Co., Ltd are as follows;

- To comply with all Myanmar laws, rules and regulations, including Special Economic Zone Law and Clauses 14 and 15 of the Environmental Conservation Law (2012).
- To ensure that legal requirements are incorporated in production procedures for operational phase.
- To conduct environmental compliance audit at least annually during operational phase.
- To ensure implementation of company's CSR program.
- To ensure compliance with company's OSH policy.
- To submit the environmental monitoring report biannually.

The commitments regarding with environmental, social and health related considerations by the Thai faster Products and M.K Company and its principal contractor for respective environmental components are described in below table 2.4.

Table 2.4 Key Environment Commitments

Field	No	Commitment	EMP Reference
General	1	• Thai Faster Products and M.K Co., Ltd will comply with relevant targeted air quality, water quality and noise level.	Ch-2
	2	• To ensure implementation of company's CSR program. • To ensure compliance with company's OSH policy.	Ch-2

		<ul style="list-style-type: none"> To submit the environmental monitoring report biannually. 	
	3	<ul style="list-style-type: none"> The company will implement all of the items in the list of commitments. 	
Air Quality	1	For Operation Phase, Company set the target value of ambient air quality in accordance with the NEQG.	Ch-2
	2	The Company has installed exhaust fan to control the ventilation and temperature of the workplace area. Monitoring of air quality will be conducted in accordance with the EMP during operation phase.	Ch-5
	3	The results of air quality will be submitted to ECD according to monitoring schedule.	Ch-6
Water and Wastewater Quality	1	The Company has installed wastewater treatment plant (WWTP) and discharged into it for reducing of the wastewater quality.	Ch-3
	2	Water quality will be conducted in accordance with the EMP during operation phase 3 times/ year.	Ch-5
	2	Conduct the testing of wastewater parameters as per ECD guidelines and the results will be submitted to ECD according to monitoring schedule.	Ch-6
Noise Quality	1	For Operation Phase, Sufficient noise mitigation measures would be adopted in operation phase to comply with noise level standards by the National and other country standard Guideline.	Ch-2
	2	Noise control measure will be applied to all project equipment by using low noise equipment where practicable. For high noise which cannot be reduced, the mitigation measures will be applied such as using ear plus or earmuff.	Ch-5
	3	The results will be submitted to ECD according to monitoring schedule.	Ch-6
Soil Contamination	1	For Operation Phase, Thai Faster and M.K Company Limited will implement the mitigation measures for reduction of soil contamination effectively.	Ch-5 and Ch-6
		Thai Faster and M.K Company Limited will provide training programs to related employees for handling, storage and disposal of solid wastes.	
Chemicals Transportation, Storage,	2	The proponent is prepared for the accident spill response procedure.	Ch-5 and Ch-6
		The proponent will provide safe handling procedures of	

Handling and Dispose		chemicals to related workers.	
		Thai Faster and M.K Company Limited will provide fire prevention facility and PPE to the worker at hazardous chemical storage area.	
Solid Waste Disposal	1	<p>For Operation Phase, Thai Faster and M.K Company Limited is committed to follow the waste management plan and the brief descriptions of it is:</p> <p><i>Waste segregation</i></p> <ul style="list-style-type: none"> • Food waste • Hazardous waste • Non-hazardous waste <p><i>Waste minimization</i></p> <ul style="list-style-type: none"> • Reuse and recycle where possible <p><i>Waste disposal</i></p> <ul style="list-style-type: none"> • dispose and handle according to ECD guidelines • disposed by authorized waste collector • sell to recycler for recyclable waste 	Ch-5
	2	Thai Faster and M.K Company Limited will follow the waste segregation plan, waste disposal plan and waste handling procedures described in EMP.	Ch-2
Occupational Health and Safety	1	<p>For Operation Phase, Thai Faster Products and M.K Co., Ltd. is committed to</p> <ul style="list-style-type: none"> • implement the EMP for the workplace • Control plan for dust and PM emission • Control plan for noise • Plan for contagious disease control • Control plan for materials handling 	Ch-5 and Ch-6
Occupational Health and Safety		<ul style="list-style-type: none"> • Plan for hazardous chemical exposure • Precautionary measures • Health and safety awareness and training. 	
	2	<ul style="list-style-type: none"> • Thai Faster Products and M.K Co., Ltd.is committed to provide adequate PPE for both normal use and specific use for employees. • Thai Faster Products and M.K Co., Ltd.is committed is to provide sufficient drinking water for the workers. • Thai Faster Products and M.K Company Limited will provide safety awareness training to the worker. 	Ch-7
Other Social Consideration	1	<p>For Operation Phase</p> <ul style="list-style-type: none"> • Thai Faster Products and M.K Company Limited are committed to enforce trainings and rules for drivers for traffic safety. • Adhere to control plans for air pollution, water pollution and noise pollution. 	Ch-5 and Ch-7

	2	<ul style="list-style-type: none"> • Thai Faster Products and M.K Company Limited will stick to local employment policy where possible. • Thai Faster Products and M.K Company Limited will implement effective CSR program. 	
Emergency Risk	1	For Operation Phase, Thai Faster Products and M.K Company Limited will supply sufficient emergency kits in factory. The detailed list of emergency kits and equipment are described in Ch-6, section 6.5.	Ch-6
	2	Thai Faster Products and M.K Company Limited has installed suitable firefighting system and set up the emergency response team for the fire and natural disaster.	Ch-6
	3	Thai Faster Products and M.K Co., Ltd. have installed enough number of fire extinguishers. The locations of fire extinguishers are described in Figure 3.29 and layout plan are described in Figure 6.5.	Ch-3 and Ch-6
Training and Capacity	1	Thai Faster Products and M.K Company Limited will implement the firefighting training program for workers.	Ch-7
	2	Capacity building program for skill workers and emergency response training for all workers for emergency response.	
Reporting	1	Thai Faster Products and M.K Company Limited will submit monitoring report to the Environmental Conservation Department during the operation phase.	Ch-6

3.0 DESCRIPTION OF THE PROJECT AND PRODUCTION PROCESS

3.1 Project Background and Objectives

Thai Faster Products and M.K. Company Limited is the joint venture company formed in accordance with the provision of Myanmar Company Act. The main objective of the project is to manufacture and distribute safe, delicious and reliable jelly products by using modern technology and machines.

Thai Faster Products and M.K. Company Limited is planning to manufacture various types of jellies at Plot No. 467/A, Ka Naung Min Thar Gyi Street, Shwe Lin Pan Industrial Zone, Hlaing Thar Yar Township, Yangon Region, Myanmar. The main purpose of this EMP study is to identify the management of the project for the prevention and mitigation of any potential land, air and water pollution during both construction and operation phases of the project.

3.2 Project Details

Project Name: Manufacturing and Distribution of Various Types of Jellies
 Address: Plot No. 467/A, Ka Naung Min Thar Gyi Street, Shwe Lin Pan Industrial Zone, Hlaing Thar Yar Township, Yangon Region, Myanmar

Company Information

Name of company: Thai Faster Products and M.K. Company Limited
 Business activity: Manufacturing and Distribution of Various Types of Jellies
 Products: Various Types of Jellies

Factory Information

Established: 5.2.2014
 Test Run: 2.1.2015
 Commercial Run: 4.1.2017

Table 3.1 List of Directors

Sr. No.	Name	Nationality	Designation
1	Mr. Wichian Chaisathaporn	Thai	Managing Director
2	Mr. Varith Bawonsakulwong	Thai	Director
3	Mr. Paradorn Kunkongkaphan	Thai	Director
4	U Myint Oo	Myanmar	Director

3.3 Financial Information

The authorized capital investment in land, buildings, plant & machinery and others will be US\$ 2.00 Million. The financial information is shown as follow.

Financial Information:

Authorized Capital	US\$ 2,000,000.00
Paid up Capital	US\$ 2,000,000.00
Type of Share	Ordinary Share
Number of Shares	2,000,000.00 shares (1 US\$ per Share)
Last Date of Capital to be Contributed	30.4.2018
Amount/ Percentage of Local Capital to be Contributed	US\$ 0.2 Million (10 %)
Amount/ Percentage of Foreign Capital to be Brought in	US\$ 1.8 Million (90 %)

Thai Faster Products and M.K Company Limited is registered the JV Company as a private limited company under the laws of Myanmar in which the shareholding structure describe as follow table 3.2.

Table 3.2 Shareholding structure

Shareholders	Number of Shares	Shareholding Percentage (%)
Thai Faster Products Co., Ltd.	1,200,000	60
Mantakanok Co., Ltd.	600,000	30
MK Co., Ltd.	200,000	10
Total Shares	2,000,000	100

3.4 Project Location, Area and Land Ownership

Hlaing Thar Yar Township is located in the western part of Yangon, Myanmar (Figure 2.1). The township comprises 20 Quarter and nine village tracts, and shares borders with Htantabin Township in the north and west, Insein Township, Mayangon Township and Hlaing Township in the east across the Yangon River, and Twante Township in the south (Figure 3.2 and 3.3).

3.4.1 Project Location

The proposed project, “Manufacturing and Distribution of Various Types of Jellies”, is implemented at Plot No. 467/A, Ka Naung Min Thar Gyi Street, Shwe Lin Pan Industrial Zone, Hlaing Thar Yar Township, Yangon Region, Myanmar and the location map is shown in the following Figure 3.1. It is bounded by Rice Mill (Shwe La Won Co., Ltd) in the east, Ka Naung Min Thar Gyi Street in the west, Garment Factory (Myanmar Yoo Ho CO., Ltd) in the south and Wet Ma Sut Wun Htauk Street in the north. The geographical coordinates of project site are as follows:

Latitude: 16° 54' 35.615" N

Longitude: 96° 04' 13.152" E



Figure 3.1 Location of the Factory

3.4.2 Area

The area of the proposed project site is 2.036 acres.

3.4.3 Land Ownership

- *Owner of the Land:* U Pyae Phyoo
- *Period of Land Lease:* 5 years (initial) & extendable for a further period up to 70 years. See the Appendix (27) for contract of Land and Building leasing.

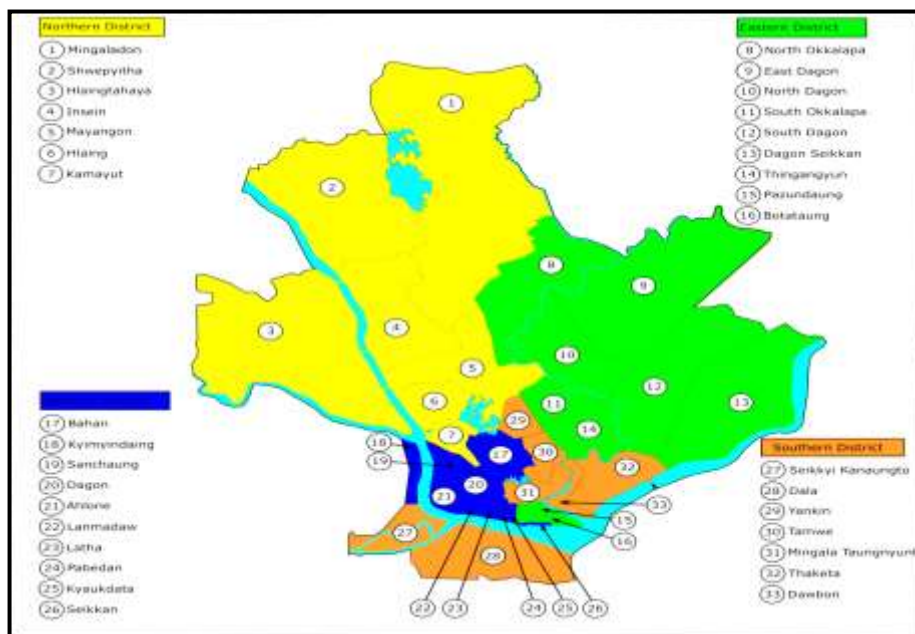


Figure 3.2 Map of Industrial Zones in Yangon

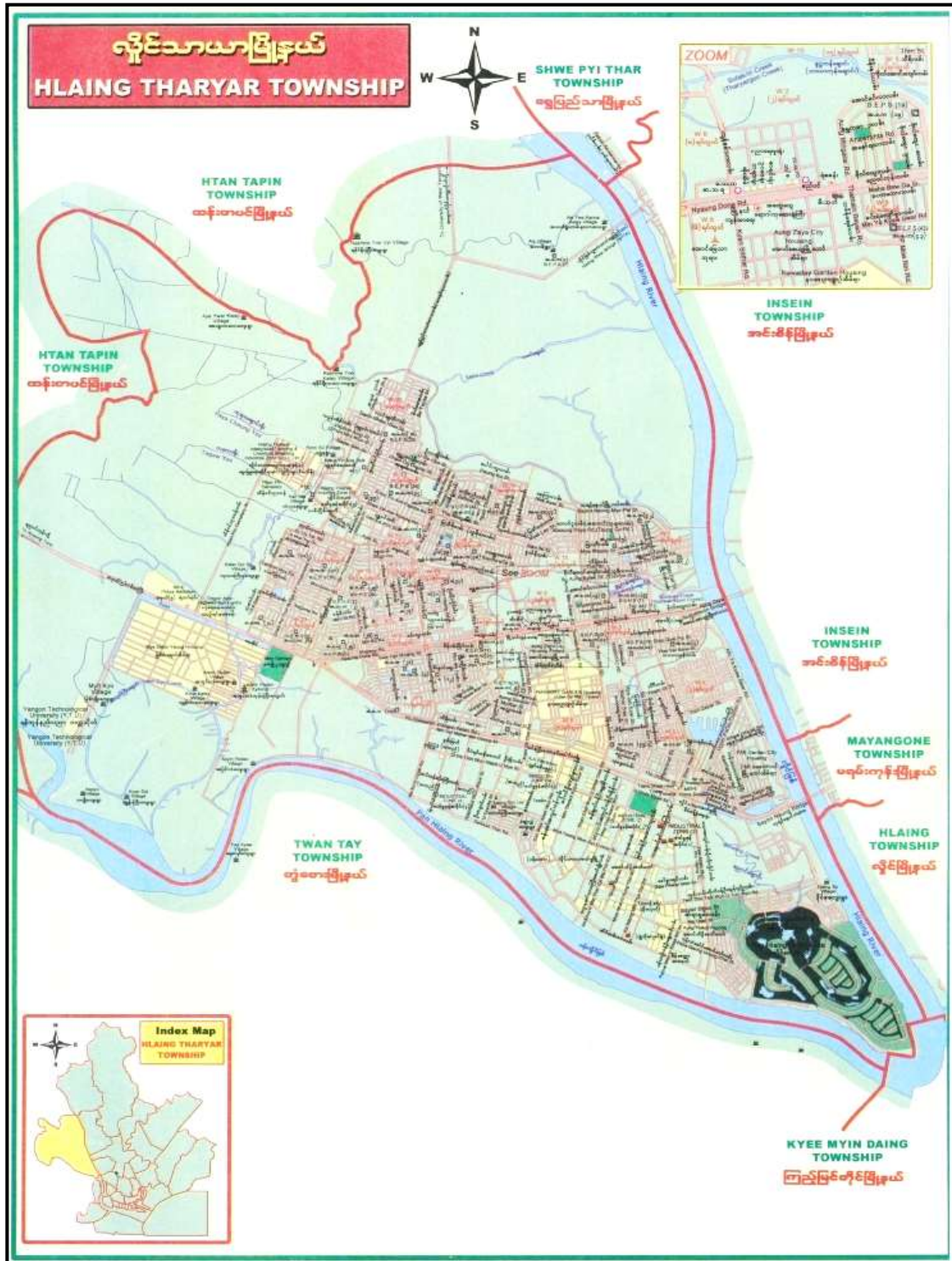


Figure 3.3 Location of Hlaing Thar Yar Township

3.5 Site Boundaries and Access Road

It is bounded by:

Rice Mill (Shwe La Won Co., Ltd)	East direction
Ka Naung Min Thar Gyi Street	West direction
Garment Factory (Myanmar Yoo Ho CO., Ltd)	South direction
Wet Ma Sut Wun Htauk Street	North direction



Figure 3.4 Site Boundaries and Access Road of the Project

As the chosen site is located on Ka Naung Min Thar Gyi Street, Shwe Lin Pan Industrial Zone, Hlaing Thar Yar Township, it can be reached from the Tha Mine junction by driving via Insein Road. At this junction turn left from Insein Road onto Tha Mine Train Station Road and continue onto Bayint Naung Bridge 2. Then continue onto Yangon- Pathein Road, turn right toward Ka Naung Min Thar Gyi Road, continue onto Ka Naung Min Thar Gyi Street, the project site is on the right hand side of the Ka Naung Min Thar Gyi Street. The site boundaries and access road of the project site are described in Figure 3.4.

3.6 Administrative Offices

- Order processing and preparing invoices
- Conducting marketing and sales
- Managing human resources

The administrative offices associated facility are typically proportional to the size of the manufacturing operation (i.e. Larger factories require more administrative support). Administrative staff manages corporate functions such as human resources, finance and accounting, billing, health and safety, and environmental compliance. Offices are equipped with basic technologies and amenities, such as computers, printers, filing equipment, desk space, and meeting rooms.

3.6.1 Infrastructure

The project site consists of four buildings:

5. Factory Building (155 ft. x 180 ft.),
6. Boiler Building (66 ft. x 72.5 ft.),
7. Houses for Employee (95 ft. x 25 ft.) and
8. Canteen (53 ft. x 23 ft.).

The layout and photos of existing buildings and infrastructures including raw materials storage area, production area, utility area, office area, greenbelt area, parking area and internal roads etc. are shown in Figures 3.5 to 3.9.

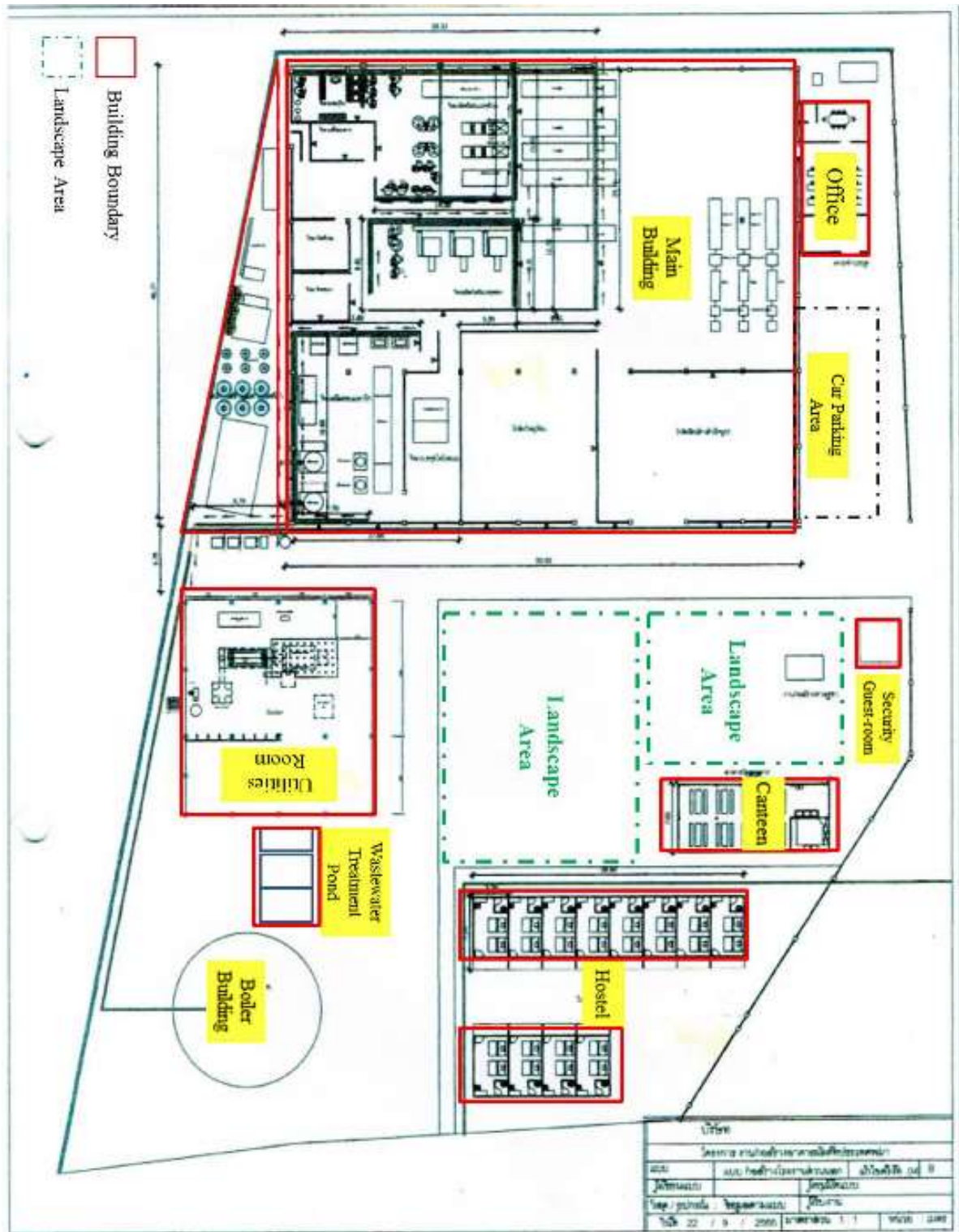


Figure 3.5 Factory Layout Plan

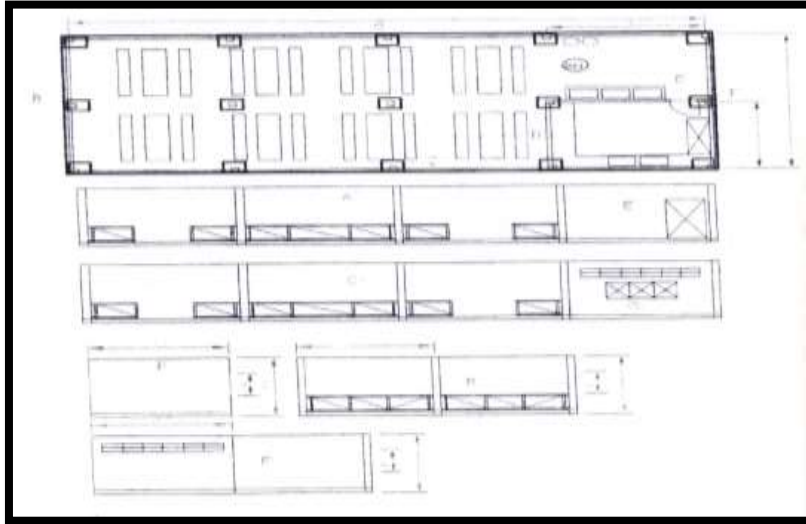


Figure 3.6 Canteen

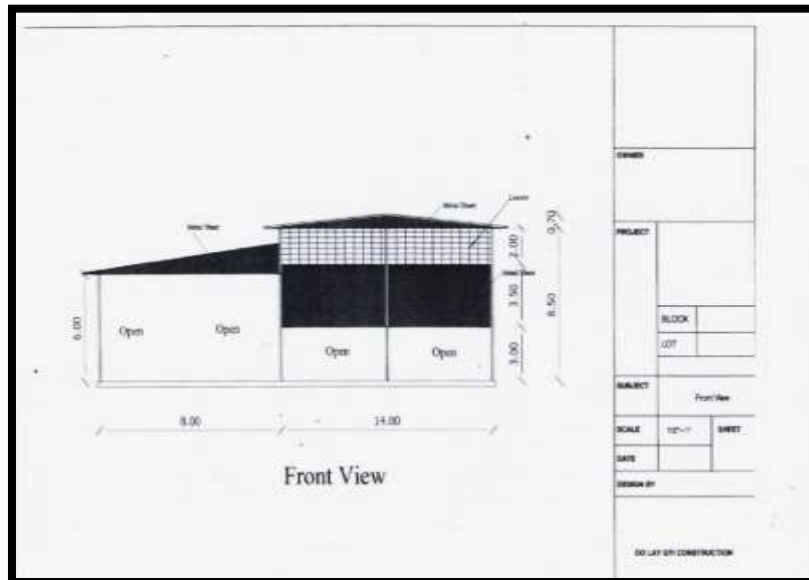
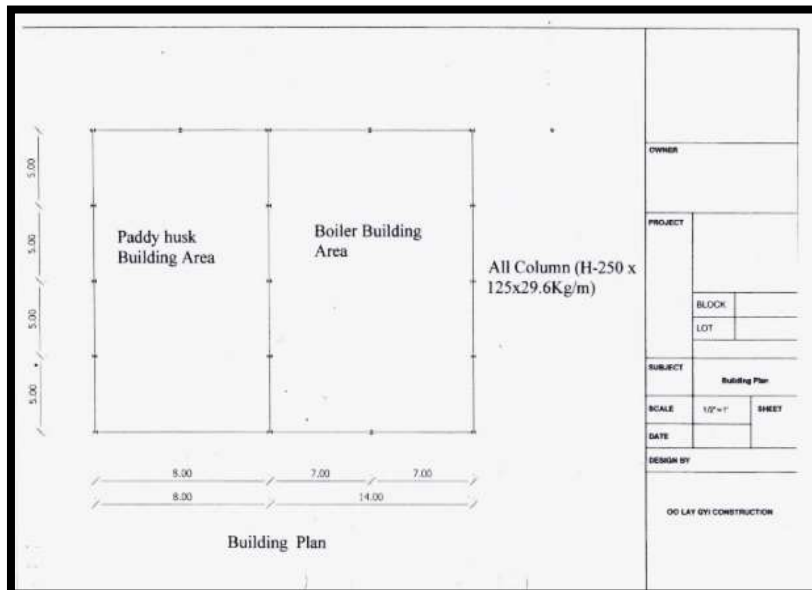


Figure 3.7 Boiler Room

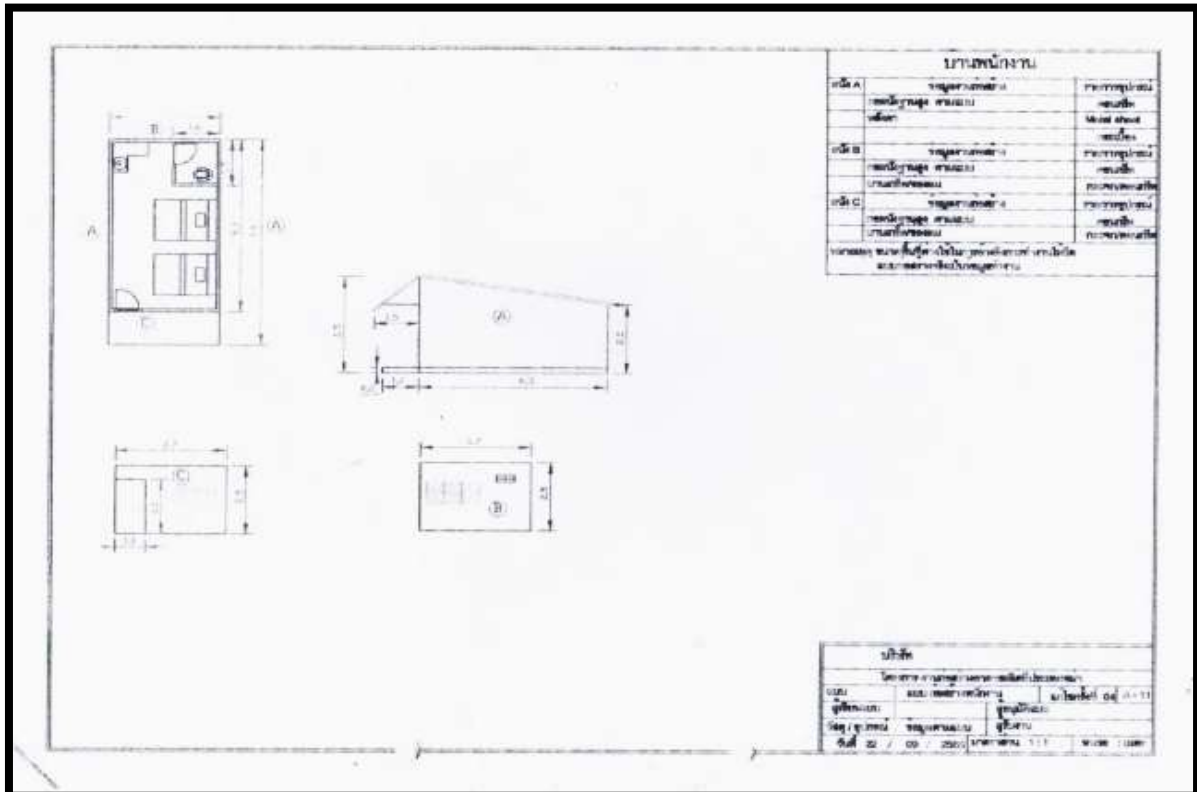


Figure 3.8 Employee Housing



Main Entrance Gate



Security Guest-room



Main Building



Boiler Building



Hostel



Canteen

Figure 3.9 Photos of Factory Buildings

3.7 Product Profile

The proposed investment business is the operation of the business involving the manufacturing and distribution of various types of jellies. More specifically, the proposed investment will involve the manufacturing and distribution of the following products:

- (5) Hero Jelly Cup
- (6) Hero Plus Jelly
- (7) Daiyamoto Light Kit Jelly Cup
- (8) Daiyamoto Big Cup Jelly

The specification of product is shown in the following table.

Table 3.3 List of Product

No.	Particular	Weight (g)
1	Hero Jelly Cup	20
2	Hero Plus Jelly	120
3	Daiya Moto Light Kit Jelly Cup	55
4	Daiya Moto Big Cup Jelly	130





Figure 3.10 Photos of Product Samples

3.8 Production Capacity

The proposed project is to produce various types of jellies. For each type of jelly products, 90 % of total production capacity will be sold at local market and the remaining 10 % will be exported to foreign countries. The proposed production capacity for local and export are listed in Table 2.3 and 2.4. The production capacity is based on one shift a day and 26 working days per month. The sale prices for local and export are shown in Table 2.5.

Table 3.4 Annual Production Capacities of Various Types of Jellies (Local Sale)

No.	Product Name	Packing Per Carton	Estimate Annual Production Capacity (Carton)				
			Year				
			1	2	3	4	5-30
1	Hero Jelly Cup	20 g x 35 cups x 12 bags	216,000	368,280	432,000	432,000	475,200
2	Hero Plus Jelly	120 g x 6 bags x 16 packs	40,500	129,600	162,000	162,000	178,200
3	Daiyamato Light Kit Jelly Cup	55 g x 15 cups x 12 packs	90,000	172,800	216,000	216,000	237,600
4	Daiyamato Big Cup Jelly	130 g x 6 cups x 12 packs	27,000	259,200	324,000	324,000	356,400
Total Production Capacity			373,500	929,880	1,134,000	1,134,000	1,247,400

Table 3.5 Annual Production Capacities of Various Types of Jellies (Export Sale)

No.	Product Name	Packing Per Carton	Estimate Annual Production Capacity (Carton)				
			Year				
			1	2	3	4	5-30
1	Hero Jelly Cup	20 g x 35 cups x 12 bags	24,000	45,320	48,000	48,000	52,800
2	Hero Plus Jelly	120 g x 6 bags x 16 packs	4,500	18,000	18,000	18,000	19,800
3	Daiyamoto Light Kit Jelly Cup	55 g x 15 cups x 12 packs	10,000	24,000	24,000	24,000	26,400
4	Daiyamoto Big Cup Jelly	130 g x 6 cups x 12 packs	3,000	16,000	36,000	36,000	39,600
Total Production Capacity			41,500	103,320	126,000	126,000	138,600

Thai Faster Products and M.K Co., Ltd. will distribute to Thailand (Export Sale) for various types of Jellies by M.K Trading (logistic).

Table 3.6 Sale Prices of Various Types of Jellies for Local and Export

No.	Product Name	Packing Per Carton	Sale Prices (US\$ / Carton)				
			Year				
			1	2	3	4	5-30
1	Hero Jelly Cup	20 g x 35 cups x 12 bags	10.00	10.00	10.00	10.00	10.00
2	Hero Plus Jelly	120 g x 6 bags x 16 packs	14.15	14.15	14.15	14.15	14.15
3	Daiyamoto Light Kit Jelly Cup	55 g x 15 cups x 12 packs	13.27	13.27	13.27	13.27	13.27
4	Daiyamoto Big Cup Jelly	130 g x 6 cups x 12 packs	10.61	10.61	10.61	10.61	10.61

3.9 Raw Materials

The ingredients/raw materials for jelly production are sugar, fructose syrup, carrageenan powder, locustbeen gum, konjakku flour, artificial flavor and artificial color. Thai Faster Products and M.K. Company Limited have a plan to purchase sugar and paper cardboard (carton) from local market and other raw materials are imported from abroad.

Required amounts of raw materials to be imported and to be purchased from local market are shown in Table 3.7 and 3.8 respectively. The raw material storage condition is shown in Figure 3.11 and the Safety Data Sheet of raw materials is shown in Appendix (29).

Table 3.7 Annual Requirements of Raw Materials

No.	Particulars	Unit	Quantity					Imported
			Year 1	Year 2	Year 3	Year 4	Year 5-30	
1	Carrageenan Powder	Kg	11,085	28,406.8	34,740	34,740	38,214	Thailand
2	Locust bean Gum	Kg	11,830	30,148.8	36,840	36,840	40,524	Thailand
3	Konjac Gum	Kg	4,984	12,706.96	15,528	15,528	17,080.8	Thailand
4	Artificial Flavor	Kg	3,856	9,965.44	12,192	12,192	13,411.2	Thailand
5	Artificial Color	Kg	1,114.5	2,895.72	3,546	3,546	3,900.6	Thailand
6	PP Cup							
	- Hero Jelly Cup	cup	100,800,000	173,712,000	201,600,000	201,600,000	221,760,000	local
	- Daiyamoto Light Kit Jelly Cup	cup	18,000,000	35,424,000	43,200,000	43,200,000	47,520,000	
	- Daiyamot Big Cup Jelly	cup	2,160,000	19,814,400	25,920,000	25,920,000	28,512,000	
7	Plastic Bag							
	- Hero Jelly Cup	bag	2,880,000	4,963,200	5,760,000	5,760,000	6,336,000	local
	- Hero Plus Jelly	bag	4,320,000	14,169,600	17,280,000	17,280,000	19,008,000	
8	Plastic Film							
	- Hero Jelly Cup	pcs	100,800,000	173,712,000	201,600,000	201,600,000	221,760,000	Thailand
	- Daiyamoto Light Kit Jelly Cup	pcs	18,000,000	35,424,000	43,200,000	43,200,000	47,520,000	
	- Daiyamoto Big Cup Jelly	pcs	2,160,000	19,814,400	25,920,000	25,920,000	28,512,000	
9	Paper Inner Box							
	- Daiyamoto Light Kit Jelly Cup	box	1,200,000	2,361,600	2,880,000	2,880,000	3,168,000	local
	- Daiyamoto Big Cup Jelly	box	360,000	3,302,400	4,320,000	4,320,000	4,752,000	
10	Plastic Tape	pcs	415,000	1,033,200	1,260,000	1,260,000	1,386,000	local

Table 3.8 Annual Requirements of Raw Materials (Purchased from Local)

No	Particulars	Unit	Quantity					Imported
			Year 1	Year 2	Year 3	Year 4	Year 5-30	
1	Pure refined Sugar	Kg	485,800	1,239,408	1,514,400	1,514,400	1,665,840	local
2	Paper Cardboard (carton)							local
	- Hero Jelly Cup	ctn	240,000	413,600	480,000	480,000	528,000	
	- Hero Plus Jelly	ctn	45,000	147,600	180,000	180,000	198,000	
	- Daiyamoto Light Kit Jelly Cup	ctn	100,000	196,800	240,000	240,000	264,000	
	- Daiyamoto Big Cup Jelly	ctn	30,000	275,200	360,000	360,000	396,000	

Figure 3.11 Raw Materials Storage condition



<p>Konjac Gum</p>	<p>Hero Jelly, Daiyamoto Light Kit Jelly, , Daiyamot Big Jelly (PP Cup)</p>
	
<p>Hero Jelly Cup- Hero Plus Jelly (Plastic Bag)</p>	<p>Hero Jelly Cup, Daiyamoto Light Kit Jelly Cup, Daiyamoto Big Cup Jelly(Plastic Film)</p>
	

<p>Daiyamoto Light Kit Jelly Cup, Daiyamoto Big Cup Jelly (Paper Inner Box)</p>  	<p>Pure refined Sugar</p> 
<p>Plastic Tape</p> 	<p>Paper Cardboard box</p> 

Table 3.9 Food grade Chemical Lists and storage condition

Items	Storage state	Production for Hero Boys 30 Bath and Daiya 21 Bath jellies			Logistic	Imported
		Day (Kg)	Month (Kg)	Yearly (Kg)		
Tripotassium Citrate (P-PCT)	Bag	2.714	81.410	976.92	M.K Trading logistic	Thailand
Maltodextrin	Bag	8.832	264.960	3,179.52		Thailand
Citric Acid Monohydrate	Bag	3	90	1,080		Thailand
Grap Flavor Symrise (F-GRS)	Bin	0.83	2.478	29.74		Thailand
Orange Flavor(Symrise) (F-ORS)		0.022	0.662	7.95		Thailand
Lychee Flavor (VM) (F-LCV)		0.029	0.875	10.50		Thailand
Grap Flavor(MV/GRV/) (F-GRM)	Bin	0.067	2.016	24.19		Thailand
Grape Flavor(Sensient) (F-GRV)		0.198	5.950	71.40		Thailand
Stawberry Flavor TFF (F-STT)		0.060	1.800	21.60		Thailand
Orange Flavor (Thai Inter) (F-ORT)	Bin	0.227	6.806	81.67		Thailand
Salacider Flavor (Firmenich) (F-SLF)		0.218	6.528	78.34		Thailand
Pineapple Falvor (Thai Inter) (F-PAT)		0.110	3.311	39.74		Thailand
Aspartame Powder (P-APT)	Carton	0.226	6.775	81.30		Thailand
Acesul FAME-K (P-ACEF)		0.236	7.085	85.02		Thailand
Sunset Yellow FCF (P-SSY)	Pouch	0.250	7.500	90.00		Thailand
Dark Red Carmoisine (P-CMI)	Pouch	0.079	2.356	28.27	Thailand	
Tartrazine (P-TTZ)	Pouch	0.050	1.500	18.00	Local	
Probenz SG Sodium Benzoate (P-BZA)	Bag	0.916	27.492	329.90	Local	

Figure 3.12 Food Grade Chemical Storage condition

Tri-potassium Citrate (P-PCT)



Maltodextrin







Citric-acid monohydrate









Grap Flavor Symrise (F-GRS)



Orange Flavor(Symrise) (F-ORS)	Lychee Flavor (VM) (F-LCV)
	
Grap Flavor(MV/GRV/) (F-GRM)	Grape Flavor (Sensient) (F-GRV)
	

Strawberry Flavor TFF (F-STT)	Orange Flavor(Thai Inter) (F-ORT)
	
Salacider Flavor (Firmenich) (F-SLF)	Pineapple Falvor (Thai Inter) (F-PAT)
	

Aspartame Powder (P-APT)	Acesul FAME-K (P-ACEF)
	
Sunset Yellow FCF (P-SSY)	Dark Red Carmoisine (P-CMI)
 	 

Tartrazine(P-TTZ)	Probenz SG Sodium Benzoate (P-BZA)
	

3.10 Machinery and Equipment

Thai Faster Products and M.K. Company Limited have a plan to purchase all machineries and equipment required for the production of various types of jellies from the local market.

The total cost of machineries and equipment is estimated to be 1,569,239.18 USD. Some of the machineries and equipment are listed in Table 3.10.

Table 3.10 List of Machinery and Equipment

No.	Item	Unit Price (USD)	Quantity
1	Sealing Machine	2,421.88	2
2	Centrifugal Pump 2 Hp	694.27	2
3	Mixing Tank 500 liter	7,164.22	2
4	Mixing Tank 1000 liter	7,092.58	4
5	Mixing Tank 250 liter	4,477.64	11
6	Air Compressor 50 Hp	10,452.43	1
7	Cooling Machine	29,033.00	3
8	Filling and Sealing Machine 16 Cups.	105,179.82	1
9	Filling and Sealing Machine 20 Cups.	142,209.88	1
10	Filling and Sealing Machine 40 Cups.	254,419.60	1
11	Pouch Type Automatic Filling	27,432.29	3
12	The Drop Bed	4,793.18	3
13	Generator 100 kVA	15,132.77	1
14	Digital Scales 150 kg	1,217.14	5
15	Main Direct Board (DBM)	17,116.02	1
16	Water Filter System Reverse Osmosis	12,171.39	1
17	Water System	78,679.92	1
18	Electric System	33,269.01	1
19	Steam Machine	129,272.74	1
20	Boiler (husk) 3 Tons	52,203.22	1
21	Boiler 100 Hp	117,905.80	1
22	Cooling Tower Model: BKC-S-150RT	7,809.94	1
23	Polyethylene Insulation Panels Complete with Accessories	74,380.40	1
24	“KOHLER” Generators KV 550 C2 II VOLVO TAD 1641 GE	67,907.29	1
25	Oil Automatic Voltage Stabilizer (A.V.S)	21,354.17	1

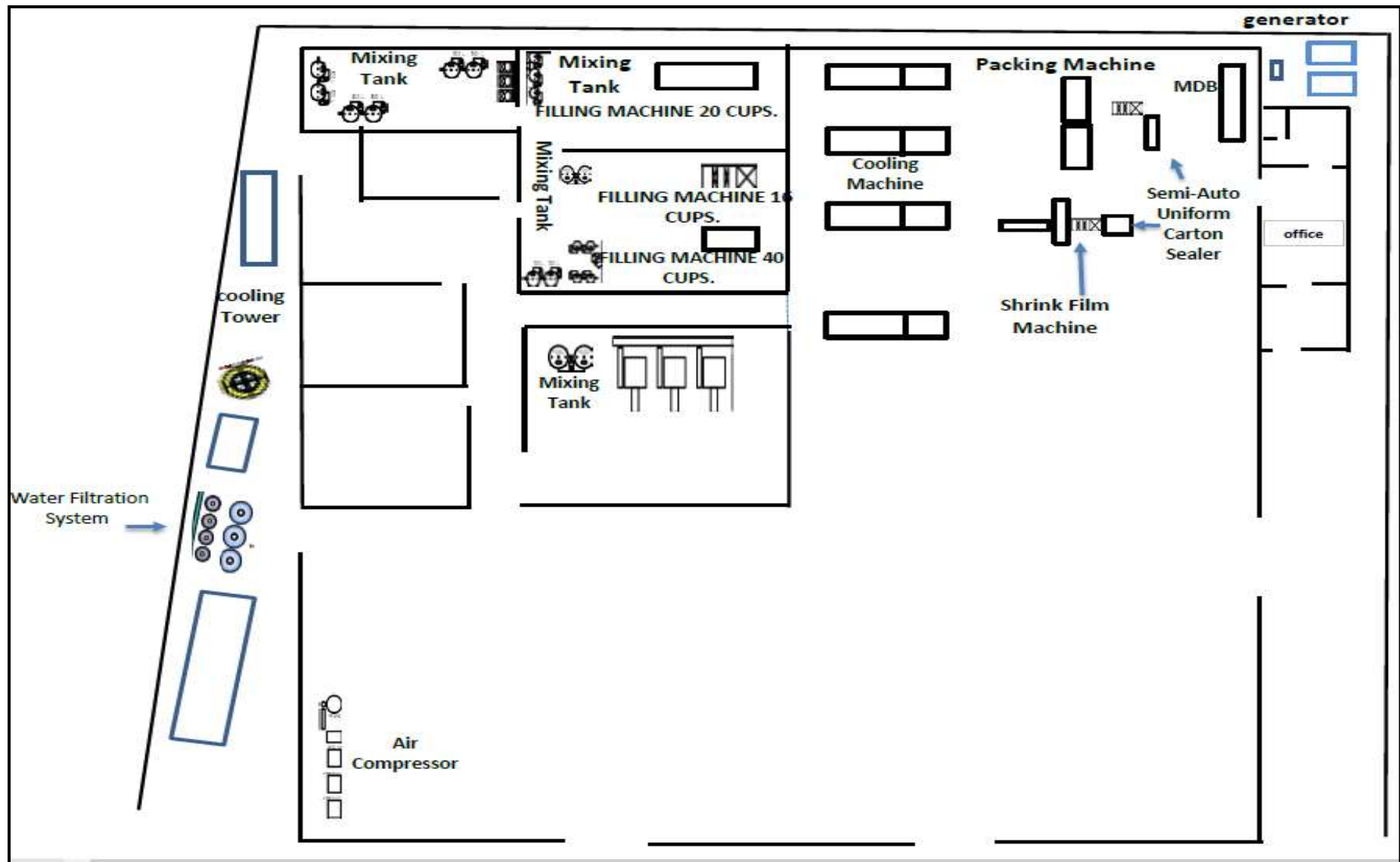


Figure 3.13 Machine Layout



Mixing Tank



Filling and Sealing Machine



Cooling Machine



Digital Scales

Figure 3.14 Production Machinery for HERY BOYS



Mixing Tank



Filling and Sealing Machine



Cooling Machine



Sealing the paper box

Figure 3.15 Production Machinery for DIAYA MOTO

3.11 Power Supply and Power Generation

The main source of energy that will be required for the project is electricity and other sources are diesel fuel and paddy husk.

3.11.1 Transformer

Electricity is used for production process and provision of light. Electricity is obtained from electricity supply and there is one unit of transformer (315 kVA) at the factory. It is described see the Figure 3.13. The detailed resource requirement for the project is shown in the following table 3.9.

Table 3.11 Annual Resource Requirements

Particulars	Source	Unit	Year 1	Year 2	Year 3	Year 4	Year 5-30
Electricity	National Grid	kWh	912,000	920,000	930,000	940,000	950,000



Figure 3.16 Transformer

3.11.2 Generator

Diesel is utilized in two units of generators (75 kVA & 500 kVA) at the factory. Diesel fuel is procured from Public Sector Oil companies. Fuel is used for the generator, cars and delivery trucks. It is stored in over ground with barrels and described the following figure 3.17. The detailed annual requirement for Diesel consumption is shown in the following table 3.12.

Table 3.12 Annual Requirement for Diesel consumption

Particulars	Source	Unit	Year 1	Year 2	Year 3	Year 4	Year 5-30
Diesel	Generator	Gallon	15,850	17,000	19,000	21,000	22,000



Figure 3.17 Generators and Diesel Storage

3.11.3 Boiler

On-site boiler (6 bar) generates steam to support heating operations at the factory. Rice Husk is used for the boiler and it is stored with traditional bag and storage room at the factory. It is described to the following Figure 3-18. The detailed annual requirement for Paddy Husk consumption is shown in the following table 3.13.

Table 3.13 Annual requirements for Paddy Husk consumption

Particulars	Source	Unit	Year 1	Year 2	Year 3	Year 4	Year 5-30
Paddy Husk	Boiler	Ton	842.40	1,684.80	2,527.20	2,527.20	2,527.20



Figure 3-18 Boiler and Rice Husk Storage

3.12 Water Consumption

There have (2 inches) width and depth is 42 feet for tube well. Thai Faster Products and M.K. Company Limited have installed water treatment system to purify ground water (tube well water) and it is shown in Figure 3.19. Ground water is treated by clarification, filtration and ion exchange method and flow diagram of water treatment process is shown in Figure 3.20. Purified water is used for process water, boiler feed water and other purposes and water consumption plan is shown in the following table 3.14.

Table 3.14 Water consumption

No.	Description	Amount (Daily)
1	Process	10,400 gallon
2	Boiler	1,200 gallon
3	General Domestic	400 gallon



Figure 3.19 Water Treatment System

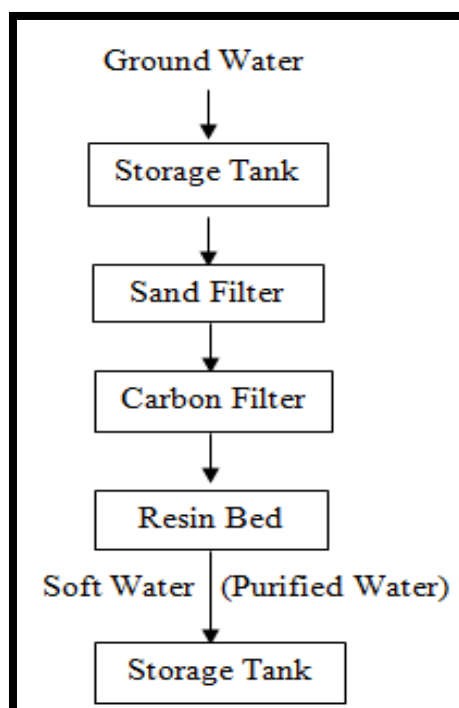


Figure 3.20 Flow Diagram of Water Treatment Process

3.13 Processes and Operations Involved in the Manufacture

A jelly is a semisolid product prepared by boiling a clear solution of pectin containing fruit extract, after addition of sugar and acid. A perfect jelly should be transparent, well set, but not too stiff, and should have the original flavor of the fruit. It should be of attractive color and keep its shape.

Essential ingredients for jelly making are fruit flavor, pectin, sugar, acid, and water. Pectin is a substance necessary for gel formation. Acid is needed for flavor and gel formation. If there is too little acid, the product will not gel; if there is too much acid the gel will lose liquid and weep. Sugar helps in gel formation and serves as a preserving agent. It also contributes to the flavor and color of the jelly products. It must be present in the right proportion with acid and pectin in order to form the gel.

Jelly is formed when a suitable concentration of pectin, sugar, acid, and water is achieved. The brief description of the process for the manufacturing of jelly will be provided in the following section.

3.13.1 Manufacturing Process

Jelly (Hero Boys and Daiya Moto) manufacturing process can be divided into following steps:

1. Preparation of Raw Materials
2. Mixing
3. Filling
4. Cooling
5. Packaging

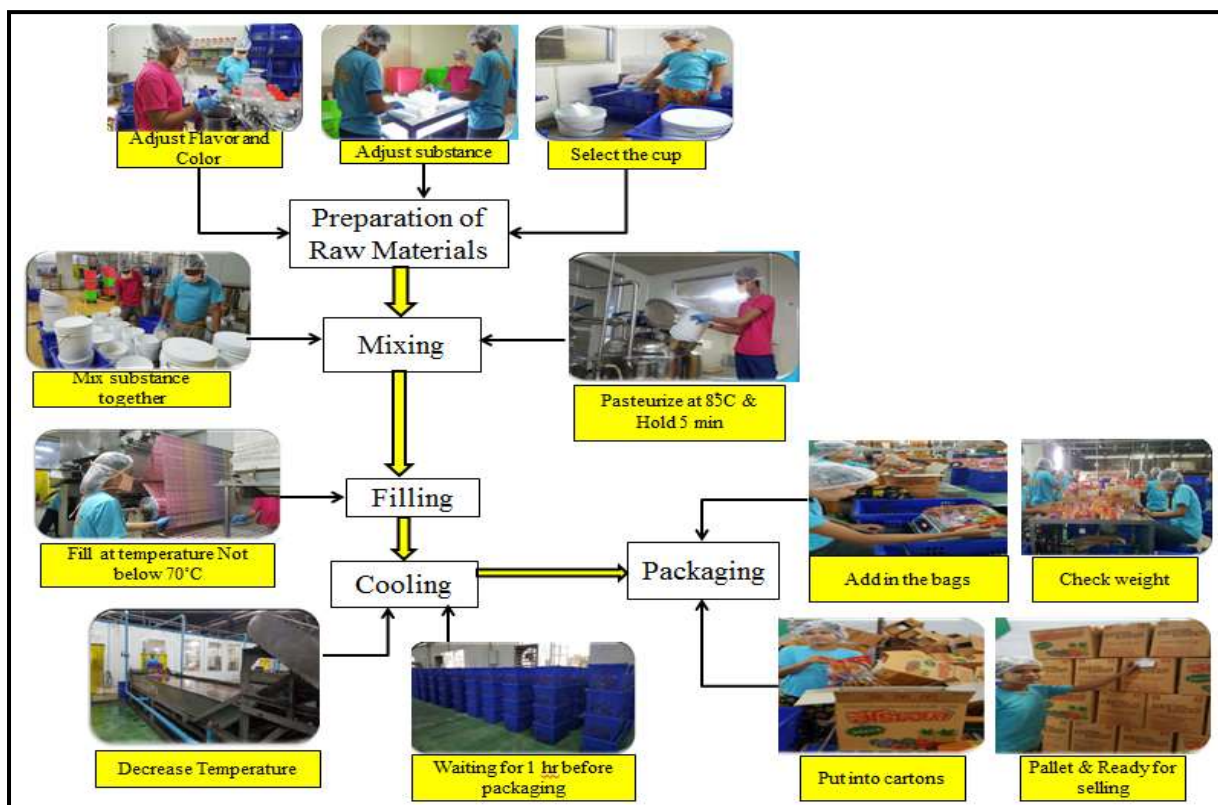


Figure 3.21 Process Flow Chart for Manufacturing of Hero Boys

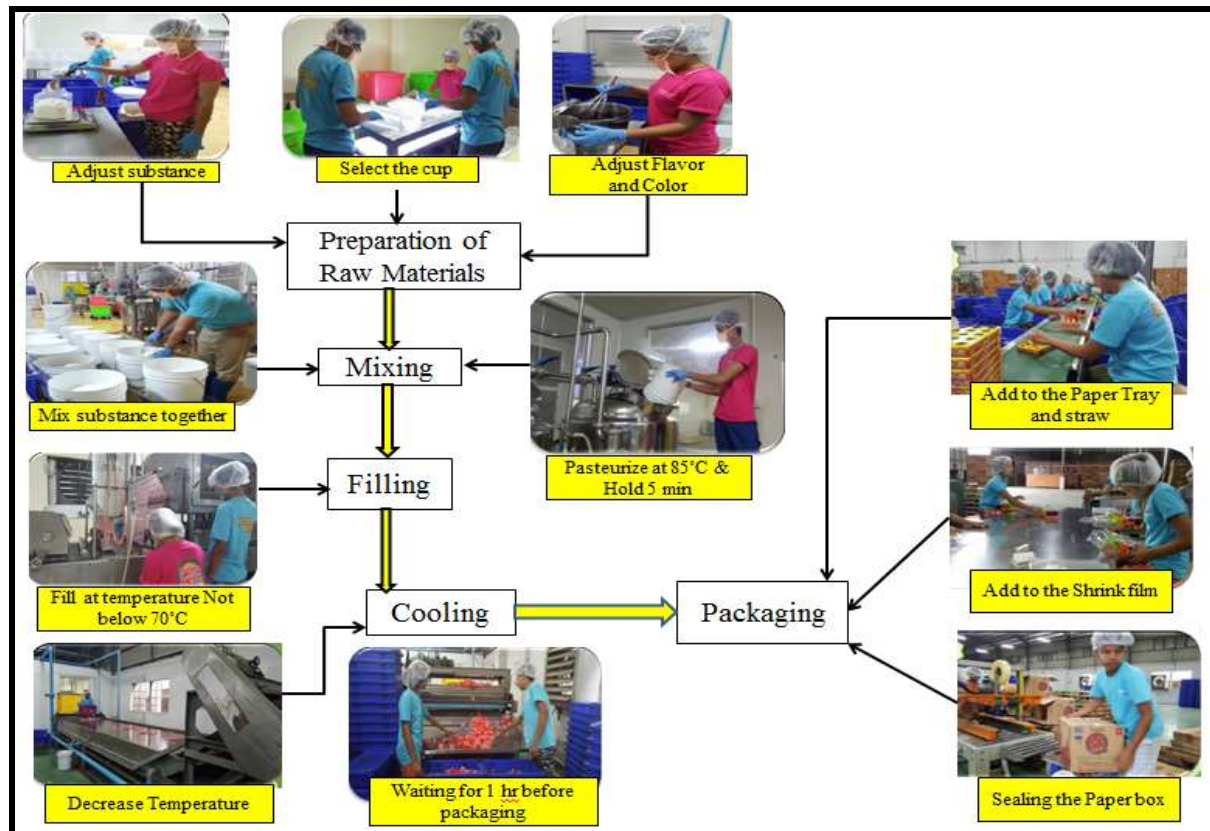


Figure 3.22 Process Flow Chart for Manufacturing of Daiya Moto

3.13.2 Quality Control and Inspection

Important quality factors for jelly products are color, flavor, texture, nutritive value, toxicity, contamination by foreign matter and growth of microorganisms after extended storage. Therefore food grade raw materials are used and they are analyzed by measuring the quality parameters such as viscosity, specific gravity and refractive index. Analysis Results of some raw materials are shown in Appendix (4).

Moreover final product quality is inspected by carrying the following activities and some analysis results are also shown in Appendix (5).

1. Weight checking
2. Flavor checking
3. Shelf life checking

In the packaging step, seal and label of each bag/pack are inspected and carton box must be dry, clean and have inspection seal. And then the Standard Mark must be clearly marked on the label of carton box and it consists of the following:

1. Manufacturer's name or trade mark
2. Number of bags/packs
3. Manufacturing date
4. Best before use date
5. Method for Handling
6. Bar code.

3.14 Employment Plan

Thai Faster Products and M.K. Company Limited have a plan to arrange the employment plan for the investment business as listed in the following table. But company has assigned initially only 68 persons of employment for the production of jelly products.

Table 3.15 Employment Plan

Type of Personnel	Department	No. of Persons				
		Year 1	Year 2	Year 3	Year 4	Year 5-30
Local Personnel Required						
Executive Level	Management	1	1	2	2	2
Expert Level	Production	3	3	3	3	3
Chief Officer	Quality Control	10	10	15	15	15
Secretary	Admin	4	4	6	6	6
Skill Employees	Production	20	25	30	30	30
Employees	Worker	150	250	300	300	300
Total		188	293	356	356	356
Foreign Experts and Technicians Personnel Required						
Executive Level	Management	3	2	1	1	1
Expert Level	Production	3	3	3	3	3
Chief Officer	Admin	2	2	2	2	2
Total		8	7	6	6	6

3.14.1 Working hour and days

Working hours for the production process are:

7:00 am to 4:00 pm (Monday to Friday) and

5:30 pm (overtime)

7:00 am to 11:00 am (Saturday).

Sunday is the holiday.

Annual Working day: 300 day/yr

Thai Faster Products and M.K. Company Limited provide proper leave scheme, over-time allowance and yearly bonus which shall be satisfactory for the workers. Moreover, there will provide First Aid and Health Care Program to the workers and staff are arranged.

3.15 Waste Generation

3.15.1 Wastewater Discharge and Treatment system

Wastewater Discharge

There is wastewater from the production and domestic wastewater will be discharged. Process waste water may be discharged from the floor washing, tanks washing and cooling process. Domestic wastewater from canteen, office and toilet flushing shall be collected in septic tanks for treatment. Storm water are discharged directly flow to the municipal drain. Wastewater discharging and Disposal Detail is described the following Table 3.16.

The gutters are secured with a filter to prevent the presence of solid particles in the effluent by the production process. Wastewaters from the production are

collected to the wastewater treatment pond and discharge to the municipal drainage sees the following Table 3.16.

Table 3.16 Wastewater discharging and Disposal Detail

No	Source	Amount (liter)			System
		Day	Month	Year	
1	Process wastewater	10,000	260,000	3,000,000	Waste water Treatment Plant
2	Domestic wastewater	200	5,200	60,000	

Wastewater Treatment System

The process wastewater will be treated with wastewater treatment plant (WWTP) that is installed in the factory. The process flow chart and wastewater treatment pond is as shown in the following Figure 3.23.

- Tank (1) storage = 31,500 liter
- Tank (2) storage = 49,500 liter
- Tank (3) storage = 21,000 liter

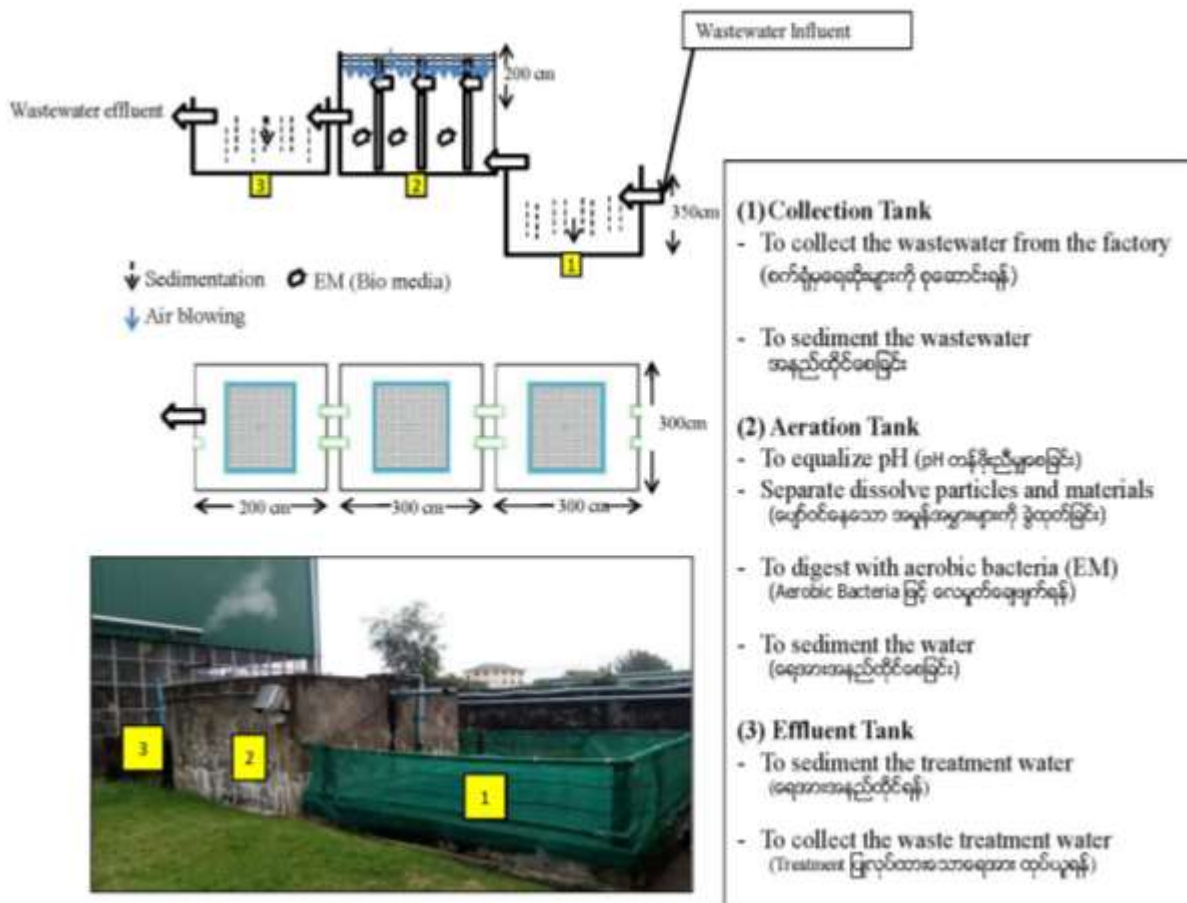


Figure 3.23 Waste water Treatment Plant

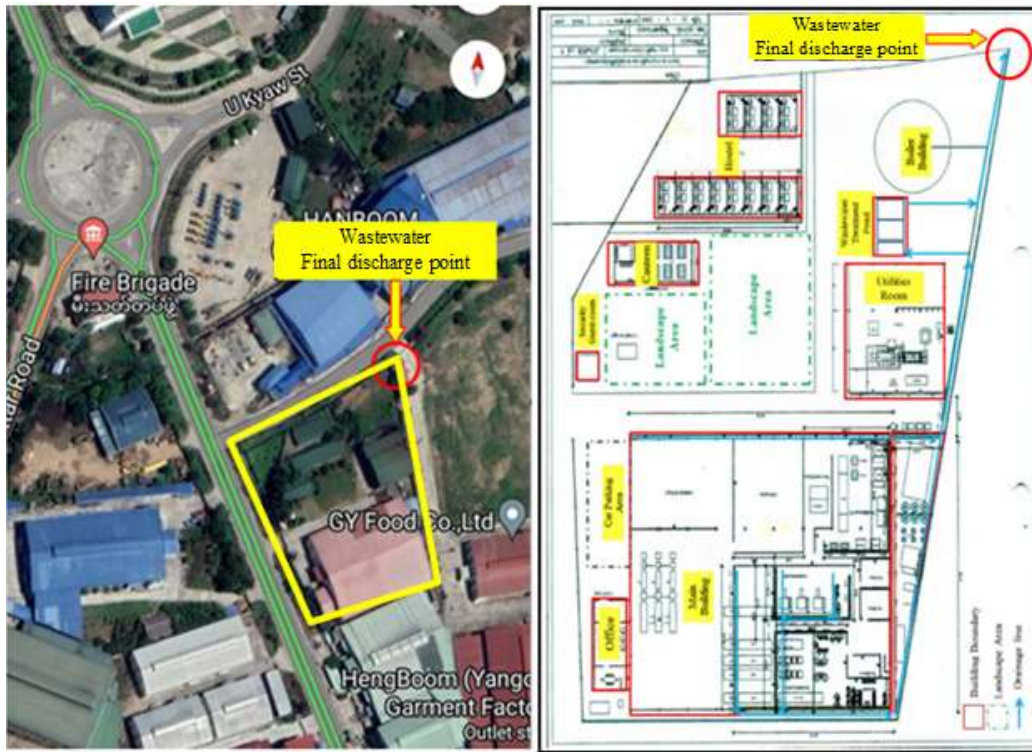


Figure 3.24 Water Final Discharge point of Thai Faster Products and M.K Co., Ltd



Figure 3.25 Photos of Drainage system



Figure 3.26 Sewage systems

3.15.2 Solid wastes Storage and Disposal System

In production of daiyamoto and hero boys, the wastes are plastic bags, paper bags, boxes of plastic cups and raw materials. During the closing process, there will be waste in the plastic film after cutting the film. The waste paper box is damaged during the pack.

There has a waste disposal method such as paper and plastic wastes that can be recycled or selling to the local vendor by the Thai Faster Products and M.K Company Limited. Other wastes will dispose to the YCDC waste dump by the company.

The Solid wastes from the packaging materials such paper box, wooden pallets, plastics and rice husk ash are separately storage at the factory. There is described in the following Figure 3.27. The solid wastes were separately collected and storage at the factory and then dispose to the Yangon City Development Committee by the Thai Faster Products and M.K Company Limited. There has disposed any solid wastes to local vendor by the factory see the Figure 3.28.

Table 3.17 Solid waste disposal system

No	Source	Type of Waste	Quantity			Disposal System
			Day	Month	Year	
Non-Hazardous waste						
1	Kitchen and Hostel	Other general domestic solid wastes	1 kg	30 kg	300 kg	Yangon City Development Committee
2	Administrative & office	Paper and general domestic solid wastes	0.5 kg	15 kg	150 kg	
3	Processing step	carton boxes, broken wooden pallets	10 kg	60 kg	600 kg	Soldering to local vendor
4	Paddy husk Boiler	Rise husk ash	30 Bag (90 kg)	900 bag	10800 bag	
5	Waste water Treatment pond	sludge	0.01 kg	0.3 kg	3.6 kg	Landfilling
Hazardous waste						
6	Administrative	e-wastes and used ink container	0.01 kg	0.3 kg	3.6 kg	Yangon City Development Committee
7	Processing Utilities	Used lubricant & Grease	0.07 lit	2.1 lit	25.2 lit	YCDC/ Local authorized organization
8	Raw materials	Used bags, Pouch, Plastic cup	1 kg	30 kg	360 kg	



Figure 3.27 Solid waste collecting



Figure 3.28 Solid waste Disposal system

3.16 Fire Fighting System

The Thai Faster Products and M.K Co., Ltd has planned, designed and constructed with fixed firefighting installations systematically at the factory. The fire extinguishers, hose reels and hydrants, water storage tank for firefighting were installed in every accessible place see the following Table 3.18, Figure 3.29 and 3.30.

Table 3.18 List of Firefighting Equipment

No	Equipment	Quantity (nos.)
1	Fire Extinguisher (20 kg)	25
2	Auto Sprinkler Pump	2
3	Fire Hydrant	2
4	Fire Alarm	2
5	Emergency Exist	3
6	Fire Hose	2
7	firefighting water storage tank = 44660 liter L×W×D = (4.4× 2.9× 3.5) meter	1



Figure 3.29 Fire Extinguisher and firefighting Equipment
(Thai Faster Products and M.K Co., Ltd)



Figure 3.30 Water storage tank for Firefighting



Figure 3.31 Firefighting Training

3.17 Other Facilities

In order that the employees may enjoy proper welfare commensurate with that of a prestigious Company, the company has set up a plan, as stated below, for employees as employees' welfare plan.

3.17.1 Self- cleanliness

- (f) To teach the laborers how to keep self-cleanliness: washing hands with soap before and after having meals and after using the toilet.
- (g) To train them to wear clean uniforms, gloves, masks and caps.
- (h) There will be a clean and ventilated room for canteen with enough tables and benches, clean drinking water and soap for washing hands
- (i) The toilet will be provided with soap, enough water and deodorants. If necessary, some kind of antiseptic liquid will be sprayed.
- (j) Provide Purified drinking water to the employees.



Toilets



Uniform



Drinking water



Canteen

Figure 3.32 Facilities for Employees

3.17.2 Medical Care

The medicine box of the factory of Thai Faster Products and M.K Company Limited, it is the basic medicine that employees need when they felt sick or have a little accident during the operation. The medicine is prepared as shown in the following table 3.15. If the employee is seriously ill or has a serious accident, there have to go to hospital by the factory.

- (e) Sometimes, there will be educational seminar on medical care.
- (f) There will be medical check-ups for some kinds of infectious diseases like tuberculosis.
- (g) If necessary, treatment with free of charges will be given.
- (h) The Company provides Covid-19 Vaccination for employees see the attached in Appendix (28).



Figure 3.33 First Aid Kit for Medical Facilities

Table 3.19 Medicine list and PPE list

Sr. No	Name	Sr. No	Name
1	Paracad	6	Leofoxidonc
2	Antacill	7	Alcohol (sprite)
3	Certirizine	8	Packtase
4	Dofenal	9	MaharPhaySae
5	Betex	10	AhbaHta
		11	HassPlast
PPE equipment lists			
No.	Equipment	Equipment	
1	Mask	Daily per person	
2	Head cover		
3	Hand glove		
4	Shoe boot		

3.17.3 Ways of Training

- (g) Our members will be trained to be honest, good and clever ones by using awarding and punishing system.
- (h) Those who work hard will be encouraged by suitable on-job training courses
- (i) There will be a promotion and demotion system depending on their skills.
- (j) They will be trained to have mutual respects among senior and junior laborers and supervisors.
- (k) They will be trained to understand the value of unity in every field.
- (l) There will be provided emergency response training to the workers.

3.18 Transportation Arrangement

The transportation arrangement for raw material, finished goods and ferry for worker is as shown in following table the factory will should be arrange the effective car parking for ferry bus. The ferries are stopped inside the factory estate. Therefore, traffic jam will not cause by the ferry car.



Figure 3.34 Photos of Ferry for employees

Table 3.20 Transportation Plan

No.	Type	Route	Road Safety Plan for Community and Environment
1	loading and unloading of Raw Materials and Products	(Logistic) M.K Trading	Speed Limit 60 – 80 to drive
2	Ferry car for the employees	Route- 1 (Factory to No.1 (Bus Stop)) Route – 2 (Factory to Alae Village)	Speed Limit 40 – 60 to drive

4.0 GOVERNING PARAMETERS AND SURROUNDING ENVIRONMENT

4.1 Regulatory Requirement

Project Proponent is responsible to prepare the standalone EMP in accordance with Article 8 or Article 24 of the EIA Procedure. The EMP report must be adequate with the format stated in Article 63 (h) of the EIA Procedure.

4.2 Myanmar Environmental Standards

Ministry of Natural Resources and Environmental Conservation - MONREC (former Ministry of Environmental Conservation and Forestry - MOECA) issued National Environmental Quality (Emission) Guidelines, NEQGs, on December 2015 according to the provision of Paragraph (42), Sub-paragraph (b) of the Environmental Conservation Law 2012.

The objective of the guidelines is to control noise and vibration, emissions and effluents in order to prevent the pollutions for the protection of human health and ecosystem.

Effluent parameters and quality standards issued by the Environmental Conservation Department for effluent levels is shown in Table 4.1. The environmental standard for air emission and noise level described in General Guidelines of the National Environmental Quality (Emission) Guidelines are stated in Tables 4.2 and 4.3 respectively.

The proponent must comply with these standards and implement the project EMP strictly and any additional requirements set out in the project Environmental Compliance Certificate (ECC) adopted by the Department. Air emissions, noise, odor, and liquid/ effluent discharges will be sampled and measured at points of compliance as specified in the project EMP and ECC.

Table 4.1 Effluent Level (General Guideline)

Item	Unit	National Environmental Quality (Emission) Guideline
5-day Biochemical Oxygen Demand	mg/l	50
Ammonia	mg/l	10
Arsenic	mg/l	0.1
Cadmium	mg/l	0.1
Chemical Oxygen Demand, (COD)	mg/l	250
Chlorine (total residual)	mg/l	0.2
Chromium (Hexavalent)	mg/l	0.1
Chromium (total)	mg/l	0.5
Copper, (Cu)	mg/l	0.5
Cyanide (free)	mg/l	0.1
Cyanide (total)	mg/l	1
Fluoride	mg/l	20
Heavy metals (total)	mg/l	10
Iron	mg/l	3.5
Lead	mg/l	0.1

Mercury	mg/l	0.01
Nickel	mg/l	0.5
Oil and grease	mg/l	10
pH		6-9
Phenols	mg/l	0.5
Selenium	mg/l	0.1
Silver	mg/l	0.5
Sulfide	mg/l	1
Temperature increase	°C	<3
Total coliform bacteria	100 ml	400
Total phosphorus	mg/l	2
Total suspended solids	mg/l	50
Zinc	mg/l	2

Table 4.2 Air Emission Levels (General Guideline)

Parameters	Average Period	Guideline Value, $\mu\text{g}/\text{m}^3$
Nitrogen dioxide, NO_2	1-year	40
	1-hour	200
Ozone, O_3	8-hour daily maximum	100
Particulate matter, $\text{PM}_{2.5}$	1-year	20
	24-hour	50
Particulate matter, PM_{10}	1-year	10
	24-hour	25
Sulfur dioxide, SO_2	24-hour	20
	10-minutes	500

Table 4.3 Noise Level (General Guidelines)

Receptor	One Hour L_{Aeq} , dB (A)	
	Day time	Night time
Industrial Commercial	70	70
Resident, Institutional, Educational	55	45
Day time	07:00-22:00 (10:00-22:00 for Public holidays)	
Night time	22:00-07:00 (22:00-10:00 for Public holidays)	

The Myanmar government has established National Environmental Quality (Emission) Guidelines (NEQGs) which include General Guidelines and Industrial Specific Guidelines. Only include the General Guideline for Food and Beverages but there is no specific guideline for Jellies factory.

4.3 International Standards and Guidelines

Table 4-4 Air Emission Levels (US-EPA Guideline)

Parameters	Unit	US-EPA Standards
Carbon monoxide, CO	ppm	35 ppm (1-hr)
Nitrogen dioxide, NO ₂	ppm	0.100 ppm (1-hr)
Sulfur dioxide, SO ₂	ppm	0.075 ppm (1-hr)
Particulate matter, PM _{2.5}	mg/m ³	35 µg/m ³ (24-hr)
Particulate matter, PM ₁₀	mg/m ³	150 µg/m ³ (24-hr)

Table 4.5 US-OHS Noise Exposure Limits for the Work Environment (Noise Exposures in dBA)

Noise (dBA)	Permissible Exposure Noise (hours and minutes)
85	16 hrs
87	12 hrs 6 min
90	8 hrs
93	5 hrs 18 min
96	3 hrs 30 min
99	2 hrs 18 min
102	1 hrs 30 min
105	1 hr
108	40 min
111	26 min
114	17 min
115	15 min
118	10 min
121	6.6 min
124	4 min
127	3 min
130	1 min

4.4 Environmental Profile of Jelly factory

TFPMK Jelly factory is located in Shwe Lin Pan Industrial Zone, Hlaing Tharyar Township, and Yangon Region. It is of prime importance to collect baseline data in order to identify the potential environmental issues to be managed through the operation phase. Information was gathered on the existing physical environment, particularly as related to climate, geology, water quality, air quality and noise. The secondary data collection is based on September 2020 General Administration Department of Hlaing Tharyar (Eastern) Township.

4.4.1 Secondary Data for the Surrounding Environment

Table 4.6 Environmental and Social Condition near the Project Area

Type	Description																																				
Natural Environment																																					
Meteorology	<ul style="list-style-type: none"> Hlaing Tharyar (Eastern) Township is located in the northern district of Yangon Region. The location of the township is between north latitude 16° 47' and 20° 12' and between east longitude 96° 12' and 100° 13'. It occupies an area of 13.96 square miles. 																																				
Topography	<ul style="list-style-type: none"> Insein Township is located in the eastern part of the Hlaing Tharyar (Eastern) Township, Hlaing Tharyar (West) Township from the West, Twantay township from the South and Shwe Pyi Thar township from the North of Hlaing Tharyar (East) Township are respectively. 																																				
Geographic	<ul style="list-style-type: none"> The topography of Hlaing Tharyar (East) Township is flat. 																																				
Hydrology	<ul style="list-style-type: none"> In Hlaing Tharyar (Eastern) Township, the Pan Hlaing River flows from west to east and merges into the Hlaing River which flows from north to south. Pan Hlaing River is shallow, 2015. In January, the river was re-excavated and boats can travel along the river. 																																				
Climate	<ul style="list-style-type: none"> The climate of the Hlaing Tharyar (Eastern) Township is a tropical monsoon climate. The highest temperature is 41°C and lowest temperature is 27°C. <table border="1"> <thead> <tr> <th rowspan="3">No.</th> <th rowspan="3">Year</th> <th colspan="2">Rainfall</th> <th colspan="2">Temperature</th> </tr> <tr> <th rowspan="2">Rainy Days</th> <th rowspan="2">Total Rainfall (inches)</th> <th>Summer (°C)</th> <th>Winter (°C)</th> </tr> <tr> <th>Highest</th> <th>Lowest</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>2017</td> <td>123</td> <td>132.05</td> <td>40</td> <td>27</td> </tr> <tr> <td>2</td> <td>2018</td> <td>105</td> <td>113.28</td> <td>41</td> <td>26</td> </tr> <tr> <td>3</td> <td>2019</td> <td>112</td> <td>102.01</td> <td>39</td> <td>26</td> </tr> <tr> <td>4</td> <td>2020</td> <td>101</td> <td>97.72</td> <td>40</td> <td>26</td> </tr> </tbody> </table>	No.	Year	Rainfall		Temperature		Rainy Days	Total Rainfall (inches)	Summer (°C)	Winter (°C)	Highest	Lowest	1	2017	123	132.05	40	27	2	2018	105	113.28	41	26	3	2019	112	102.01	39	26	4	2020	101	97.72	40	26
No.	Year			Rainfall		Temperature																															
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		Highest	Lowest																																		
1	2017	123	132.05	40	27																																
2	2018	105	113.28	41	26																																
3	2019	112	102.01	39	26																																
4	2020	101	97.72	40	26																																
Sea level	<ul style="list-style-type: none"> The sea level of Hlaing Tharyar (Eastern) Township is 100 feet. 																																				
Biodiversity																																					
Natural plants	<ul style="list-style-type: none"> The natural plants that grow naturally in Hlaing Tharyar (Eastern) Township are; the clover emerald tree vanda even kukko tree and boskai tree. 																																				
wild animal	<ul style="list-style-type: none"> There are no wild animals in the Hlaing Tharyar (Eastern) Township. 																																				
Natural	<ul style="list-style-type: none"> Hlaing Tharyar (Eastern) Township is located between Pan Hlaing 																																				

Environment	River and Hlaing Reiver, so the environment is lush and green.																																				
Natural Environmental conservation	<ul style="list-style-type: none"> To protect the environment, planting shady plants on the left/ right sides of highways every year. Raising awarens about not catching fish during fishing trips in lakes/ channels. The levant deparments, to educate and preach according to the industrial zones to ensure that waste discharges from the factories are organized. There is coopertaiton with NGOs. 																																				
Administrative	<ul style="list-style-type: none"> Hlaing Thayar (Eastern) Township is Ward (9) It is composed of (5) village groups and (9) villages. 																																				
Housing/ Population and Communities	<ul style="list-style-type: none"> As of the end of September 2020, Hlaing Thayar (Eastern) Township has 21,141 urban households, 7,152 village households, 29,056 urban households, and 12,630 village households. 																																				
Population by National Ethnic Group	<ul style="list-style-type: none"> The polulation by National Ethnic Group of Hlaing Thayar (Eastern) Township is the following table. <table border="1"> <thead> <tr> <th>Sr. No.</th> <th>Ethnicity</th> <th>No. of Persons</th> <th>Percentage (%)</th> </tr> </thead> <tbody> <tr> <td>1.</td> <td>Kachin</td> <td>101</td> <td>0.044</td> </tr> <tr> <td>2.</td> <td>Kayah</td> <td>8</td> <td>0.033</td> </tr> <tr> <td>3.</td> <td>Kayin</td> <td>2,638</td> <td>1.150</td> </tr> <tr> <td>4.</td> <td>Chin</td> <td>434</td> <td>0.18</td> </tr> <tr> <td>5.</td> <td>Mon</td> <td>448</td> <td>0.19</td> </tr> <tr> <td>6.</td> <td>Burmese</td> <td>216,986</td> <td>94.64</td> </tr> <tr> <td>7.</td> <td>Rakhine</td> <td>3,173</td> <td>1.37</td> </tr> <tr> <td>8.</td> <td>Shan</td> <td>322</td> <td>0.14</td> </tr> </tbody> </table>	Sr. No.	Ethnicity	No. of Persons	Percentage (%)	1.	Kachin	101	0.044	2.	Kayah	8	0.033	3.	Kayin	2,638	1.150	4.	Chin	434	0.18	5.	Mon	448	0.19	6.	Burmese	216,986	94.64	7.	Rakhine	3,173	1.37	8.	Shan	322	0.14
Sr. No.	Ethnicity	No. of Persons	Percentage (%)																																		
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6.	Burmese	216,986	94.64																																		
7.	Rakhine	3,173	1.37																																		
8.	Shan	322	0.14																																		
Religion	<ul style="list-style-type: none"> According to the religion of the people living in Hlaing Thayar (Eastern) Township, the population is Buddhist (220,859); Christianity (3,461); Hindi (3,781); Islamabad (1,163) respectively. 																																				
Population by Foreigner	<ul style="list-style-type: none"> The number of foreigners living in Hlaing Thayar (Eastern) Township is Chinese (964), which is (0.42%) of the township's population. There are Indians (804 people) and (0.35%) of the township's population; There are 111 Pakistanis, 0.05 of the township's population. There are 583 Bangladeshis (0.25%) of the village population. Others (2692) are 2.24% of the township population. 																																				
Socio-economic																																					
Economical	<ul style="list-style-type: none"> Hlaing Thayar (Eastern) Township is located in Yangon Region and is a township with slow economic development. The local people in the township have few employees and most of them work as factory workers. Livestock farming is owned and bred. The township is located on the Yangon-Pathein road and has good transportation. Although the township does not have any major products, there are exports from the Irrawaddy region. 																																				
Land Use	<ul style="list-style-type: none"> Land using of Hlaing Thayar (Eastern) Township is the follow table. <table border="1"> <thead> <tr> <th>No.</th> <th>Types of Land</th> <th>Area (acres)</th> </tr> </thead> <tbody> <tr> <td>1.</td> <td>Net Cultivation Area</td> <td></td> </tr> </tbody> </table>	No.	Types of Land	Area (acres)	1.	Net Cultivation Area																															
No.	Types of Land	Area (acres)																																			
1.	Net Cultivation Area																																				

	(vi) Paddy land	
	(vii) Farmland for crop	
	(viii) Cultivated Island	
	(ix) Orchard	
	(x) Hillside	
	2. Vacant Land Area	
	3. Industrial Land	3455.678
	4. Rural Land and Others	13191.552
	5. Reserved Forest and Protected Forest Area	-
	6. Wild forest	-
	7. Virgin Soil area	-
	8. Non-cultivated area	-
Industry	<p>As the industry of Hlaing Tharay (East Ping) Township</p> <ul style="list-style-type: none"> • Army garment factory (1). • 108 factories in Industrial Zone (1). • 132 factories in Industrial Zone (2). • 66 factories in 3 industrial zones • 123 factories in 4 industrial zones • 13 factories in 6 industrial zones • 43 factories in 7 industrial zones • 306 factories in Shwe Linping Zone <p>There are total of (92) privately owned domestic industries in the township.</p> <ul style="list-style-type: none"> • There are (22) cooperative societies and (1) cooperative societies in Hlaing Thayar (East Pyong) township. 	
Economic Infrastructure	<p>Commodity depot in Hlaing Tharay (Eastern) Township. There are no fairgrounds.</p> <ul style="list-style-type: none"> • There are 11 state-owned markets, 4 malls, 8 private banks and 1 government banks, 467 stores and shops and 3 drinking water industries. 	
Livelihood	<ul style="list-style-type: none"> • The number of people working in Hlaing Thayar (Eastern) Township is government employees (2887); service industry (185 people); Transactions (978 people); Industry (17,350 people); Random (3270 people) and other business (2645 people). 	
The number of working people and unemployed	<ul style="list-style-type: none"> • In Hlaing Thayar (Eastern) township, the number of working people (132698) and the number of unemployed (22709) is 14.6. 	
Educational	<ul style="list-style-type: none"> • High schools (8) in Hlaing Tharay (Eastern) Township. High school branch (5) schools; Primary school (14) Pre-primary school (4); There are 7 monastic education schools. 	
Health Information	<ul style="list-style-type: none"> • There are 2 (2) government hospitals in Hlaing Tharay (Eastern) Township. (2) private hospitals; Dispensary (113); and there are 4 (4) Rural Health Departments/Divisions. • The most common diseases in the region are diarrhea, tuberculosis stomach ache Liver disease. 	
Sports and	<ul style="list-style-type: none"> • Soccer field (2) in Hlaing Tharay (Eastern) Township. Volleyball 	

entertainment industry	court (2); Golf course (1); Cinema (1); Public Park (1).
Religious Information •	<ul style="list-style-type: none"> • As religious buildings in Hlaing Tharay (Eastern) Township, Pagoda (1); Monastery (46); Nunnery School (2); There is (1) temple. • A prominent god The pagodas are Aung Munthaya Pagoda, Shwe Rin Aye Pagoda.

Source- www.gad.gov.mm

4.4.2 Primary Data for the Surrounding Environment

4.4.2.1 Air Quality

The objective of the air-quality sampling program is to document baseline air quality conditions in the project area. Seven sampling points were selected in the project area. Field investigation was done by EMP team in March 2018 for baseline data of water quality, air quality and noise. These points are listed in Table 4.9 and shown in Figure 4.2.

Table 4.7 Air Quality Monitoring Points (AMP)

No	Location ID	Location	Coordinate
1	Location-1 (AMP-1)	Factory estate	16° 54' 35.66" N, 96° 04' 13.34" E
2	Location-2 (AMP-2)	Raw Material Storage Area	16° 54' 34.69" N, 96° 04' 13.45" E
3	Location-3 (AMP-3)	Adjust Substance Room	16° 54' 34.93" N, 96° 04' 13.56" E
4	Location-4 (AMP-4)	Adjust Flavor & Color Room	16° 54' 34.48" N, 96° 04' 14.71" E
5	Location-5 (AMP-5)	Mixing Room	16° 54' 34.63" N, 96° 04' 14.24" E
6	Location-6 (AMP-6)	Packing Area	16° 54' 33.92" N, 96° 04' 14.08" E
7	Location-7 (AMP-7)	Boiler Section	16° 54' 36.35" N, 96° 04' 14.24" E

Notte: AMP- Air Quality Monitoring Point



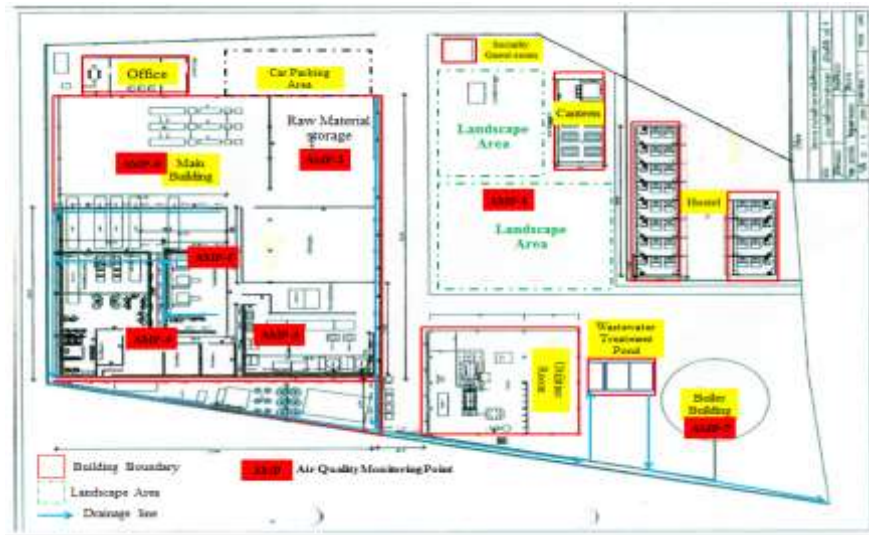


Figure 4.1 Location of Air Quality Monitoring Points



Figure 4.2 Air Quality Sampling Stations

The air quality assessment involved the measurement of O₂, CO, CO₂, NO₂, SO₂, TVOC, PM_{2.5} and PM₁₀ content in air. Wind direction and wind speed were also measured in this project area. These Qualities were measured using HAZ-SCANNER™ Model-EPAS, KANE 900 PLUS Combustion Analyzer, DUSTTRAK™ 8532 AEROSOL MONITOR, PHOTOVAC 2020 Combo Pro™ Photoionization Detector and Weather Text™ ULTIMETER 100.

Air Samples collected from the locations as shown in Table 4.15 were analyzed at Laboratory of GMES Co., Ltd and the results obtained are shown in Table 4.10 & Table 4.16 by comparing with air quality guidelines of Myanmar Environmental Quality (Emission) Guidelines 2015 from Ministry of Natural Resources and Environmental Conservation.

The Monitoring Instruments

<p>The ambient air quality was measured 24 hr. continuous within factory premise. Two technicians were monitored stand by. The instrument used for ambient air quality measurement HAZ-SCANNER EPAS is a true environmental air station providing ambient air quality monitoring of critical EPA criteria pollutants and air parameters. See the calibration certificate attachment in appendix (3).</p>	 <p>Haz-Scanner</p>
<p>The Stack Emission was measured to the Boiler. The insutrment used for boiler stack emission. Kane 900 plus combustion analyzer is handheld multi-gas emissions analyzer is easy to use for domestic and industrial boiler flue gas measurement and analysis. See the calibration certificate attachment in appendix (3).</p>	 <p>KANE 900 PLUS Combustion Analyzer</p>
<p>The DustTrak II Aerosol Monitor 8532 is a handheld battery operated, data-logging, single-channel; light-schatteing laser photometr thea gives real-tiem aerosol mass readings. This monitor measures aerosol contanminants such as dust, smoke, fumes and mists.</p>	 <p>DUSTTRAK™ AEROSOL MONITOR</p>
<p>The 2020 Combo Pro measures the concentration of airborne gases and vapors that can be ionized by a photoionization dector. The 2020 ComboPro can dectect thousands of different types of airbones gase and vapors and its response depends on the characteristics as well as the concentration of each compound.</p>	 <p>PHOTOVAC 2020 Combo Pro™</p>

Table 4.8 Ambient Air Quality Data (Location- 1) (30.3.2018 to 31.3.2018)

No.	Parameters	Unit	Measured Data	National Environmental Quality Emission Guidelines (2015)	
				Avg. Period	Guideline Value ($\mu\text{g}/\text{m}^3$)
1	Oxygen	mol %	21.20	-	-
2	Carbon Monoxide	ppm	0.14	-	-
3	Carbon Dioxide	ppm	278.88	-	-
4	Ammonia	ppm	24.78	-	-
5	Nitrogen Dioxide	$\mu\text{g}/\text{m}^3$	79.656	1-hour	200
6	Sulphur Dioxide	$\mu\text{g}/\text{m}^3$	0.131	24-hour	20
7	Particulate Matter PM ₁₀	$\mu\text{g}/\text{m}^3$	218.93	24-hour	50
8	Particulate Matter PM _{2.5}	$\mu\text{g}/\text{m}^3$	126.57	24-hour	25
9	Ozone	$\mu\text{g}/\text{m}^3$	42.61	8-hour	100
10	Total Volatile Organic Compound (TVOC)	ppm	0.38345	24-hour	-

The Analysis Report is shown in Appendix (12).

According to Table 4.10, particulates levels were much higher than the recommended air quality guidelines established by National Environmental Quality (Emission) but levels of other parameters were lower than this standard.

The ambient PM_{2.5} and PM₁₀ level is higher than the NEQG due to the transportation of motor vehicle and near the road with the entrance of the factory. Moreover, cumulative impact may be because the factory is located at the Industrial zone. There should be implemented according to EMP for this impact.

Table 4.9 Workplace Air Quality Data (Location- 2 to 7)

Parameters	Average period	Unit	Location ID					
			2	3	4	5	6	7
Total Volatile Organic Compound (TVOC)	1hr	ppm	0.317	0.208	0.517	0.933	0.667	0.075
Particulate Matter, PM ₁₀	8hr	$\mu\text{g}/\text{m}^3$	2.792	1.844	3.875	0.117	0.083	0.009
Particulate Matter, PM _{2.5}		$\mu\text{g}/\text{m}^3$	2.24	1.719	1.719	2.094	2.271	1.969

The Analysis Report is shown in Appendix (12)

Table 4.10 Boiler Stack Gas Emission Data

Location -7	Parameters and Unit				
	Oxygen (O ₂), mol %	Carbon monoxide (CO), mg/m ³	Carbon dioxide (CO ₂), mol %	Nitrogen oxide (NO)	Sulfur dioxide (SO ₂)
Boiler Stack	20.5	966	20	0	0
NEQG (Small combustion facilities Emission)	-	-	-	650 mg/Nm ³	2,000 mg/Nm ³

The Analysis Report is shown in Appendix (12).



Figure 4.3 Photos of Boiler Stack Gas Monitoring

4.4.2.2 Water Quality

The objective of the water-quality sampling program is to document baseline conditions of water quality in the project area. Five sampling points were selected in the project area. These points are listed in Table 4.13 and shown in Figure 4.5.

Samples were compared with Drinking Water Standards of WHO, EPA and Indian Specification for tube well water and drinking water; and Water Quality Guidelines of National Environmental Quality (Emission) Guidelines from Ministry of Natural Resources and Environmental Conservation for waste water.

These samples were analyzed at Laboratory of GMES Co., Ltd and at Ecological Laboratory of Advancing Life and Regenerating Motherland (ALARM) to confirm the analysis results from GMES and the results obtained are shown in Appendix (14).

Table 4.11 Water Quality Sampling Points (30.3.2018)

No.	Sample ID	Location	Location point
1	Location -1 (SP-1)	Tube well	16° 54' 35.63" N, 96° 04' 14.96" E
2	Location-2 (SP-2)	Water tap (Canteen)	16° 54' 35.67" N, 96° 04' 18.73" E
3	Location-3 (SP-3)	Boiler Section	16° 54' 36.42" N, 96° 04' 14.73" E
4	Location-4 (SP-4)	Cooling Section (Production Area)	16° 54' 36.43" N, 96° 04' 14.30" E
5	Location-5 (SP-5)	Factory inside drain channel	16° 54' 34.11" N, 96° 04' 14.89" E

WSP = water sampling point

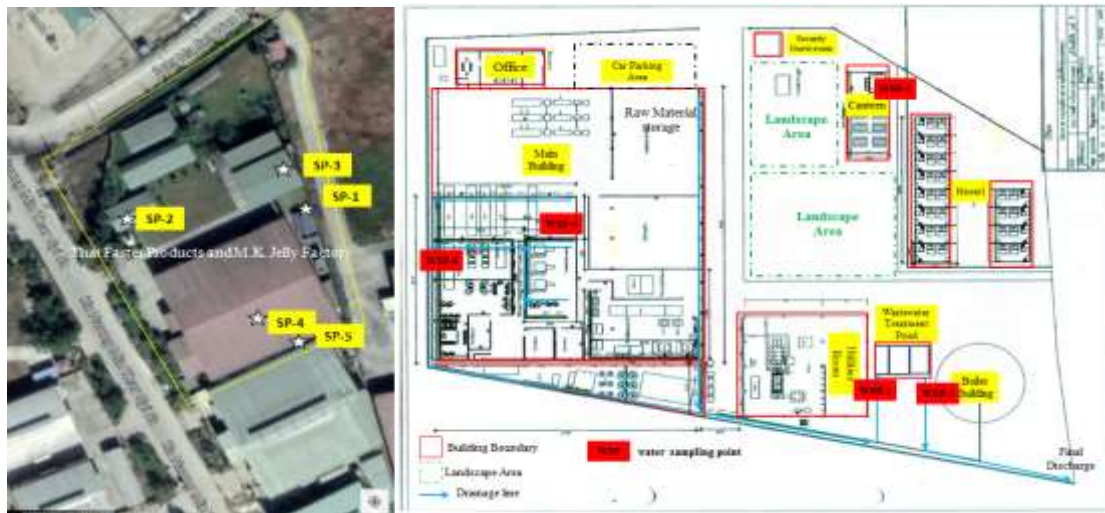


Figure 4.4 Locations of Water Quality Sampling Points



Figure 4.5 Photos of Water Sampling collecting

Table 4.12 Water Quality Data for Tube Well Water (Location-1) (26.4.2018)

No.	Parameters	Unit	Analysis Value	Drinking Water Standards		
				WHO (2011)	EPA (Spring 2012)	Indian Specification (IS: 10500, 2012)
1	pH	-	6.54	6.5-8.5	6.5-8.5	6.5-8.5
2	Chloride (Cl ⁻)	ppm	158	250	250	250
3	Total Hardness	ppm	9	500	-	200
4	Total Iron (Fe)	ppm	< 0.1	0.3	0.3	0.3
5	Sulphate (SO ₄ ²⁻)	ppm	2.5	250	250	200
6	Total Alkalinity	ppm	112	-	-	200
7	Turbidity	NTU	1.92	5	-	1
8	Manganese (Mn)	ppm	ND	0.4	0.05	0.1
9	Aluminum (Al)	ppm	0.03	0.2	0.2	0.03
10	Copper (Cu)	ppm	ND	2	1	0.05
11	Cyanide (CN)	ppm	ND	0.07	0.2	0.05
12	Arsenic (As)	µg/l	25	10	10	10
13	Total Dissolved Solids (TDS)	ppm	420	600	500	500

ND* – Not Detected

The Analysis Report is shown in Appendix (14).

According to Table 4.14, Arsenic level of tube well water exceeded the standard value. Levels of other parameters were lower than the standards. The results generated for the present study indicate that the quality of tube well water in the project area is showing any signs of stress because water is used for process water, boiler feed water and other purposes in this proposed project. So Thai Faster Products and M.K. Company Limited have a plan to install water treatment system.

Table 4.13 Water Quality Data for Drinking Water (Location-2) (26.4.2018)

No.	Parameters	Unit	Analysis Value	Drinking Water Standards		
				WHO (2011)	EPA (Spring 2012)	Indian Specification (IS: 10500, 2012)
1	pH	-	7.24	6.5-8.5	6.5-8.5	6.5-8.5
2	Chloride (Cl ⁻)	ppm	134	250	250	250
3	Total Hardness	ppm	ND	500	-	200
4	Total Iron (Fe)	ppm	< 0.1	0.3	0.3	0.3
5	Sulphate (SO ₄ ²⁻)	ppm	2.5	250	250	200
6	Total Alkalinity	ppm	112	-	-	200
7	Turbidity	NTU	0.84	5	-	1
8	Manganese (Mn)	ppm	ND	0.4	0.05	0.1
9	Aluminum (Al)	ppm	0.02	0.2	0.2	0.03
10	Copper (Cu)	ppm	ND	2	1	0.05

11	Cyanide (CN)	ppm	ND	0.07	0.2	0.05
12	Arsenic (As)	µg/l	0	10	10	10
13	Total Dissolved Solids (TDS)	ppm	420	600	500	500

ND* – Not Detected # The Analysis Report is shown in Appendix (14).

According to Table 4.15, levels of all parameters were lower than the standards. So the results generated for the present study indicate that the quality of drinking water in the project area is not showing any signs of stress because drinking water is obtained by removing the impurities in tube well water effectively by the water treatment system.

Table 4.14 Water Quality for Boiler Section & cooling section (Location-3 & 4) (26.4.2018)

No.	Parameters	Unit	Analysis Value		NEQG (2015) General Applications
			Boiler section	Cooling Section	
			Location- 3	Location- 4	
1	pH	-	12.78	6.35	6-9
2	Chemical Oxygen Demand (COD)	ppm	25	495	250
3	Biochemical Oxygen Demand (BOD ₅)	ppm	ND	137	50
4	Ammonia (NH ₃)	ppm	ND	ND	10
5	Total Cyanide (CN)	ppm	ND	ND	1
6	Total Iron (Fe)	ppm	0.5	< 0.1	3.5
7	Oil & Grease	ppm	ND	ND	10
8	Phenols	ppm	ND	ND	0.5
9	Sulfide	ppm	ND	ND	1
10	Total Suspended Solids (TSS)	ppm	610	140	50
11	Chromium (VI)	ppm	ND	ND	0.1
12	Chromium(Total)	ppm	ND	0.03	0.5
13	Copper	ppm	ND	ND	0.5
14	Nickel	ppm	ND	ND	0.5
15	Zinc	ppm	0.03	ND	2

ND* – Non Detectable, NEQG= National Environmental Quality (Emission) Guideline

The Analysis Report is shown in Appendix (15).

According to Table 4.16, pH and Total Suspended Solids level of Location- 3 were above the standard value. COD, BOD₅ and Total Suspended Solids level of Location- 4 were higher than standard values comparing with National Environmental Quality (Emission) Guidelines. The results show that levels of other parameters were lower than this standard.

The value of location-3 and location 4 are not treated and the factory has already installed wastewater treatment plant (WWTP). There will be discharged to the municipal drain channel after treated of wastewater in the WWTP.

Table 4.15 Analysis result of Factory inside drain channel (Location- 5) (26.4.2018)

No.	Parameters	Unit	Analysis Value	NEQG (Food and Beverage Processing)
			Location- 5	
1	pH	-	4.36	6-9
2	Chemical Oxygen Demand (COD)	ppm	5190	250
3	Biochemical Oxygen Demand (BOD ₅)	ppm	2170	50
4	Oil & Grease	ppm	6	10
5	Total Suspended Solids (TSS)	ppm	320	50

ND* – Non Detectable, # The Analysis Report is shown in Appendix (15).

According to Table 4.17, Oil & Grease level was lower than the standard value and levels of other parameters were higher than the standard comparing with National Environmental Quality (Emission) Guidelines.

The value of location-4 is not treated and the factory has already installed wastewater treatment plant (WWTP). The location-5 is produce from the discharged of processing and there will be discharged to the municipal drain channel after treated of wastewater in the WWTP.

4.4.2.3 Wastewater Quality

The objective of the waste water-quality sampling program is to document baseline conditions of water quality in the project area. Three sampling points were selected in the project area. These points are listed in Table 4.18 and shown in Figure 4.7.

These results were compared with Guidelines of National Environmental Quality (Emission) Guidelines from Ministry of Natural Resources and Environmental Conservation for waste water (Food and Beverages Processing).

These samples were analyzed at Laboratory of GMES Co., Ltd and at Ecological Laboratory of Advancing Life and Regenerating Motherland (ALARM) to confirm the analysis results from GMES and the results obtained are shown in Appendix (15).

Table 4.16 Wastewater Quality Collecting Points

No.	Sample ID	Location	Collect Date	Location point
1	WWSP -1	Processing discharge	14.6.2022	16° 54' 35.67" N, 96° 04' 14.77" E
2	WWSP-2	inlet of WWTP (Before treated)	14.6.2022	16° 54' 35.96" N, 96° 04' 14.56" E
3	WWSP-3	Outlet of WWTP (after treated)	21.7.2022	16° 54' 34.25" N, 96° 04' 15.33" E

WWSP = wastewater sampling point



Figure 4.6 Wastewater Quality collecting points

Table 4.17 Analysis result for waste water quality, WWSP-1 & WWSP-2 (1.7.2022)

No.	Parameters	Unit	Analysis Value		NEQG (Food and Beverage Processing)
			Processing discharge	Inlet of WWTP	
			WWSP-1	WWSP-2 (before treated)	
1	5-day Biochemical Oxygen Demand	mg/l	2060	380	50
2	Chemical Oxygen Demand	mg/l	5070	1260	250
3	Oil and Grease	mg/l	5	<5	10
4	pH	-	4.08	4.32	6 ~ 9
5	Total Nitrogen	mg/l	8	<5	-
6	Total Phosphorous	mg/l	2.8	0.15	2
7	Total Suspended Solids	mg/l	38	24	50
8	Coliform	-	> 1100	150	

ND* – Non Detectable, NEQG= National Environmental Quality (Emission) Guideline

The Analysis Report is shown in Appendix (15).

According to Table 4.19, BOD, COD, pH, total phosphorous and coliform value are higher than the standard value. But TSS, Oil and Grease, were higher than the standard comparing with National Environmental Quality (Emission) Guidelines.

The value of WWSP-1 and WWSP-2 is not treated and the factory has already installed wastewater treatment plant (WWTP). There will be discharged to the municipal drain channel after treated of wastewater in the WWTP.

Table 4.18 Analysis result for waste water quality, WWSP-3 (3.8.2022)

No.	Parameters	Unit	Analysis Value	Minimum Measurement Range of Methods	NEQG (Food & Beverage Processing)
			Outlet of WWTP		
			WWSP-3 (after treated)		
1	5-day Biochemical Oxygen Demand (BOD ₅)	mg/l	170	30	50
2	Chemical Oxygen Demand (COD)	mg/l	580	30	250
3	Oil and Grease	mg/l	<5	5	10
4	pH	-	6.95	0.1	6 ~ 9
5	Total Nitrogen	mg/l	<5	5	10
6	Total Phosphorous	mg/l	0.02	0.02	2
7	Total Suspended Solids	mg/l	22	1	50
8	Temperature	°C	26	1	<3 ^b
9	Coliform	-	> 1100	MPN/100 ml	400

ND* – Non Detectable, NEQG= National Environmental Quality (Emission) Guideline

The Analysis Report is shown in Appendix (15).

According to Table 4.20, BOD, COD and Coliform were a little higher than the standard value and other parameters within the standard of National Environmental Quality (Emission) Guidelines.

The above value of WWSP-3 is after treated from the Wastewater Treatment Plant. So, there will perform within the Guideline of NEQG for the effluent of wastewater value by the Thai Faster Products and M.K Co., Ltd.

4.4.2.4 Noise Level

Three sampling points for noise level measurement were selected in the project area. These points are same as the air quality sampling points of Location-1, 6 & 7 listed in Table 4.21 and shown in Figure 4.8. Noise measurements were taken using Sound Level Meter and the results recorded for the present study are presented in Table 4.22.



Table 4.19 Noise level Monitoring Point

ID	Location	Average Noise Level, L _{Aeq} , dB(A)	Period	Coordinate Point
Location-1	near entrance of the factory	76.345 56.59	Day Night	16° 54' 35.66" N, 96° 04' 13.34" E
Location-6	Mixing room	70.95 (working hour)	1 hr	16° 54' 33.92" N, 96° 04' 14.08" E
Location-7	Boiler section	71.2 (working hour)	1 hr	16° 54' 36.35" N, 96° 04' 14.24" E

The Analysis Report is shown in Appendix (13).

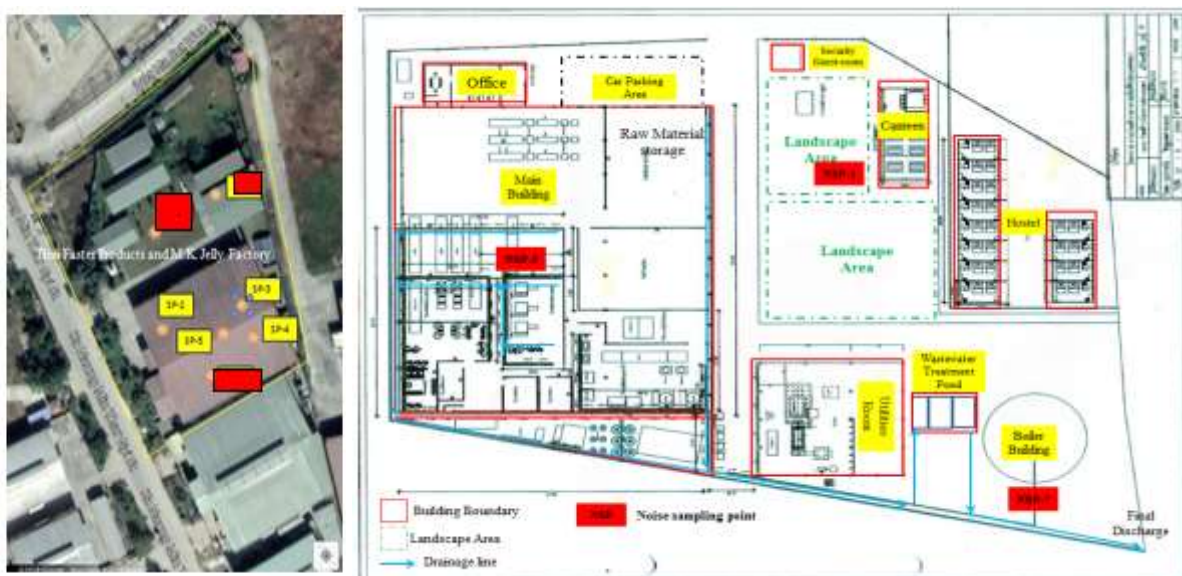


Figure 4.7 Wastewater Quality collecting points

Table 4.20 Noise Level Monitoring Data

ID	Average Noise Level, L_{Aeq} , dB(A)	Period	National guideline for Industrial Zone (Day & Night)
Location-1	76.345 56.59	Day Night	70 dBA
Location-5	70.95 (working hour)	1 hr	US OHS guideline for 1 hour average: (working hour) 105 dBA
Location-7	71.2 (working hour)	1 hr	
# The Analysis Report is shown in Appendix (13).			

According to the Table 4.22, Noise level guidelines established by National Environmental Quality (Emission) are 70 dBA for factory surrounding and 55 dBA for residential vicinity. The average values of noise level recorded at location-1 (Ambient noise) monitored is slightly greater than the standard. This noise would be from ambient sources including vehicular traffic on the road.

The Noise level guidelines established by United State OHS is 105 dBA during the working time for 1 hour average of noise exposure limit. The average values of noise level recorded at location-6 (mixing room) and location-7 (boiler room) monitored is lower than the United State OHS standard.

4.4.2.5 Soil Quality

Soil sample was collected from beside the Boiler Section in the project area as shown in Figure 4.9. Laboratory of GMES Co., Ltd performed the analysis of soil sample by measuring the parameters such as pH, Chloride, Total Iron, Aluminum. Soil location point is shown in Figure 4.9 and the result is shown in Table 4.23.

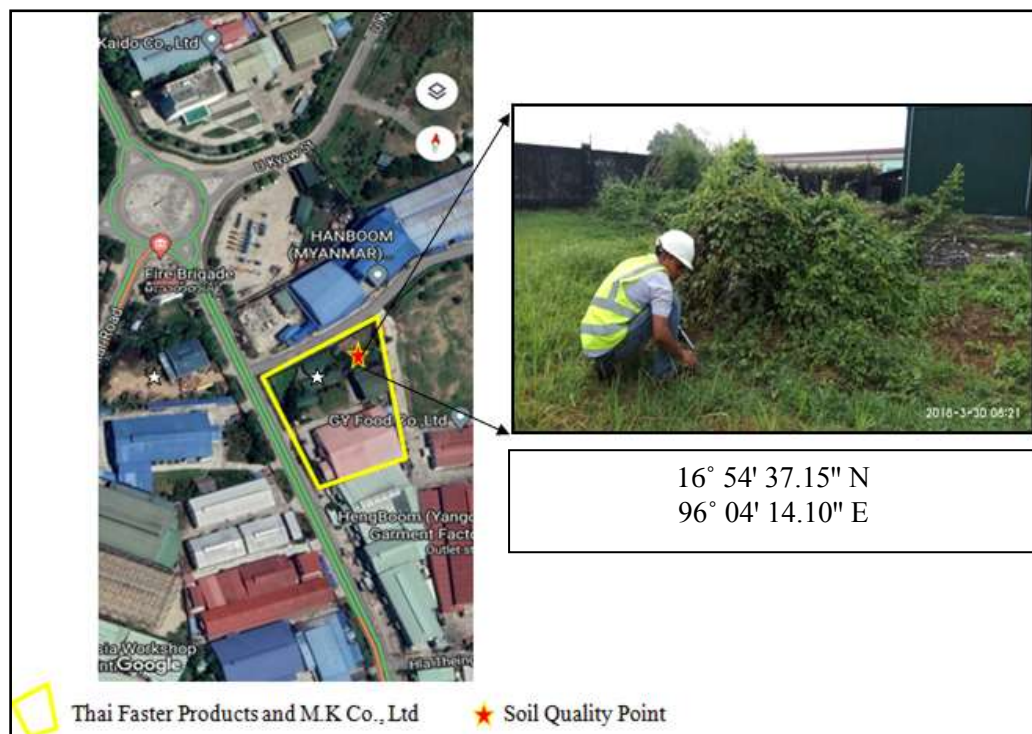


Figure 4.8 Soil Quality Sampling Point

Table 4.21 Laboratory Analysis Results of Soil #

No.	Parameters	Unit	Analysis Value
1	pH	-	7.53
2	Chloride (Cl ⁻)	g/kg soil	0.63
3	Total Iron (Fe)	mg/kg soil	10
4	Copper (Cu)	g/kg soil	ND
5	Cyanide (CN)	mg/kg soil	ND
6	Aluminum (Al)	mg/kg soil	0.15
7	Manganese (Mn)	g/kg soil	ND
8	P- Alkalinity	mmol/l extract	0
9	Total Alkalinity	mmol/l extract	1.305
10	Extractable Acidity	cmol/kg soil	1.125

ND* – Not Detected

The Analysis Report is shown in Appendix (16).

These results shown in Table 4.23 are existing soil conditions of project area. At this condition, vegetation is already present and it looks healthy. So it can be concluded that existing soil is unpolluted. We were collected soil sample for the base line of the project current condition.

5.0 POTENTIAL IMPACT ASSESSMENT AND MITIGATION MEASURE

5.1 General Description of the Process

The general steps of manufacturing of jellies are described briefly to identify all potential sources of impacts.

Jelly is formed when a suitable concentration of pectin, sugar, acid, fruit flavor, fruit color and water is achieved. The brief description of the process for the manufacturing of jelly will be provided in the following section.

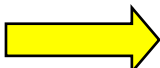
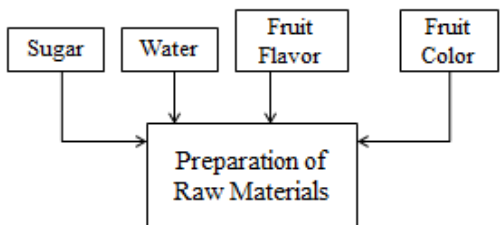
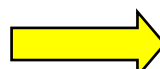
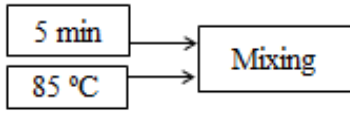
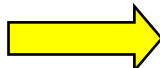

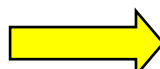
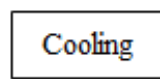
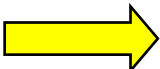
The production process of Jellies involves unit operations like Preparation of Raw Materials, Mixing, Filling, Cooling and Packing.

The processing typically comprises of:

5.2 Adverse Impacts for Processing Step

The following section reviews the potential impacts of the activities on the environment and possible measures against potential adverse effects. Relations between impact sources and various part of the environment are summarized in the Figure 5.1.

Figure 5.1 Production Lines for Manufacturing Jellies and Related Pollutions

Inputs		Processing Step	Pollutants
Electricity Manpower			Dust, Spill
Electricity Manpower			Heat
Electricity Manpower		Temperature not below 70°C 	Spill
Electricity Manpower Water		1 hour 	Warm water
Cartoon box, Tape, Inner plastic, Manpower		Packaging	Tapes, plastics

	Processing	Pollutants
floor washing	Preparation of Raw material	Used bags, bins and cartoon box
	Mixing	Washed water (tank)
	Filling	Washed water (tank)
Boiler	Boiler running	boiler blow down water

5.3 Impact Assessment Methodology

The significance of the aspects/ impacts of the process were rated by using a matrix derived from Plomp (2004) and adapted to some extent to fit this process. These matrixes use the consequence and the likelihood of the different aspects and associated impacts to determine the significance of the impacts. The significances of the impacts were determined through a synthesis of the criteria below:

5.3.1 Probability

Probability describes the likelihood of the impact actually occurring as follow:

The weights are assigned to each attribute:

Table 5.1 Rating for Probability

Attribute	Description	Weight
Improbable	The possibility of the impact occurring is very low, due to the circumstances, design or experience.	1
Probable	There is a probability that the impact will occur to the extent that provision must be made therefore.	2
Highly Probable	It is most likely that the impact will occur at some stage of the development.	4
Definite	The impact will take place regardless of any prevention plans, and there can only be relied on mitigation actions or contingency plans to contain the effect.	5

5.3.2 Duration

Table 5.2 Rating for Duration

Attribute	Description	Weight
Short term	The impact will either disappear with mitigation or will be mitigated through natural processes in a time span shorter than any of the phases.	1
Medium term	The impact will last up to the end of the phases, where after it will be mitigated.	3
Long term	The impact will last for the entire operational phase of the project but will be mitigated by direct human action or by natural processes thereafter.	4
Permanent	Impact that will be non-transitory. Mitigation either by man or natural processes will not occur in such a way or in such a time span that the impact can be considered transient.	5

5.3.3 Scale

Scale is the physical and spatial size of the impact as follow:

Table 5.3 Rating for Scale

Attribute	Description	Weight
Site	The impacted area extends only as far as the activity, e.g. footprint.	1
Local	The impact could affect the whole, or a measurable portion of the above mentioned properties.	2
Regional	The impact could affect the area including the neighboring residential areas.	3

5.3.4 Magnitude/ Severity

Magnitude/ severity determine does the impact destroy the environment, or alter its function.

Table 5.4 Rating for Magnitude or Severity

Attribute	Description	Weight
Low	The impact alters the affected environment in such a way that natural processes are not affected.	2
Medium	The affected environment is altered, but functions and processes continue in a modified way.	6
High	Function or process of the affected environment is disturbed to the extent where it temporarily or permanently ceases.	8

5.3.5 Significance

Significance is an indication of the importance of the impact in terms of both physical extent and time scale, and therefore indicates the level of mitigation required.

$$\text{Significance} = (\text{Duration} + \text{Scale} + \text{Magnitude}) \times \text{Probability}$$

Table 5.5 Rating for Significance

Attribute	Description	Weight
Negligible	The impact is non-existent or unsubstantial and is of no or little importance to any stakeholder and can be ignored.	< 20
Low	The impact is limited in extent, has low to medium intensity; whatever its probability of occurrence is, the impact will not have a material effect on the decision and is likely to require management intervention with increased costs.	< 40
Moderate	The impact is of importance to one or more stakeholders, and its intensity will be medium or high; therefore, the impact may materially affect the decision, and management intervention will be required.	< 60
High	The impact could render development options controversial or the project unacceptable if it cannot be reduced to acceptable levels; and/or the cost of management intervention will be a significant factor in mitigation.	> 60
Status	Perceived effect of the impact	
Positive (+)	Beneficial impact	
Negative (-)	Adverse impact	
Negative impacts are shown with a (-) while positive ones are indicated as (+)		

The significance of the impact, rated from Low to High, is indicated in the table below with an explanation of the impact magnitude and a guide that reflects the extent of the proposed mitigation measures deemed necessary.

Table 5.6 Impact Significances for Operation Phase

Impact Sources	Pollutants	Impact Duration	Impact Scale	Impact magnitude/Severity	Impact probability	Total Score	Impact Significance Rating
Air Quality							
Processing	PM, dust	Long term (4)	Site (1)	Low (2)	Definite (x5)	(35)	Low (Negative)
Generator	CO, CO ₂ , SO ₂ , NO _x	Short term (1)	Local (2)	Low (2)	Definite (x5)	(25)	Low (Negative)
Boiler	PM, SO _x , NO _x , CO _x	Long term (4)	Site (1)	Medium (6)	Definite (x5)	(55)	Moderate (Negative)
Truck and delivery car	SO _x , NO _x , CO _x	Medium term (3)	Local (2)	Low (2)	probable (x2)	(14)	Negligible (Positive)
Water Quality							
Domestic water	pH, BOD, COD, TSS, TDS, Oil & Grease	Medium term (3)	Site (1)	Medium (6)	Definite (x5)	(35)	Low (Negative)
Process wastewater	BOD, COD, TSS, TDS, color, Oil & Grease, pH	Long term (4)	local (2)	Medium (6)	Definite (x5)	(60)	Moderate (Negative)
Waste Disposal							
Hazardous Wastes	Water & soil	Medium term (3)	Site (1)	Low (2)	Definite (5)	(30)	Low (Negative)
Non-Hazardous Wastes	Water & soil		Local (1)	Low (2)	Definite (x5)	(30)	
Domestic Wastes	Water & soil	Medium term (3)	Local (1)	Low (2)	Definite (x5)	(30)	

Noise							
vehicle movement,	worker health and surrounding environment	Short term (1)	Site (1)	Low (2)	Definite (x5)	(20)	Low (Negative)
operation of generators		Short term (1)	Site (1)	Low (2)	Definite (x5)	(20)	Low (Negative)
Fire Hazards							
electric shock, Fuel Leakage, Smoking	PM, Dust and explosion	Permanent (5)	Local (2)	High (8)	Definite (x5)	75	High (Negative)
Emergency Risk							
Flood risk, cyclone, high tide Earthquake	Air, Water, Soil and human Health	Short term (1)	Regional (3)	High (8)	probable (x2)	24	Low (Negative)
Hazardous of Machineries Handling							
Electric shock, improper instilling machines, Do not have regularly maintenance Boiler and air compressor	Worker Health and Surrounding Environment	Permanent (5)	Local (2)	High (8)	Definite (x5)	75	High (Negative)
Local Economy							
Job opportunities	Job opportunities for local people will be provided and regional will be boosted.	Long term (4)	Local (2)	Medium (6)	Definite (x5)	60	High (Positive)

The various hazards associated with the proposed paddy husk fired boiler are outlined as below:

Table 5.7 Potential Hazards associated with the Boiler

No.	Blocks/areas	Hazards identified
1.	Rice husk storage in open yard	Fire, spontaneous combustion
2.	Rice husk handling	Fire
3.	Boiler	Steam explosions
4.	Light Density Oil (LDO) Containers Heavy Furnace Oil (HFO) Containers	Fire

The quantity of hazardous substances like LDO, HFO used in the rice husk boiler for initial firing of boiler is very less. Hence the major fire and explosion accident due to the use of these materials is very less.

Most of the anticipated impacts are assessed and found out to be low, except high influx of workers to the nearby area. On the other hand, the benefits such as job opportunities and linkage with the agricultural sector will be created and also generates income for the Government. Thus; the envisaged plant is environment friendly and does not have any pollutant emission to the environment.

5.4 Mitigation Measures for Operation Phase

The mitigation measures for operation phase pollution of TFPMK's Jelly Factory are summarized in the following table.

Table 5.8 Mitigation Measures for Operation Phase

Activity & Sub Activities	Environ - mental Impacts	Mitigation Measures	Final Impacts
Operation Phase			
1. Air Pollution			
Process, Boiler, Generator, Truck and Delivery car	Air Quality	<ul style="list-style-type: none"> • Good ventilation and clear assess will be provided. • Select diesel generator type with high combustion efficiency to minimize dark smoke generation • Conduct regular maintenance • Trained/Approved transports will be given work for the transportation of the raw materials / products. • Proper records will be maintained. 	Low, as proper handling of material will be followed

2. Solid Waste			
Packaging materials such as waxed corrugated boxes, pallets, shrink wrap, strapping ties, drums & polystyrene	Soil contamination	<ul style="list-style-type: none"> • Segregation of solid wastes will be done and will be sold for raising social- welfare fund. • There will provide training programs to related employees for handling and storage of chemicals. 	Beneficial Impacts on the factory and surrounding environment
3. Wastewater			
Effluent Generation from the Process, Utility	Water quality	<ul style="list-style-type: none"> • Segregation of the waste streams will be done. • Less pollution streams will be treated. • Treated effluent will be utilized for greenbelt, gardening & firefighting requirement. • Domestic wastewater will be disposed of into septic tank. 	Low impacts, As extreme care will be taken in treatment & monitoring of the quality of the effluent.
4. Hazardous Waste Generation			
Raw materials such as color, essence or flavoring ingredients	Soil, Water	<ul style="list-style-type: none"> • Preparation and mixing areas will be made of impervious surface to prevent leach ability. • Records of quantity of waste generated will be maintained. • Empty cans or drums will be sold to the vendors. 	Low impacts, due to preventive maintenance
5 Noise Pollution			
Noise Generation due to plant operation	Factory area & Environment	<ul style="list-style-type: none"> • Preventive Maintenance to ensure low noise generation. • Personal Protective Equipment (Ear Plug & Muff) will be utilized in the affected area. 	Low impacts, Due to preventive maintenance & usage of PPE's.
6 Storage of raw materials and products			
Storage of raw materials	Air, Risk	<ul style="list-style-type: none"> • Proper Storage area for raw materials, fuel oil drums and finished products. • Proper records will be maintained. • Good ventilation and clear assess will be provided. 	Low impacts, as proper Handling of material will be followed.

7. Hazardous of Machineries Handling			
Effect on Worker Occupational Health and Safety	Effect on Worker Occupational Health and Safety	<ul style="list-style-type: none"> • Installation of machine prevention system with regular inspection on the system • Regular safety training for workers in a accordance with OHS training • Avoid unnecessary accidents. 	Beneficial impacts on the factory and surrounding environment
8. Fires Hazard			
<ul style="list-style-type: none"> • Accidental spillage of fuel from unconscious handling • Ignorance of fire hazard • Improper storage of raw materials and finished products 	Factory area & Surrounding Environment	<ul style="list-style-type: none"> • Scheduled fire drill will be done. • In all the necessary locations in the factory fire extinguish -hers must be in place. • The expiry date and working function of the fire extinguishers must be checked regularly. • Regarded no-smoking sign • Ensure smoking area(s) are away from flammable materials. 	Beneficial impacts on the factory and surrounding environment
9. Greenbelt Development			
Greenbelt Development	Factory area & Surrounding Environment	<ul style="list-style-type: none"> • Development of good greenbelt within premises and at periphery of the premises. 	Beneficial impacts on Air, Land & Noise.
10. Socio-economic			
Employment	Socio economy	<ul style="list-style-type: none"> • Employment of the local people. • Indirect employment to the service sector & suppliers. • Substantial benefits in the form of contracts to local agencies for different services • Employment in Skilled, Semi • Skilled and Labor class. 	Beneficial impacts on the socio economy

Most of the anticipated impacts are assessed and found out to be low, except high influx of workers to the nearby area. On the other hand, the benefits such as job opportunities and linkage with the agricultural sector will be created and also generates income for the Government. Thus; the envisaged plant is environment friendly and does not have any pollutant emission to the environment.

6.0 ENVIRONMENTAL MANAGEMENT PLAN AND MONITORING PROGRAM

6.1 Objective of Environmental Management Plan

Environmental Management Plan (EMP) makes to ensure that the quality of the environmental aspects does not deteriorate due to the operation of the proposed project. Environmental Management Plan (EMP) is a quality system that provides the framework to;

- Mitigate the probable or potential adverse impacts on various environmental components which have been identified during impact assessment.
- Protect the environmental resources where possible.
- Enhance the environmental components where possible.
- Monitor and verify the effectiveness of the mitigation measures implemented.

The environmental management plans required for the operational phase of Jellies

Manufacturing factory is summarized as follows:

- Air Pollution Management Plan
- Solid Waste Management Plan
- Wastewater Management Plan
- Noise Pollution Management Plan
- Drainage Management Plan
- Resource Utilizing Management Plan
- Occupational Health and Safety Management Program
- Socio-Economic Management Plan
- Fire Prevention Plan
- Emergency Response & Disaster Management Plan

6.2 Environment Management Plan

The following sections describe the environment management system proposed for Operation phase. Thai Faster Products and M.K Company Limited must take responsibility to implement the environmental management plan as shown in Table 6.1.

Table 6.1 Environmental Management Plan

Environmental Management Plan (Operation phase)	
Air Pollution Management Plan	
Objective	<ul style="list-style-type: none"> • To reduce the source and amounts of the pollutants that is responsible for the pollution of the air quality. • To comply with national emission guidelines.
Management Plan	<ul style="list-style-type: none"> • Maintain green area to improve air quality. • Regular checkup and scheduled maintenance of machineries and generators. • Keep proper housekeeping in the factory or in the premises to reduce dust generation. • There is no open burning of waste materials on site.

Environmental Management Plan (Operation phase)	
	<ul style="list-style-type: none"> • Install good ventilation system and dust emission system • Employees are instructed to wear mask during working time in dust generating area. Careful handling and weighting of the powder. • All the bare land area is covered with grass field or paved with concrete. • Generator exhaust is oriented away from people accommodated area. • A system such as water spraying in the chimney should be implemented to reduce particulate emissions from the boiler chimney. • The ash from the boiler must be properly collected so that it does not scatter.
Responsible Team	EMT Team Leader/ Members
Responsibility	<ul style="list-style-type: none"> • Implementation of above air pollution management plan. • Contact the environmental service contractor for monitoring air quality as scheduled. • Report the results of the air quality monitoring to the management and keep the records. • Inform public about air quality at appropriate time.
Solid waste Management Plan	
Objective	<ul style="list-style-type: none"> • To dispose solid waste generated in proper way to prevent from pollution of soil and water body. • To comply with government waste management policy.
Management Plan	<p>Hazardous Waste</p> <ul style="list-style-type: none"> • Storage All waste, hazardous or not, must be contained to prevent it from blowing away and from leaching into surface or groundwater. Hazardous waste must be in containers or tanks clearly labeled with the words “Hazardous Waste”. Volumes and time limits for storing hazardous waste on-site vary by generation category. • Handling All employees must be instructed to the Safety Data sheet and there must be wore suitable PPE when the hazardous materials handling. Skillful and training worker must be taken and holding on it. • Disposal Hazardous waste must be disposed at permitted waste facility such as authorized organization/ YCDC. Record amount of waste regularly.
Responsible Team	EMT Team Leader/ Members

Environmental Management Plan (Operation phase)	
Management Plan	<p>Non-Hazardous waste</p> <ul style="list-style-type: none"> • Storage Non-hazardous waste needs to be removed from on-site at regular intervals to prevent release to the environment, and to avoid additional permit requirements. Nonhazardous waste and unused product must be contained to prevent discharge to the air, or runoff to surrounding land or water. • Disposal Non-hazardous waste disposed at permitted waste facility such as Yangon City Development Committee. Record amount of waste regularly.
Responsible Team	EMT Team Leader/ Members
Responsibility	<ul style="list-style-type: none"> • To ensure the solid waste management plan is implemented. • To monitor whether the solid waste is segregated accordingly or not. • To check the waste transfer notes and documented. • To avoid pollution of the environment due to solid wastes.
Noise Pollution Management Plan	
Objective	<ul style="list-style-type: none"> • To reduce the noise pollutant of the factory boundary environment. • To comply with national guidelines and OHS guideline.
Management Plan	<ul style="list-style-type: none"> • Use sound absorbing material such as curtains, insulation sheet and damper where necessary and appropriate. • Generator shall be put in the enclosed room. • Rotate the working shift for employees who work in the high noise area. • Generator and machineries such as pumps have to be maintained regularly. • Employees who work in the high noise area should be provided with enough ear plugs or ear mufflers. • Drivers must turn off the vehicle engines when not moving.
Responsible Team	<ul style="list-style-type: none"> • EMT Team Leader/ Members
Responsibility	<ul style="list-style-type: none"> • Implementation of above noise pollution management plan. • Contact the environmental service contractor for monitoring of noise level as scheduled. • Report the results of the noise level monitoring to the management and keep the records. • Inform public about noise quality at appropriate time.
Water pollution Management Plan	
Objective	<ul style="list-style-type: none"> • To protect and mitigate for the water pollution. • Prevent pollution of groundwater sources.
Management	<ul style="list-style-type: none"> • All drainage channels need to be covered by gratings.

Environmental Management Plan (Operation phase)	
Plan	<ul style="list-style-type: none"> • Baskets must be provided for Silt and debris • Avoid disposing of used oil direct into the drain. • Wastewaters from the production are collected to the wastewater treatment pond and discharge to the municipal drainage. • To provide awareness of discharge of wastw water for employees. • To monitor for the results of the water quality and keep the records it.
Responsible Team	EMT Team
Responsibility	<ul style="list-style-type: none"> • To ensure the above EMP is well implemented. • To monitor the effectiveness of the EMP. • To take action if there is any concern.
Resource Utilizing Management Plan	
Objective	<ul style="list-style-type: none"> • To minimize the electricity usage and water usage.
Management Plan	<p><u>Energy</u></p> <ul style="list-style-type: none"> • Use energy efficient lamp and devices. That costs more upfront but over the years it saves more money and energy. • Use maximum day light. • Educate employees regarding with the energy saving features of electrical appliances such as air conditioner, microwaves, fans, printers, computers and other devices to let them use these features to cut the energy usage. • Plant shady trees outside of the building to protect from hotness of the building inside. • Turn off and unplug the equipment when not using. <p><u>Water</u></p> <ul style="list-style-type: none"> • Use eco flush toilets. • Treated effluent will be utilize for greenbelt, gardening and firefighting requirement.. • Domenstic wastewater will be disposed of into septic tank. • Records of quantity of wastewater discharged will be maintained. • Detect the leak and fix it immediately.
Responsible Team	EMT Team Leader/ Members
Responsibility	<ul style="list-style-type: none"> • Report the electricity consumption and other energy issues to top management. • Monitor the electricity consumption. • If there is any concern, review the EMP. • Take corrective action and fix it if it is required.

6.3 Occupational Safety and Health Management Program

Thai Faster Products and M.K Company Limited currently maintain an occupational health and safety program actively managed by on-site staff. To implement the safety and health management for employees, the Occupational Health and Safety Management Committee was formed with the following members.

The duties and responsibilities of Occupational Health and Safety Management Committee are as follows.

1. To inspect the operation regularly with checklists for Safety and prevention of accidents.
2. To respond quickly when accident, illness or other emergency cases happen.
3. To convene the monthly committee meeting for discussing the situation of the Occupational Health and Safety status, accidents, emergency, other production problems and mitigation measures
4. To report the findings and remarks from the monthly meeting to the administration for implementation.
5. To provide training for safety and health risk and prevention
6. To keep the records of inspections, accidents and meeting minute.
7. Adequate budgetary provisions have been made by proponent. The management for execution of environmental management plans should be framed. The detailed capital and recurring (per annum) budget should be earmarked for pollution control/monitoring equipment; operation and maintenance of pollution control facilities.

Occupational health and safety management program is implemented to promote the health conditions, physical conditions, mental conditions and social well beings of the employees and to prevent from the risk of workplace hazard and incidents.

Medical Precautionary Measures

- Pre-employment medical examination must be done for all employees. Annual medical examinations are also recommended. Medical records of the employees are properly maintained and updated from time to time.
- Provide the trainings for first aid procedures, safe working procedures, safe use of equipment, good personnel hygiene practice and industrial hygiene to the employees.
- Medical personnel should be available on-site or by phone for advice and consultation.
- Emergency phone numbers should be posted near the telephones.
- At least one person on each shift should be trained for first aid, as well as qualified to do CSR (cardiopulmonary resuscitation).
- Provide eye wash and shower near fuel and chemical storage facility.
- Keep MSDS at place of chemical provision.

Emergency and First-aid Procedures

- First aid is immediate, temporary treatment given in the event of accident or illness.
- Check first whether the scene is safe to enter.
- Find out what happened.
- Take first aid kit, use appropriate PPE and wear gloves.

- Interview the injured person or bystander if possible.
- Conduct a head to toe check first to decide the overall condition.
- Identify the nature of the injury or illness as far as possible.
- Arrange for emergency services to attend.
- Manage the casualty promptly in appropriate ways.
- Wait until health care professional arriving to hand over.
- For treating burning injury, determine the burn type and severity, disinfectant and cover with thin and loose cloth to prevent from infection.
- For treating of cut and bruises, wash with water, apply pressure on affected area, use disinfectant and cover with damage.
- For eye incident such as entering debris or contaminants, do eye wash for a few minutes and go to hospital if required for medical assistance. Do not apply any eye drop if it is not prescribed by the physician.
- For treating of fractures, immobilize the area and apply cool pack. Elevate the injury part.
- Make emergency call to 911.

House Keeping

Effective housekeeping can help control or eliminate workplace hazards. It includes

- Keeping work areas neat and orderly
- Maintaining halls and floors free of slip, trip and fall hazards
- Removing of waste materials (e.g., paper, cardboard) and other fire hazards from work areas
- Proper waste disposal
- Daily disposal of waste
- Keep isles and stairways clear
- Clean up during the shift
- Day-to-day cleanup
- Removal of unused materials
- Regular inspect, clean and repair tools, do not use damage tools
- Regular cleaning of lighting fixture and windows to get enough light
- Inspection to ensure cleanup is complete
- Keeping ventilation systems for perfect working condition
- Maintaining hygienic conditions in areas like canteens, near drinking water sources and toilets.
- Maintaining green area within the premise to suppress noise, fugitive dust and to improve the aesthetics.

Safety Awareness and Training

- To increase the safety awareness of the employees _
- Displaying safety caution billboards and safety posters mentioning Do's &
- Don'ts at various location _at outdoor area, at canteen, at workplace, at aisles and at car park.
- Arranging housekeeping competition.
- Holding safety slogan competition.

- Provision of PPE.

To refresh and upgrade the knowledge of the safety issues, training program shall be organized at all levels of employees for safety and accident prevention. The following training program will be conducted periodically in a planned manner.

- Safe working procedures and practices
- Proper use of personal protective equipment
- Handling emergency situation
- Handling of hazardous chemicals training
- Firefighting training
- Emergency response training
- Health awareness talk
- Personnel hygiene practice
- General safety rules training

Infectious Disease Control

- Do regular cleaning of toilets and canteen area and office area.
- Cover waste bins to avoid breeding of flies and other insects
- Make sure there will be no water ponding within premise to avoid breeding of mosquitos.
- For Covid-19 infectious disease; educate the employees for awareness of sensitization, self-hygiene and precaution practices such as safe social distancing, wearing masks and washing hands, etc.

6.4 Socio-Economic Management Plan

Company shall aside any percentage of profit as CSR fund.

- Proponent shall use its CSR fund for upgrading of health care and education of the local community.
- Local employment policy should be adopted for local labour recruitment.
- Minimize the impacts of local community by adherence to EMP.
- Increase the interaction between factory workforce and local people by arranging public meetings and fun meetings at appropriate time.
- Facilitate the access to get opportunities for local contractors for providing local business development

6.5 Emergency Response & Disaster Management Plan

Emergency response & disaster management plan is required to avoid panic and to tackle the situation effectively during emergency time if occurred. The plan covers emergency response activities that shall be carried out in the event of emergency time.

The emergency response plan (ERP) is included are describe the following;

- The emergency response team structure
- The roles and responsibilities of command staff and support staffs
- Resources such as personnel & equipment that can be utilized during emergency time.
- Checklist of ERP activities.

Table – 6.2 Emergency Response Team Structure and Responsibilities (Thai Faster Products and M.K Co., Ltd)

Name	Position	Responsibility
U Kyaw Win	Factory Manager	Commander of Chief (Give general directions for managing the incident)
U Than Htwe	Production Leader	Incident Commander (Give general directions for managing the incident)
Mr. Than Zaw Tun	Supervisor	On Scene Commander (Assess the incident, report the incident, secure the scene)
U YeHtwe	Operation staff	Carry out the ERP as directed by on scene commander

Fire Fighting Equipment List in the Factory

Fire Extinguishers (20 kg)	- 25
Auto Sprinkler Pump	- 2
Fire Hydrant	- 2
Fire Alarm	- 2
Emergency Exit	- 3
Fire Hose	- 2
Capacity water storage tank	- 1

Emergency contact list

a. Fire Station (Emergency)	-	191
b. Fire Station (Hlaing Tharyar)	-	01-645017
c. Police Station, (Emergency)	-	119
d. Police Station (Hlaing Tharyar)	-	01-707550

Checklist of ERP activities

1. Declare an emergency.
2. Alert personnel using an internal communication system.
3. Activate the emergency response plan.
4. Evacuate the danger zone, seek shelter-in-place or implement a lockdown.
5. Close main shutoffs, if applicable.
6. Call for external aid from local emergency services.
7. Initiate rescue operations.
8. Keep personnel as calm as possible.
9. Prepare an incident report after the incident.

Emergency Preparedness Plan for Earthquake

- Emergency preparedness for earthquake must be taken into account as Bago is located in a highly seismically active region and has many experiences of disastrous earthquakes in the past.
- Emergency preparedness training for earthquakes should be provided to all employees to be aware of the safe steps for it.

- The following preparedness plans should be done for emergency earthquake.
- All the shelves are fastened securely to the walls.
- Heavy and larger things are kept on the lower shelves.
- Brace the hanging lighting fixtures from the ceiling.
- All aerosol can such as pesticides and insecticide should be stored in closed cabinets to avoid fire risk.
- All the cabinets must have latches.
- Fix immediately the damage wire and these are potential to electric shock.
- First aid kits are readily available.
- Provide first aid training and CSR training to employees.
- Flash lights and batteries are readily available.

Emergency Response Plan for Earthquake

- Turn of the gas and electricity. Wear shoes. Carry flashlight.
- Evacuate the employees as there are risks of falling objects and building collapsing.
- Identify the safe places indoor and outdoor.
- For indoor search the safe spots such as under sturdy desk or table. Stay away from glass windows, mirrors and heavy cabinets.
- For outdoor go away from the buildings, trees, telephone, electrical lines and overpasses.
- Follow the drop, cover and hold on procedures to be safe during earthquakes.
- Drop to the ground, cover under sturdy objects like table or furniture and hold on to it until the shaking is stopped.
- Stay as safe as possible during earthquake and make minimum movements until the shaking is finished.
- Use emergency whistle if trapped.



• Figure 6.1 Safe Procedure to follow during Earthquake Time

Flood Control Plan

Bago River can have potential on flood and the following factors should aware to all of the workers from safety point of view during flood.

- Do not walk through flowing water.
- Use a pole to test the depth of standing water before you proceed.
- Do not drive through a flooded area. Two feet of water will carry away most automobile.
- Stay away from power lines and electrical wires.
- Turn off your all electricity if your building is flooded.
- Watch out for hiding animals.
- Look before you step. Mud can be very slippery to walk on.
- Be alert for gas leaks. Leave the area immediately if you smell gas fumes.

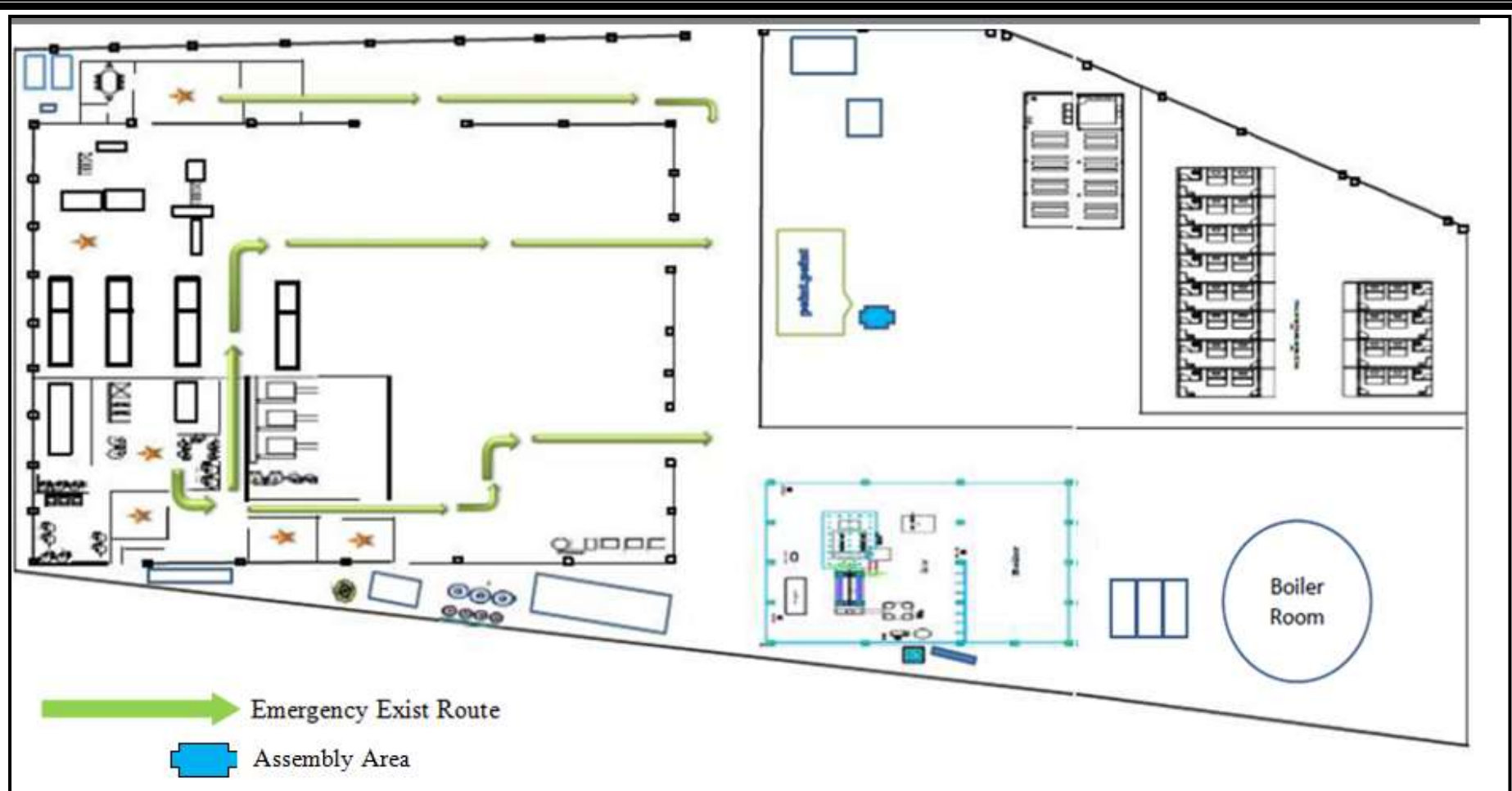


Figure 6.2 Emergency Route of Thai Faster Products and M.K Co., Ltd.

6.6 Generally Fire Prevention Plan

6.6.1 Fire risk

Fires have been a persistent problem in most industry. Significant capital expenditure may be required to install adequate fire prevention and protection measures. Uncontrolled fires at the factory may not only destroy the business but also cause significant damage to neighboring properties and habitats.

The following standards are required for all factories:

- At least one alternative exit with a stair connecting all the floors of the factory building.
- No exit can be locked or fastened during working hours.
- An effective and clearly audible means to warn of fires.
- Cleared passages providing access to each escape route.
- A fire drill at least once a year in each factory where more than fifty workers are employed.

6.6.2 Suggestions Regarding Fire Safety

It is important to remember that when there is a fire, the first thing one should do is to run away from it. And this is what everyone does in such a situation.

Precautionary need to be adopted is given below:

- Building should be constructed with fire resisting materials;
- Adequate exits and proper escape routes should be designed;
- Protection against fire and smoke should be ensured;
- Electrical wiring must be properly designed, installed and maintained;
- Escape routes should be lighted at all times, kept clear, be indicated by signs;
- Regular fire drills should be held
- Doors should be protected and should open along the direction of escape;
- Doors should not open on the steps and sufficient space should be provided;
- Smoke/Fire alarm systems must be installed;
- adequate number of extinguishers should be provided;
- Prior relationship with local Fire services should be established.

6.6.3 Firefighting Equipment

The following requirements for firefighting equipment shall be taken into consideration:

- *Location* - extinguishers and hoses are to be placed in readily accessible locations and in areas where the risk of fire is likely.
- *Access* - clear access is to be maintained around fire extinguishers and hoses at all times.
- *Signage* - signage is to be provided at each location, indicating the type of fire extinguisher and fire types that they are suited for.

- *Mounting* - fire extinguishers are to be mounted on a purpose made hooks or brackets and suspended above the floor.
- *Inspection* - fire extinguishers are to be inspected and serviced every 6 months.

6.6.4 Firefighting Training and Protection Measures

There were making firefighting training at the factory by the Thai Faster Products and M.K Co., Ltd described see the following figure 6.4.

- In every section of the factory, there shall be provided and kept in readiness adequate equipment for firefighting and protection.
- Each item of firefighting equipment shall be inspected and tested at appropriate intervals by a competent person. The date of the last inspection shall be entered in a logbook kept for that purpose.
- All the personnel employed shall be instructed on the use of firefighting equipment.
- Instruction to personnel in case of fire shall be clearly and concisely expressed in writing and prominently displayed on the site.
- "NO SMOKING" signs shall be conspicuously displayed at strategic locations in the factory and was highlighted in the case of identification in dull bright.
- Whenever a fire or any accident occurs, notify the nearest fire station.

The factory owner needs to take responsibility for ensuring the safety of his /her employees by taking adequate steps to rectify these problems. All buildings, including extensions to the factory, must meet legal standards and electrical equipment should be properly maintained. At the same time they must ensure that managers, supervisors and workers are properly trained in fire and safety procedures; and that exit routes are sufficient for the number of workers employed in the factory. Factory gates should be kept unlocked at all times whenever workers are in the building.





6.6.5 Operating a Fire Extinguisher

Fire extinguishers should be only used if safe and if trained to do so.



Even though extinguishers come in a number of shapes and sizes, they all operate in a similar manner. Here's an easy acronym for fire extinguisher use:

- P A S S -- Pull, Aim, Squeeze, and Sweep

Uses of a fire extinguisher properly Remember the acronym PASS .	
	<p>P – Pull the pin at the top of the extinguisher that keeps the handle from being accidentally pressed.</p>
	<p>A - Aim at the base-not the flames. This is important- in order to put out the fire, you must extinguish the fuel.</p>
	<p>S – Stand approximately 8 feet away from the fire and squeeze the handle to discharge the extinguisher. If you release the handle, the discharge will stop.</p>
	<p>S – Sweep the nozzle back and forth at the base of the fire and then move towards the fire once it starts to diminish. After the fire appears to be out, watch it carefully since it may re-ignite! Be sure to read the instructions on your fire extinguisher different fire extinguishers recommend operating them from different distances.</p>

Using Fire Extinguishers

1. Ensure that you use the correct extinguisher
2. Always keep an emergency exit behind you. (Away from the fire)
3. Stay low to avoid the effects of smoke/heat.
4. Direct extinguisher stream at base of flames.
5. Move stream in a side to side, sweeping motion.
6. If the fire gets to the point where you can no longer able to control it, retreat and close the doors. (Do not lock)

Using Fire Hose Reels

1. Turn on the stop valve
2. Run out the length of hose
3. Turn on the water nozzle and direct stream at the base of the fire.
4. Ensure you leave a direct egress path between you and the exit door/egress route



Fires have been classified into six categories involving different substances:

- Class A, combustible carbon-based solids e.g. paper, wood or textiles
- Class B, flammable liquids e.g. paraffin, petrol, diesel or oil (but not cooking oil)
- Class C, flammable gases, e.g. butane, propane or methane
- Class D, burning metals, e.g. aluminum, lithium or magnesium
- Fires caused by electrical equipment (indicated by an electric spark symbol and not the letter E)
- Class F, fats and cooking oils.

Types of extinguisher to use

- Class A fires – water, water mist, foam, dry powder, wet chemical
- Class B – water mist, foam, dry powder, CO₂, some wet chemical
- Class C – water mist, dry powder
- Class D – specialist dry powder
- Electrical – water mist, foam, CO₂
- Class F – water mist, wet chemical.

6.6.6 Fire prevention and control plan of Thai Faster Products And M.K. Co., Ltd

Various accidents can happen anytime. That sometimes we may never know. Which may be caused by or resulting from acts of nature? The ground of negligence, as in the case of fire, it can happen at any time. And, if not taken care of Pay attention to the importance of monitoring, especially for organizations that have been produced or referred to as "factory" which is often a source or Origins of the accident was due to a combination of several types of energy in the system of production. Also included is a large number of personnel associated with the various types of equipment and different these things are all important factors. Major accidents that may cause type called "fire" them.

So in order to secure the life and property of all that exists. Should the fire protection plan?

Measures to prevent and suppress fire.

Objective

- To prevent loss of life and property from fire.
- Place to ensure the safety of employees in case of fire.
- To reduce the risk of fire.
- To create a positive attitude towards the employees in the establishment. To life and property in the workplace is safe from fire. Therefore, measures to prevent and suppress fires, as follows.
 1. Providing protection and extinguishing systems. Both the fire Storage of flammable and explosive, Disposal of the flammable waste, Lightning protection, installation of fire alarm, fire escapes, including the preparation of the construction of a fire protection system.
 2. Arrange a plan to prevent and suppress fire. In the areas of surveillance, training, fire prevention campaign to fire the fire relief. Reform and revival fire up.
 3. Arrange a channel through the solution according to the specified bundle.
 4. for areas where the machine is installed. Or have the object or the wall or something. To provide a channel through to the exit this has a wide range of law.
 5. Arrange a solution, at least all the way to evacuate all employees. Out of the work area to the last exit in less than five minutes safely
 6. Final solution, which is the road to a safe area, such as road, etc.
 7. Doors used in fire escape routes are installed in the clear with no obstructions.
 8. Doors used in fire escape routes are among the most open - the one side and both sides.
 9. Doors used as escape routes, fire doors that open to the outside with no lock or chain to tie off while working.
 10. Objects together to ignition. Reference is made to separate the mixture.
 11. Organize a fire escape route without the employees working in each unit to a secure location.
 12. Arrange hand-held fire extinguishers. Fire and water systems and accessories
 13. Provide backup water used for firefighting.
 14. Coupling fire water into the building and within a single building or equal to the fire department of the government.
 15. Transmission oil fire is long or not long enough to control the fire area.
 16. System for water. Water storage and water pump installed. Have been inspected and certified by a civil engineer and to prevent fire damage.
 17. Arrange a hand-held fire extinguishers to use a chemical type fire extinguishers, dry chemical, carbon dioxide, or hard or hot. Or chemical type fire extinguisher is ABC and better.

18. The maintenance and monitoring the chemicals used in firefighting by volume defined by the type of hand-held fire extinguisher.
19. Arrange for the inspection of fire extinguisher of not less than six months at a time.
20. Arrange a monitor installed in good condition always.
21. Held fire extinguishers installed in clearly visible. And be able to use it with ease without any obstructions.
22. The maintenance Equipment. And monitoring in the active state has at least once a month or the period of time that the equipment manufacturer.
23. Ensure staff is trained to fire primarily from government agencies assigned or accepted.
24. Ensure employees on fire all the time, especially at work.
25. Providing personal protective equipment used in firefighting. And fire drills, especially such as clothing, footwear, gloves, hats, masks, heat or fumes so as to allow employees to use fire extinguishers.
26. Prevent fire caused by radiation, conduction or convection of heat sources to combustible materials. There is prepared as insulation or block.
27. Prevent the fire from the friction. Friction of machinery, Tools create sparks or heat that can cause burns or breaks such as maintenance applications.
28. Has a separate store flammable material. Or explosives as well as objects that when combined will react or flammable material into a pile. Or explosives, that mingled. And store in a fireproof wall and self-closing fire doors and off-key every time when there is no work in it.
29. Objects susceptible to reacting to the burn it. Are the classified separately stored away from buildings and flammable materials in a safe distance?
30. Controls prevent leakage or evaporation of flammable material or explosives to cause ignition.
31. Has prepared a sign "no smoking" area to store flammable material.
32. Arrange for the disposal of waste by burning in a stove designed for burning, especially in the open air. Away from the employees work in a safe distance
33. Arrange a lightning rod for lightning protection.
34. Providing Fire alarm system type voice. Employees who worked in the building heard throughout.
35. Has tested the performance of the system, a fire alarm at least once a month.
36. Organize a group of employees to work on the prevention and extinguishing and fire prevention and the director, director of operations of the system at all times.
37. Organized, who is responsible for the prevention and extinguishing receive training on the prevention and extinguishing the firefighting equipment in first aid and emergency assistance.
38. Arrange a practice evacuation of the building by a fire escape route.
39. Held the fire drills and fire drills at least once a year.

Duty Responsible for the establishment of fire protection

Fire protection is a function of

1. Executive
2. Employees.
3. Staff safety in the workplace.
4. Security guard (Rpp)

1. Executive

- 1.1 Establishment of plant layout. New technology and to safety
- 1.2 determines the area of process control. Machinery may cause fire.
- 1.3 The performance standards for fire safety.
- 1.4 Control of fire to the fire, flame, sparks, static electricity, heat or any other cause to the fire, such as welding, cutting and heating pipes. And transposition, Freight transport flammable.
- 1.5 The Board shall appoint safety officers and security plans and operations, such as fire prevention and training, and improving the condition of the work, etc.
- 1.6 Monitoring activities related to fire protection.
- 1.7 Long-term planning for the installation of fire protection systems such as flammable or smoke, Alarm system, Automatic fire suppression system in a location with flammable or combustible material easily.
- 1.8 The regulation and control of contractors or other third parties who work on the several of the fire.

Duty of employee about the fire protection

All employees must comply with the safety rules in the workplace.

- 1) Do not build a fire in a restricted area or premises without prior permission from the people who are responsible.
- 2) Do not smoke in the vicinity of the sign. "The danger of flammable or explosive material," or areas where smoking is only a venue.
- 3) Do not perform a repair tool. In areas where flammable or flammable arbitrary. Before repair work and safety officer will prepare a report based repair procedures and methods defined.

Control area containing flammable or flammable materials.

Conductivity use not to cause fire in any area of the factory. Be away from areas where flammable or easily flammable materials at least 10 meters in the radius could be done to prevent flammable or easily flammable materials safely.

Entry to the workplace and how to avoid fire

- 1) To prevent leakage of flammable fuels and various Employees exposed containers with flammable fuels or defective may result in a leak.

2) Waste or scrap materials are flammable. Employees will be collected in a container that is not flammable and away from the work area to keep it in a safe place at least one time per shift.

3) Protection from vehicles. Employees using any vehicle unloading areas where flammable gas must be care to strike the pose shock or fire.

4) To prevent electrical hazards.

Lamp cord switches, electric motors, electric fans, machine tools available in areas where flammable or flammable materials. Must regularly check the condition of the damaged wiring and grounding plug or any other that may cause fire.

5) to prevent the explosion of the boiler.

- Before lighting, check the water level

- Safety valve (SAFETY VALVES) must be tested at least one time per month, and if a leak valve, safety valve should not be used to increase the safety or performance.

- If the boiler leak, stop use immediately and reported to have resolved soon.

-Check the pressure gauge and pressure not exceeded.

-If the water level is too dry to quickly extinguish the fire of a glass tube.

Do not pump water into the boiler immediately decisively. Need to let it cool down.

- Prohibit the transportation of flammable or avoid routes that are already sparking the flame tube hot metal flakes.

-Handling flammable materials to be careful not to drop on the workspace.

-Use the safest way to move.

-Vessels used to contain do not need to open the lid. To be closed entirely.

-Set to be the sort that could cause dropped or fallen out.

Duties of officer safety in the workplace

- Monitoring locations vulnerable to fire regularly

-The details of the plan to prevent and suppress fires, as well as provide training and practice time.

-Provide maintenance and monitoring of fire extinguishers and firefighting equipment. In ready to use condition.

Duty security guard

4.1 rounds to third parties or the goods into the factory or at risk of fire.

4.2 out mounting casualty care and storage of explosives, flammable and flammable gas or areas at risk of fire.

4.3When exposed to what may have caused the fire immediately reported to stakeholders

Management and implementation of occupational safety, Environment and to work on the prevention and extinguishing

- The employer shall provide a plan for the prevention and extinguishing of surveillance. Campaign training, fire protection, fire suppression, fire relief. Rehabilitation and reform.
- Thus, for safety and to comply with the law firm has prepared the plan.
- There are 3 conditions which include 7discs.

Training Plan; May hire an outside agency to provide training require the employee or officer performance in the field of firefighting and fire escape.

The training plan;

1. Designated individuals responsible for training
2. Determine the course subject. Or subject to such training
 - Fire prevention and control plan
 - The fire initially
 - The fire advanced or advanced
 - Use of different types of fire extinguishers
 - First aid and rescue
3. Selecting training methods such as
 - Lecture
 - discussion
- 4. Defined terms used in the training
- 5. Determine who will receive training appropriate to the subject or topic of training
- 6. Evaluation of training every time

Fire prevention campaign plan

The map is designed to create attention and promote the subject of fire protection to occur. The campaign plan for fire protection;

- Designated person responsible for campaign management.
- Determine subject or topic will include campaign.
 - The element of fire.
 - storage of flammable materials
 - To reduce smoking
 - the effects of fire
 - cleaning

Monitoring plan

- By the inspection on the waste material as fuel flammable. Heat source;
- Designated person responsible for patrolling the area and clearly. By the person who will act as well.
 - Determine the specific needs of each area, the report prepared by the test results easy.

- The time the inspection and report.
- Persons monitoring report, the executive summary of the flaws in each revision as plant manager. Managers etc director reports to plan every month.
- Should be monitored every shift.

While fire, the plan will include the fire and losses include Plan 3 plan is different

The identified the individual responsible for fire suppression function of enterprises responsible for fire protection.

The plan includes the following key

1. Standing Committee composed of representatives of the Planning Department in various establishments.
2. Plans to assign individual responsibility and the responsibility clearly.
3. Tasks to be performed in the same period to separate the practice is not the same person.
4. Establishment work in a team must determine who is responsible for all shifts continuously.
5. Questions need to be clear while the fire is not ambiguous because it is a time to fast and accurate in practice, many people may be in shock. Which will result in unexpected behavior has been practicing frequently makes practitioners more confident and performs properly when the event occurred.

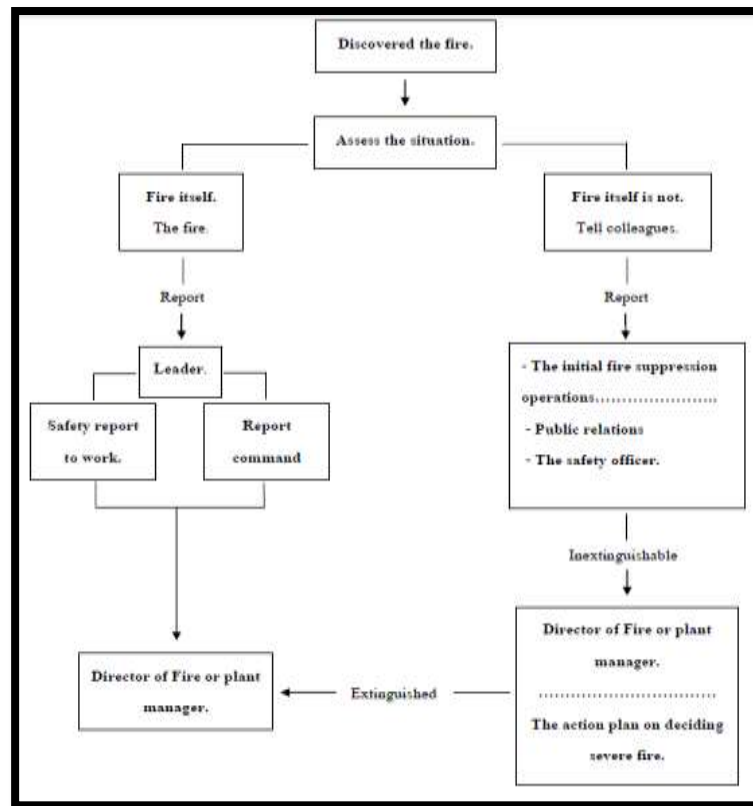


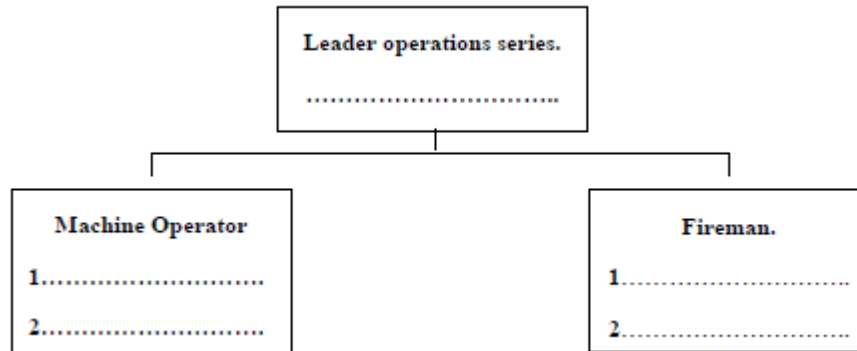
Figure 6.3 Sequential procedures when employees discovered the fire
Basic fire suppression plans

Chart of the person and work to suppress the fire

Section :

Area :

Set :



Previous worker in various positions under the plan hold primary fire

Position	Responsibilities.
Leader operations series	1. Onto the scene and informed public. Safety Board (Hp.) and chief operating officer. 2. Ordered the firefighters tackle fire source as soon as possible. 3. Instructed the staff to run the equipment, or shut off the power and then to help the fire department and / or those who do not leave the area. 4. Inform the team leader for help from others if needed.
Machine Operator	1. Controlled machines next. And shutdown and power off on orders of the fire chief. 2. Rescue firefighter when, commanded by a chief minister. 3. Together those who are not on the outside area.
Fireman	.1 The fire as soon as possible. Two., If not, immediately press the fire source extraction Fire. Or get help immediately. .3 The head immediately.

Thai faster Products and M.K. Co., Ltd

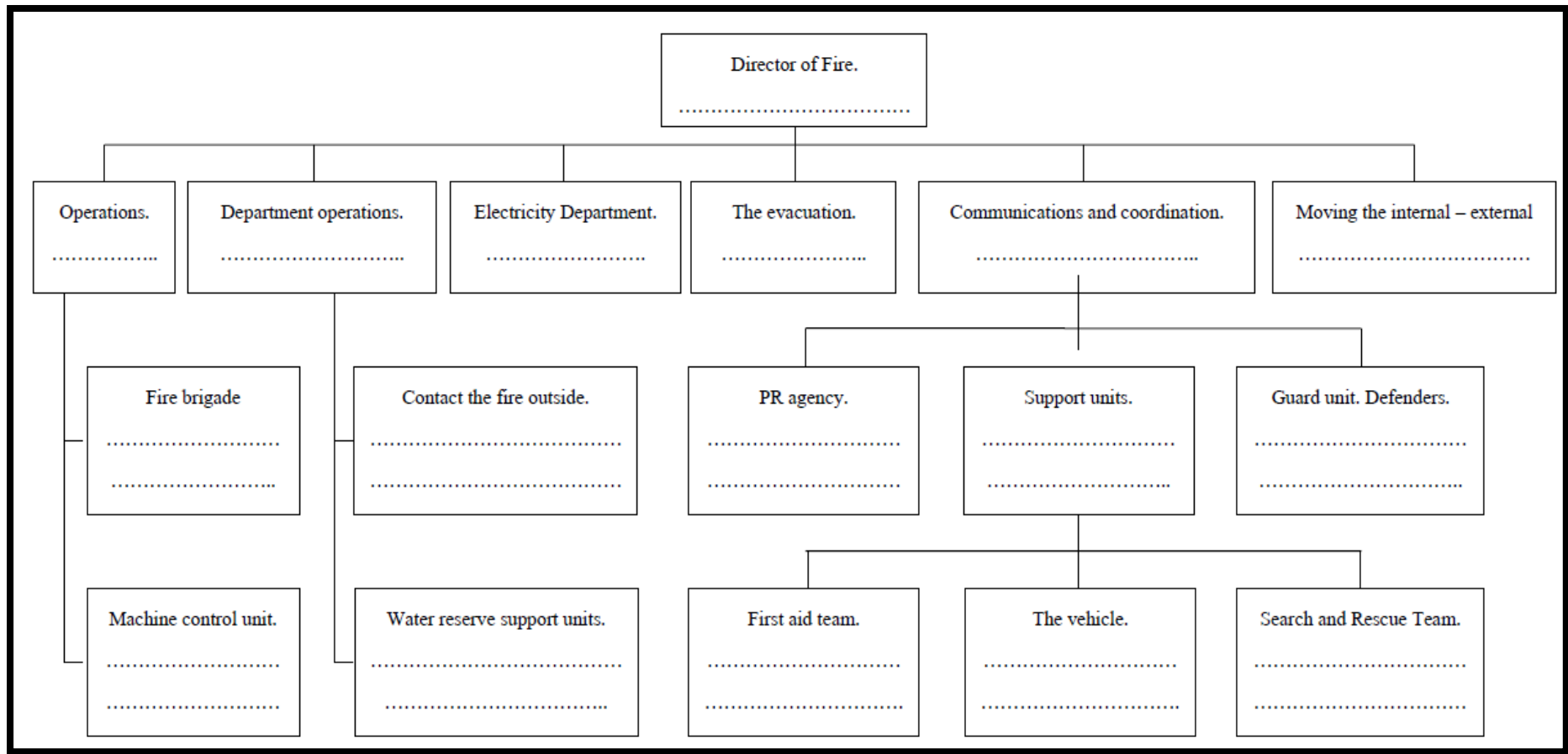


Figure 6.4 Structure on fire prevention and extinguishing severe

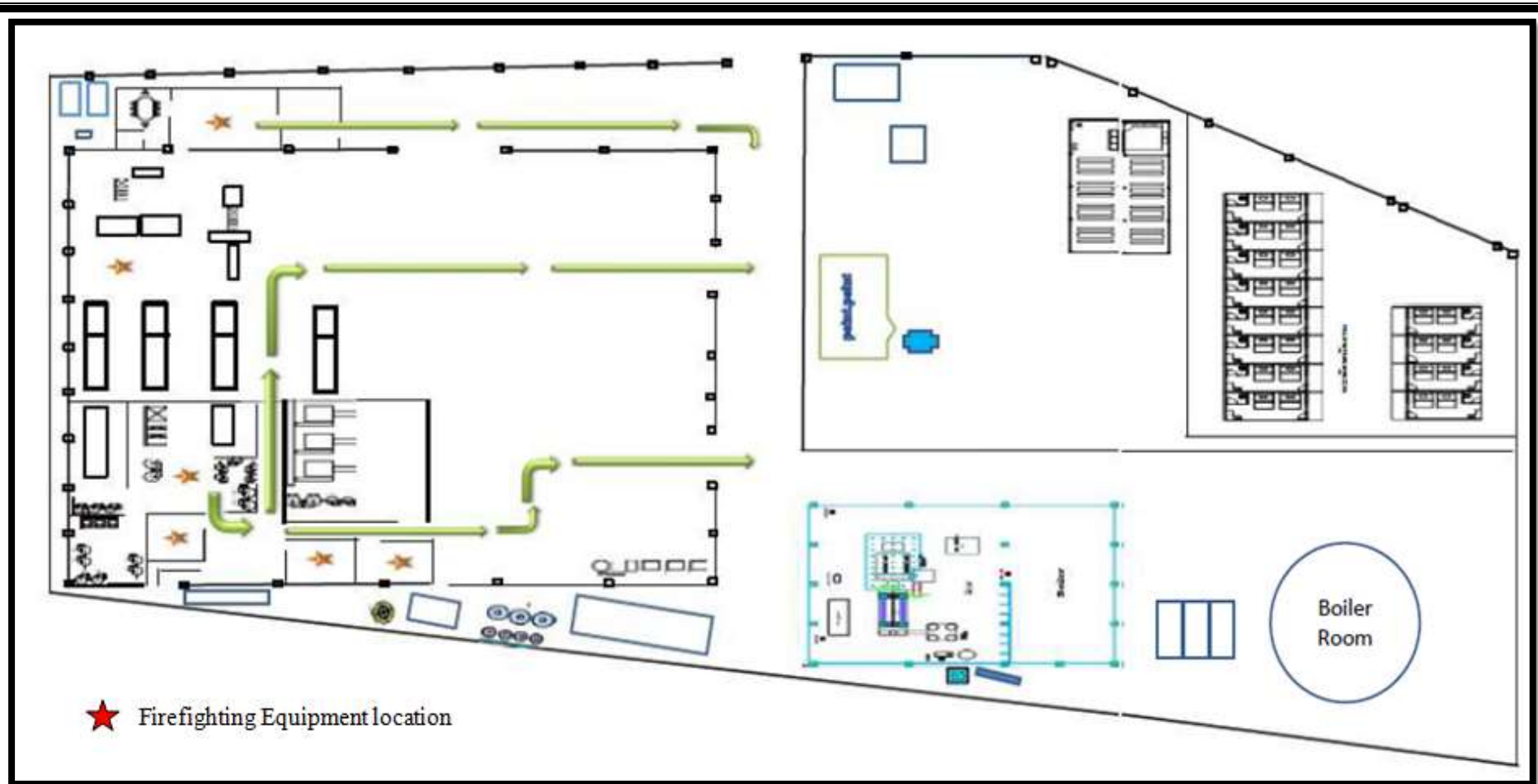


Figure 6.5 Location of Firefighting Equipment (Thai Faster Product and M.K Co., Ltd)

Previous worker plans on extinguishing fires, severe

officer	Responsible.
Director of Fire.	<ol style="list-style-type: none"> 1. Director and mandates the use of fire control plan. 2. Bid and urged cooperation to the relevant person or staff to assist in controlling the fire. Or order the evacuation plan. 3. Dictates that all parties cease fire fighting operations or reduce the severity of the fire. 4. Ordered the fire department to get help from outside the plant. 5. Director and other executable. As necessary and appropriate. 6. Cases the fire to the President without delay.
Operations.	<ul style="list-style-type: none"> - The machine control. Fire in any area. The engine control unit to control the machine to run until it was ordered to stop the machine from chief operating officer. If you can not walk or be ordered to stop the machine. A machine to help control the fire or other action as ordered. A person who is not related to other areas. - Set the fire. On fire in the area of responsibility. Whether large or small. The separation of control equipment for firefighters immediately after a fire. Without stopping the machine and operating under the command of the chief of operations in the area of operations. <ul style="list-style-type: none"> - Chief ordered to get help from others if needed. - As soon as the fire in your own space. To telephone the news to staff safety in the workplace, or the Director of Fire and Public Relations telephone number.
Department operation - Water reserve support units	<ul style="list-style-type: none"> - Facilitate fire department access to the water reserve. - In normal times, check the engine. Equipment used by checklists.

officer	Responsible
Department operation - Contact the fire outside	<ul style="list-style-type: none"> -To request help from the fire department. -Coordination of a firefighters to get the fire outside. Incoming Fire assistance. To report to the Director of Fire. To help promote the work is divided into sets. -For the fire in the machinery. Set fire to set fire should come from that place. Who should help in transporting equipment to help firefighters. -To keep the areas fire are ordered by the Director of Fire. -In normal times should be checked and updated telephone number to keep up
Electricity Department	- To meet the director of the fire quickly. In order to power cuts.
The evacuation.	- Check the fire assembly point and fire the director and staff to evacuate together.

	<ul style="list-style-type: none"> - Move to the staff meeting (rally point) evacuation plans. - Check the results of the employee to notify the public and / or the Director of Fire.
<p>Communications and coordination.</p> <p>-PR agency.</p> <p>- Support units.</p>	<ul style="list-style-type: none"> - As soon as the fire that occurred in any area. To public inspection by the fire chief of the fire area, and pronounce on what the audio line. -Stay tuned to the news release from the fire. <ul style="list-style-type: none"> * Head of the Laboratory. * Safety in the workplace. -After the fire burn, the notification sound lines. - Set up the triage nurses to provide the necessary equipment and supplies to the specified point. And be prepared to provide first aid. - Coordinating the team preparing the vehicle to bring people to the hospital. - To coordinate search and rescue team ready for orders from the Director of Fire. If you need to search and rescue.

officer	Responsible.
<p>Communications and coordination.</p> <p>- Guard unit.</p> <p>Defenders.</p>	<ul style="list-style-type: none"> - Traffic control within the company and to facilitate fire department access. The Director of Fire orders to seek help from an outside agency. - Prevent third parties not involved into the area without prior permission. - Control the movable property to be stored.
Moving the internal – external	<ul style="list-style-type: none"> - Determine the safe storage of materials, equipment and assets of the company. - Provide transportation vehicles and equipment. - Facilitate the transportation of materials.

6.7 Environmental Management Team

In preparation of an EMP, it is also necessary to have a permanent organization set up to ensure its effective implementation. Hence, Thai Faster Products & M.K Co., Ltd will organize a team consisting of officers from various departments to coordinate the activities concerned with management and implementation of the environmental control measures. The Environmental Management Team to implement EMP, to carry out Monitoring Plan and to tackle other safety, health and environmental issues of the factory is as follow.

Table 6.3 Environmental Management Team

No.	Roles	Responsibilities
1	Managing Director	<ul style="list-style-type: none"> • Responsible for all environmental issues. • To support for setting up an Environmental Management Team. • To support the implementation of the environmental management plan and monitoring plan.

		<ul style="list-style-type: none"> • To review the EMP annual report and to give feedback regarding with the performances of EMP and EMT. • Responsible for providing of safety awareness training, firefighting training and emergency response training to the employees.
2	HSE Manager (Factory Manager)	<ul style="list-style-type: none"> • To implement the environmental management plan. • To set up firefighting team and emergency response team. • To assure regulatory compliance with all relevant rules and regulations. • To minimize environmental impacts of operations by strict adherence to the EMP. • To review the scheduled monitoring test results and check whether the results are within the allowable limits. If there is any concern, plan and do corrective action. • To support to conduct the necessary trainings for health, safety and environment.
3	Executive HSE Manager (Production Manager)	<ul style="list-style-type: none"> • To plan the monitoring schedule for environmental parameters. • To plan the maintenance schedule. • To report the results and recommendations to top management. • To coordinate with regulatory agencies. • To plan and direct the team member to handle the local complaints about environmental and social issues. • To appoint the in-charge person for monitoring plan of environmental parameters. • To appoint the in-charge person for maintenance plan of generator and other machineries. • To plan for safety and health awareness training, firefighting training and emergency response training.
4	Health and Safety Coordinator (Maintenance Supervisor)	<ul style="list-style-type: none"> • To assist the management in implementing of OHS plan, Community Health and Safety Management Plan, Hazardous Chemical Management Plan and local policies on health and safety issues. • To communicate or liaise with the local authorities on health and safety issues. • To carry out the maintenance of the machineries, safety equipment and firefighting equipment as scheduled and report it to Executive HSE manager. • To response the accident, incident and injuries. • To participate in any health-care activities for both employees and communities. • To maintain all records related to health and safety issues. • To organize and assist in conducting the trainings for health and safety.
5	Environmental Officer (Production Supervisor)	<ul style="list-style-type: none"> • To assist the management in implementing of EMP and local policies on environmental issues. • To communicate or liaise with the local authorities on

		<p>environmental issues.</p> <ul style="list-style-type: none"> • To communicate and cooperate with the environmental consultant service team for scheduled monitoring plan. • To give suggestions for improving EMP. • To participate in any environmental activities. • To report the local complaints to the managing. • To maintain environmental related records. • To organize and assist in conducting of environmental awareness trainings.
6	EMT members	<ul style="list-style-type: none"> • To carry out day-to-day management of environmental and safety issues at the Project site. • To log any complaints from local people about environmental and social issues and to report to EMT coordinators and take actions as recommended by the EMT coordinators. • To make regular checkup of the factory as part of the safe working procedures. • To carry out scheduled fire drill and emergency response drill. • To coordinate and assist to carry out in performing of environmental programs, drills and trainings. • To do the jobs assigned by the EMT coordinators (according to the procedures and guidelines stated in the EMP).

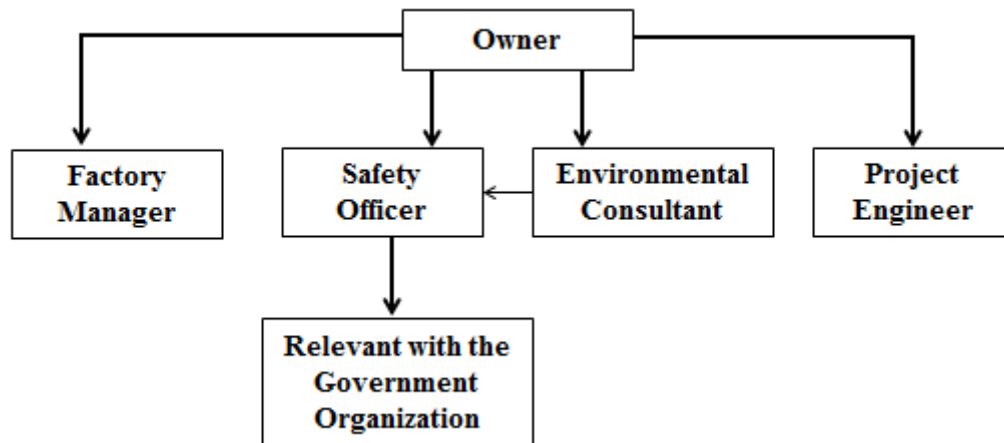


Figure 6.6 Environmental Management Team (Organization)

6.8 Environmental Monitoring Plan

Monitoring is an essential and an integral part of the implementation of the proposed environmental mitigation measures. Environmental monitoring generates useful information and improves the quality of implementation of mitigation measures.

Monitoring involves the observation, review and assessment of onsite activities to ensure adherence to regulatory standards and the recommendations made to reduce negative impacts. The plan must be comprehensive and address relevant issues, with a reporting component that will be made available to the regulatory agencies based on a mutually agreed

frequency. It is recommended that a minimum monthly monitoring report be submitted to the authorities.

Table 6.4 Environmental Monitoring Plan

Environmental Issue	Item	Location	Frequency	Responsibility
Air Quality	PM ₁₀ , PM _{2.5} , O ₂ , CO, CO ₂ , NH ₃ , NO ₂ , SO ₂ , O ₃ , VOC	Ambient air within the factory premises	Annual	Designated EMT member
	PM ₁₀ , PM _{2.5} , VOC, O ₂ , CO, CO ₂ , NO ₂ , SO ₂	Boiler and diesel generator	Bi-annual	
	PM ₁₀ , PM _{2.5} , SO _x , NO _x	Workplace (Mixing room)	Bi-annual	
	Establish a routine maintenance, inspect - ion program for burners	Boiler	Daily	
Non-hazardous Solid Waste	Set quantified waste reduction and disposal targets (in volume, weight or costs)	Workplace, Factory Premise	As necessary	EMT, Operation supervisor
	Separate bins for different kinds of waste	Workplace, Factory Premise	Daily	Operation supervisor, Workers
Hazardous Solid Waste	Provide training to employees on how to dispose of hazardous material	Workplace, Factory Premise	For each new staff	Manager
	Ensure MSDS for hazardous products are up-to-date and accessible at any time.	Workplace, Factory Premise	Monthly	Designated EMT member
Water Quality	Aluminum, Chloride, copper, cyanide, Manganese, pH, Sulfate, Total Alkalinity, TDS, Hardness, Total Iron, Turbidity	Tube well	3 time/ yr	Designated EMT member
		Drinking water		
Waste water Quality	BOD ₅ , COD, Oil & Grease, pH, Total Nitrogen, Total Phosphorous, TSS, Coliform, temperature	Processing wastewater	3 time/ yr	Operation supervisor, Designated EMT member
		WWTP influent	3 time/ yr	
		WWTP effluent	3 time/ yr	

Environmental Issue	Item	Location	Frequency	Responsibility
Noise Quality				
Ambient Noise	Noise level in decibel	Factory Premise	1 time/ yr	Designated EMT
Workplace Noise	Noise level in decibel	Maintain all equipment so it's running efficiently.	Weekly/ necessary	Factory manager
		Employees working in areas with high noise levels	Daily	Factory manager
Workplace Noise	Noise level in decibel	Mixing room	Bi-annual	Designated EMT
		generator and Boiler	Bi-annual	
Emergency Response Equipment	<ul style="list-style-type: none"> ▪ Firefighting equipment (extinguisher, fire hydrants, firehose) 	Factory Premise, Workplace, Generator Room, Fuel Storage Area	Daily	Fire brigade
	<ul style="list-style-type: none"> ▪ Fire-drill testing 	Factory Premise	Monthly	Fire brigade
	<ul style="list-style-type: none"> ▪ Servicing firefighting equipment 	All equipment	Quarterly	Fire brigade
	<ul style="list-style-type: none"> ▪ Reviewing records of accidents which is recorded on & around the entire facility 	-	Quarterly	Fire brigade
	<ul style="list-style-type: none"> ▪ OHS training 	Factory Premise	Biannual	OHS manager
Occupational Health and Safety	<ul style="list-style-type: none"> ▪ the sanitary facilities that should be kept clean and well lit. 	Factory Premise	Weekly	General manager, nurses and OHS team
	<ul style="list-style-type: none"> ▪ Ensure proper solid waste disposal and facilities. 	Factory Premise	Daily	OHS team
	<ul style="list-style-type: none"> ▪ Provide First Aid kits on the site. Ensure nurse(s) is stand-by in clinic. Educate workers on environmental management. 	Factory Premise	Daily	General manager and OHS team
	<ul style="list-style-type: none"> ▪ Provision of all necessary PPEs. 	Factory Premise	As necessary	General manager and

Environmental Issue	Item	Location	Frequency	Responsibility
	<ul style="list-style-type: none"> Workers should be trained on OSH and first-aid administration. 	Factory Premise	As necessary	OHS team
Energy Consumption	<ul style="list-style-type: none"> Record diesels consumption 	Generator, and Compressors	Monthly	General manager and OHS team
	<ul style="list-style-type: none"> Record Electricity usage 	Electric Meter	Monthly	
Resources Usage	<ul style="list-style-type: none"> The unused equipment must be switched-off 	Power Distribution Panel	Daily	In-charge in each section
	<ul style="list-style-type: none"> All water taps shut when not in used 	All Water Taps	Daily	For all employees

6.8.1 Monitoring and Reporting

Monitoring of the final effluent should be carried out at least once per month—more frequently, if the flows vary substantially.

Monitoring data should be analyzed and reviewed at regular intervals and compared with the operating standards so that any necessary corrective actions can be taken. The results should be reported to the responsible authorities and Environmental Conservation Department, as required.

The key production and control practices that will lead to compliance with emissions guidelines is implementing water conservation and recycling measures.

6.9 Green Belt Development

The company has a total land of 2.036 Acres. Thus the unit can provide a sufficient land area for green belt development. The trees will be grown within the plant boundary and at the periphery of the company premises. Thus, the proposed project will have significant positive impact on the floristic component.



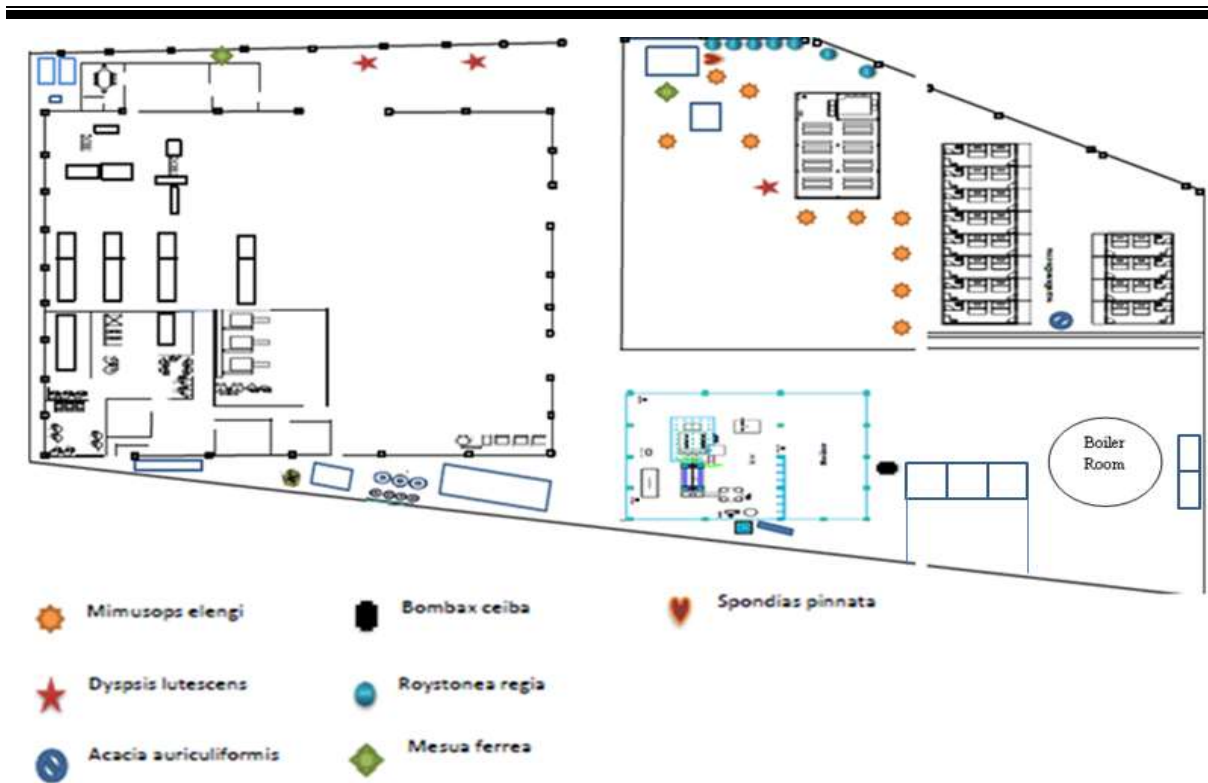


Figure 6.7 Green Plan and Landscape layout

6.10 Budgetary Provisions for EMP

Adequate budgetary provisions have been made by proponent. The management for execution of environmental management plans should be framed. The detailed capital and recurring (per annum) budget should be earmarked for pollution control/monitoring equipment, operation and maintenance of pollution control facilities.

The project is going in operation phase when this EMP report was prepared. Thus, estimated EMP budget was more emphasized for operation phase. The Project will carry out impact monitoring during operation phase. The following table shows the estimated expenditures for the implementation of Environmental Management Plan for operation phase twice a year. It can change according to the situation. The project proponent will carry out impact monitoring during operation. The following table shows the costs estimated for Environmental Monitoring for the Thai Faster Products and M.K Company Limited.

Table 6.5 Estimated Costs for Environmental Monitoring

Sr. No.	Monitoring	Locations	(a) no. of location	(b) frequency	(c) Rate (Kyats)	(a x b x c) Total Amount (Kyats)
Operation Phase						
1.	Air Quality monitoring	Stack emission of boiler and Generator	2	2 times /year	300,000	1,200,000
		Workplace Air Quality	1	2 times /year	200,000	400,000
		Ambient Air Quality	1	1 time /year	1,000,000	1,000,000

Sr. No.	Monitoring	Locations	(a) no. of location	(b) frequency	(c) Rate (Kyats)	(a x b x c) Total Amount (Kyats)
Sub-total						2,600,000
2.	Water Quality	Tube-well water	1	3 times / year	150,000	450,000
		Boiler Section Drainage	1		150,000	450,000
		Process wastewater	1		150,000	450,000
		WWTP (influent)	1		150,000	450,000
		WWTP (effluent)	1		150,000	450,000
Sub-total						2,250,000
3.	Noise Level	Work Place	3	2 times / year	50,000	300,000
		Ambient Noise	1	1 time / year	50,000	50,000
Sub-total						350,000
4.	Miscellaneous					
	Wastewater Management				Lump sum	500,000
	Air Pollution Control				Lump sum	500,000
	Solid Waste Management				Lump sum	700,000
	Green Plan				Lump sum	200,000
	Sign board on safety				Lump sum	1,000,000
	Emergency safety measures				Lump sum	100,000
	Fire safety measures				Lump sum	500,000
	Personal Protective Equipment				Lump sum	500,000
Training				Lump sum	500,000	
Sub Total						4,500,000
Total = Sub-total+ Sub-total+ Sub-total + Sub -total						97,00,000

6.11 Record Keeping and Reporting

Record keeping and reporting is one of the requirements of any production system and essentially of a good management tool. Properly maintained records of construction, installation, training, equipment maintenance, operation, fault detection and remedy can help in reducing risks of accidents, legal costs and thereby overall cost of operation of a plant.

Records also help in identifying causes of any accident and elimination of the same accident in future. Records may be maintained for the proposed plant as follows.

6.11.1 Water Use

To estimate water usage in various production processes, the wastewaters from unit operations should be monitored for each product stream at a minimum, annually. Records of monitoring results should be kept in an acceptable format.

6.11.2 Noise

Audiometric test records of employees should be kept during the employee's period of employment and longer as necessary, as they may provide a useful reference for workers' compensation. The records should be kept in a safe, secure place and held as confidential documents.

6.11.3 Hazardous Substances

Assessment reports which indicate a need for monitoring and/or health surveillance together with the results of monitoring and/or health surveillance shall be kept as records in a suitable form for at least 30 years from the date of the last entry made. Retention for a period of at least 30 years is necessary because some health effects, such as cancers, may take a long time to become evident.

The information kept will be valuable in epidemiological studies and for developing effective control strategies.

All other records, including assessment reports not indicating a need for monitoring and/or health surveillance and records of induction and training, shall be maintained for at least five years in a suitable form.

6.12 Accident Reporting

6.12.1 Purpose of Accident reporting

An accident reporting and investigation plan prescribes methods and practices for reporting and investigating accidents that can be read and understood by all managers, supervisors, and employees. No matter how conscientious the safety efforts are, accidents are going to happen sometimes due to human or system error.

6.12.2 Accident Reporting Procedures

Employees injured on the job are to report the injury to their supervisor as soon as possible after the incident/accident. Near miss accidents or incidents (when an employee nearly has an accident but is able to avoid it) should be reported as well. All accidents and incidents should be reported for prevention purposes.

The supervisor must immediately notify Human Resources Department and the Public Safety Department when an incident/accident occurs.

If they are not available a report should be forwarded for their review and the supervisor shall conduct an investigation and interview. All accident reports and police reports involving accidents with or without injury's are reviewed by the Safety office.

Any employee witnessing an accident at work is to call for emergency help or whatever assistance appears to be necessary. In addition, the employee is immediately to report the accident to his or her supervisor and take part in answering questions related to the Accident Report and Accident Investigation.

6.12.3 Accident Investigation Procedures

Thorough investigation of all accidents will lead to identification of accident causes and help:

- reduce economic losses from injuries and lost productive time;
- determine why accidents occur, where they happen, and any trends that might be developing;
- employees develop an awareness of workplace problems and hazards;
- identify areas for process improvement to increase safety and productivity; and
- suggest a focus for safety program development.

For all accident investigations, the Safety Department will perform the following duties:

- Conduct the accident investigation at the scene of the injury as soon after the injury as safely possible.
- Ask the employee involved in the accident and any witnesses, in separate interviews, to tell in their own words exactly what happened.
- Repeat the employee's version of the event back to him/her and allow the employee to make any corrections or additions.
- After the employee has given his/her description of the event, ask appropriate questions that focus on causes.
- When finished, remind the employee the investigation was to determine the cause and possible corrective action that can eliminate the cause (s) of the accident.
- Complete an accident investigation report with the employee and review data with employee for accuracy. This will provide information to put into database format.

The accident investigation report is used to:

- track and report injuries on a monthly basis;
- group injuries by type, cause, body part affected, time of day, and process involved;
- determine if any trends in injury occurrence exist and graph those trends if possible;
- identify any equipment, materials, or environmental factors that seem to be commonly involved in injury incidents;
- discuss the possible solutions to the problems identified with the safety team and superiors; and
- Proceed with improvements to reduce the likelihood of future injuries.

7.0 CAPACITY DEVELOPMENT AND TRAINING

Capacity building of senior factory officers will enhance the awareness of the manufacturing case of cleaner production and possibly also of the need for ensuring compliance with local legislation. In various developing countries, companies tend to be hesitant to train their employees out of fear that they will shift to a new employer on the basis of these increased skills. This hesitation to training makes it difficult to provide professionals with new insights that help the industry move ahead. Capacity building and knowledge exchange within the sector is also likely to reduce the resistance to change. If successful implementation is seen in the local industry, others are more likely to follow.

7.1 Corporate Social Responsibility Plan

We, Thai Faster Products and M.K Co., Ltd will contribute 1 % net profit for social activities that will help society and country of Myanmar. Our social welfare activities shall include training of our employees such as on job training to be more qualified and providing necessary healthcare such as medical checkups and giving proper medical knowledge about diseases and its prevention. Part of our CSR activity such as donations will also contribute to public school around our factory.

Thai Faster Products and M.K Co., Ltd will undertake that 1 % of net profit earned from our business will be contributed towards CSR in the Republic of the Union of Myanmar.

The CSR fund will be used for;

- 50 % for environmental conservation activities
- 10 % for social activities of the nearby wards
- 15 % for education development
- 10 % for donation to welfare states and
- 15 % for in donation to orphanage and religious places

7.2 Employees' Welfare

The following facilities and services are the company practices and based on the labor law of the Country. Thai Faster Products and M.K Company Limited will set up a plan of proper welfare commensurate with that of prestigious company for its employees as follows:

7.2.1 Staff Transportation

The project proponent arranges the transportation for all employees. There are two routes arranged for the ferry transport way.

- The route (1) - Factory to No.(1) Bus Stop, Hlaing Tharyar Township
- The route (2) - Factory to Alae village, Hlaing Tharyar Township.

7.2.2 Accommodation

The project proponent arranges dormitory with full facilities for foreign technicians (4) at the project site.

7.2.3 Other Benefits

Uniform

All employees are supplied with uniform free of charge twice a year.

Health Care

The Company provides medical check-ups (free of charge) and Covid-19 Vaccination for all employees, if any emergency cases arise due to the work related activities. In addition, purified water is provided for staff drinking water. Appropriate sanitation facilities are installed and regular disinfection work carried out. The project proponent provides to the following health programs.

- a) Medicine and first aid kits are available at the factory to address emergency cases.
- b) There have first aid kits and a resting room for staff who feel sick
- c) If the employees are sick will be sent to social welfare hospital for care
- d) The project proponent trains employee on basic health care every three months. It aims to teach staff how to provide first aids for injured person during emergency cases.
- e) The project proponent supply proponent supply medicine and/ or provide for the cost of medicine longtime employees as required.

Bonus

Based on the performance of the company, annual bonus will be declared and paid out to each employee before the Myanmar New Year (Water Festival). The amount of bonus will be in accordance with the amount of profit earned by the company.

All the above-mentioned employee benefits are the usual company practices and based on the labor law of the country, other benefits such as leave (sick leave, annual leave etc.) would be drawn up and included in the Employees' welfare plan accordingly.

7.3 Employee Education

In addition to the maintenance and management of a safe and reliable operating system, there is a need to continuously strive to improve technical skills and deepen the skill base. To this end, the operational staff needs to refine their trained operating and technical maintenance skills. Regularly scheduled on-the-job training is vital to maintaining and improving technical skills.

- Ensure employees are trained whenever new equipment is installed or new procedures are implemented.
- They should be familiar with the hazards associated with the material they are using and be aware of potential sources of contamination.

- To make sure employees are aware of the spill response plan, provide regular employee training on spill cleanup procedures and washing practices and properly trained to carry it out.
- Maintain awareness of best available technology, as many companies now consider environmental issues when designing and manufacturing their products.
- Keep training records of all employee

7.4 Employee Involvement

Environmental conservation will usually require some engineering, scheduling, or operational changes; but unless employees are motivated with an enthusiastic effort, the goals may not be reached. Employee suggestions should be solicited. Their voice in planning and goal setting and their sincerity in executing a conservation program may well determine the success or failure of the project. Some firms have effectively utilized a committee of employees to develop and conduct a conservation program.

Prominently displaying a sizeable chart showing the amount of the various utilities used each month per unit of production helps maintain the interest and cooperation of everyone.

7.5 Training on Safety Production

1. Factory Manager shall train new employees about safety production and skills.
 - First, let workers understand the fire alarm, firefighting equipment, emergency lights, emergency exits, evacuation maps, safe escape, fire and evacuation drills, personal protective equipment, electrical equipment, drinking water equipment, etc.;
 - Second, let new employees understand the factory environment system, including factory sanitation, the control of electrical equipment, the handling of chemicals, the light source to meet production needs;
 - Third, let workers know Environment Protection System, particularly:
 - a. When not on use, turn off power and water faucets. Violation operator must be treated according to the internal evaluation standard. If there are any updates, directors shall train employees about the updates.
 - b. Equipment controller shall be trained about the maintenance of the machine, periodic inspection and the cleaning of machine place.

2. Emergencies training shall be responsible by plant manager

For example, worker injuries occur in production, it is necessary for workers to learn how to use medicine in medicine cabinet or call emergency personnel. Director shall check the medicine cabinet periodically. Directors shall be called to send the wounded to hospital if serious.

If the unexpected disasters occur, such as earthquake, floods, fires etc., employees shall be trained about how to escape.

Fire safety evacuation shall be held by directors twice per year, meetings about safety production shall be initiated by deputy factory director. Middle managements and workshop directors shall be invited.

3. Let employees know:
 - a. There are 11 days federal holidays per year.
 - b. Wages in sick leave will be paid in accordance with the minimum wage if hospital record is available.
 - c. marriage leave,
 - d. bereavement leave,
 - e. maternity leave,
 - f. annual leave and
 - g. Leave program.

Let employees understand:

- a. The recruitment process.
- b. The prohibition of child labor,
- c. youth workers policy,
- d. no forced labor,
- e. no discrimination,
- f. the payroll system,
- g. payroll calculation and
- h. Process of forgetting punching in / out.
- i. Wages can be increased if employees work more efficiently and let employees agree to pay social security and knowing the benefits.

7.6 Grievance Redress Mechanism (GRM)

The proponent has team for Grievance solution within the Factory. The suggestion box is also providing in the factory. The Worker Compliance Committee (WCC) team is described the following table 7.1.

Table 7.1 WCC team of the Factory

No.	Name	Designation
1	Mr. Than Htwe	Production Leader
2	Naw Win Sandar	HR
3	Thin Su Hlaing	Supervisor
4	Thiri Aye	Production staff
5	Than Zaw Htwe	Production staff



Figure 7.1 Suggestion Box and WCC meeting record photo

8.0 PUBLIC CONSULTATION AND INFORMATION DISCLOSURE

Thai Faster Products and M.K. Co., Ltd. will implement Manufacturing and Distribution of various types of Jellies Plot No. 467/A, Ka Naung Min Thar Gyi Street, Shwe Lin Pan Industrial Zone, Hlaing Thar Yar Township, Yangon Region, Republic of the Union of Myanmar, on the area of (2.036) acres. Green Myanmar Environmental Services Co., Ltd has been responsible for the assessment of environmental and social impact for the project. As part of this procedure, public participation involved not only meetings with nearest local residents but also discussion with factory employees.

8.1 PURPOSE

Public consultations on environmental management programs are designed to provide a real understanding of industry issues and the aim is to make the public aware of the environmental impact of industrial operations and the increase in job opportunities caused by industry. By participating in the consultation process with anyone affected by the proposed project, the business community will be able to resolve any issues that may arise in advance.

8.2 METHODOLOGY AND APPROACH

Green Myanmar Environmental Services Co., Ltd. has taken the following two steps in gathering public opinion and information about the factory.

- (a) Meeting with factory staff and obtaining workplace advice
- (b) Meeting with the relevant government organizations and the vicinity of the factory

8.3 MEETING WITH THE FACTORY'S EMPLOYEES

The manufacturing of various of Jellies of the Thai Faster Products and M.K Company Limited for reporting of the Environmental Management Plan (EMP), there were met with the factory staff about of the Drinking water system, cleaning system, sanitation system, Noise, Particles, Smell Smoke, Adequate lighting and Ventilation system, in the workplace and about the social situation in the workplace. A total number of (21) suggestions letters were collected from employees. We also received (21) signed employees at attendance lists that were shown in Appendix (19). Their comments and suggestions were attached as Appendix (20).

Method	- Meeting
Date	- 29.3.2018
Participants	- 21 Factory's staff
Venue	- Meeting room



Figure 8.1 Photos Record of Employees Discussion Program

Table (8.1) Excerpts from suggestion of the factory staff

No	Suggestions/ Comments
	• Suggestion on occupational health and safety
	• About the personal protective equipment, all persons mentioned that they were provided.
	• About the drinking water, all persons mentioned that they were provided with good drinking water.
	• About the sanitation system, all persons recommended it is good and enough.
	• About the cleaning system, all staff members who attended the meeting stated that it was convenient to have soap / hand sanitizer for washing.
	• About the light intensity of workplace, all persons recommend.
	• About the ventilation system in workplace, all persons recommend.

Suggestion on working conditions in the workplace
• About the noise in workplace, all persons mentioned there was no noise at the workplace.
• About the odor, all persons mentioned there have no odor at the workplace.
• About the particles/dust in workplace, all persons mentioned the was no particle at the workplace.
Suggestion on the social relation in workplace
• About the social relation in workplace, all persons mentioned it was convenient with upper level.

8.4 Meeting with the relevant government organizations and the vicinity of the factory

There are two ways of discussion, one way is participants can involve themselves in public consultation meeting and another way is by writing suggestions on distributed suggestion form.

Meeting attendees were encouraged to ask questions and give comments during and after the presentation. Comment forms were available at each meeting for attendees to write comments at the time of the meeting.

On August 5th 2018 at KaSin Village Tract Administrative Office, Hlaing Thar Yar Township, the public meeting for disseminating project information to general public including stakeholder and requesting their comments and (20) suggestions letter well collect from the (30) participants from local community attended the public meeting and participated in open discussion. Attendee lists were shown to Appendix (17). Their comments and suggestions were attached as Appendix (18).

Method	- Meeting
Date	- 5.8.2018
Participants	- local community, administrative organization, responsible person of project and Third party organization
Venue	- KaSin Village Tract Administrative Office, Hlaing Thar Yar Township.

The main points of discussion, questions and answers were mentioned in the following table.

Table 8.2 Comments of Public Consultation Meeting

No	Participants	Suggestions and Discussions
1	U Myo Thint	• Ensure to keep for Air, Water and Soil of the environment
2	U Than Zaw Oo	
3	Ma Aye Aye Htet	
4	Daw Thuzar Nyunt	• benefits and disadvantages of the impact to the Environment • supporting for allowance of the employees
5	Daw Khin Ohn Myint	• Ensure to keep the environment not to effect due to the manufacturing of various types of Jellies
6	U Tate Sein	• Follow to National guideline, not to effect health and

		social of the surrounding of the factory
7	U Sein Thaung	
8	U Soe Myint	• Ensure to keep for surrounding of the factory
9	U Mya Thwin	
10	Myo Thu	• Thank you so much for performing of a good practice
11	Ma Myint Myint Aye	• I want to mitigate food dye in the jellies for health of the children
12	U Kyi Soe	• To keep cleaning of the factory's environment
13	Daw Aye Thandar	• I got it, the benefits and disadvantages of the impact to the Environment due to dispose of wastewater from the factory
14	Daw Wai Wai Khin	• I advise to discuss manufacturing of jellies for the health of the children because the most of the children are customers
15	Daw Zar Zar Htet	• Ensure a safe and healthy workplace for employees
16	Daw Aye Mi	• Ensure to keep the production of jellies and not polluting the environment
17	Ma Khin Win Maw	<ul style="list-style-type: none"> • I want to mitigate food dye in the jellies for health of the children • Process of factory and area is very clean • I want to manufacture of jellies, not to cause disease but to get energy
18	Ma Thida	<ul style="list-style-type: none"> • To keep the environment clean • Not to cause for the health of the employees of the factory • I advise to discuss manufacturing of jellies for the health of the children because the most of the children are customers
19	Daw Su Wai	<ul style="list-style-type: none"> • To keep the environment clean • Must be cleaned packaging of the jellies • Don't be use chemical • Not to pollute for Air, Water, Soil and Noise of the environment • I advise to manufacture of Jellies, not to effect on the health of the children • Must be cleaned surrounding of the factory
20	Daw Swe Swe Oo	<ul style="list-style-type: none"> • Don't be use chemical dye • Must be cleaned packaging of the jellies • I advise to generate for Jellies, not to effect on the health of the children but to get energy for them



Figure 8.2 Recorded Photos taken from Public Disclosure Meeting

8.5 Response for Comments and Suggestions

Green Myanmar Environmental Services (GMES) Co., Ltd requested client, Thai Faster Products & M.K Co., Ltd to commitments on the suggestions of public consultation meeting by email at 17.8.2018. The client replied at 24.8.2018 by email. The GMES requesting letter and the proponent's commitment letters are attached as Appendix (21) and (22) respectively.

9.0 CONCLUSION AND RECOMMENDATION

9.1 Conclusion

This Initial Environment Examination (IEE) study was carried out based on the primary data, secondary data, information provided by the project proponent, existing studies and reports relevant to the project, baseline environmental monitoring and stakeholder engagement. Assessments of potential environmental impacts due to implementation of the project activities during operational phase is conducted qualitatively and quantitatively where possible. This IEE report provides a full picture of all potential environmental impacts associated with the proposed project, and made recommendations for prevention and mitigation measures for negative impacts and enhancement for positive impacts.

The positive impacts due to the proposed project will be as follows.

- Increasing local employment opportunities
- Enhancing the capabilities and work skills of the local employees
- Improving of socio-economic conditions
- Increasing of government's revenue
- Supporting the economic growth of country
- The negative impacts due to the proposed project will be as follows.
- Air Pollution
- Water Pollution
- Noise pollution
- Solid Waste generation

Based on the analysis values of the air quality, water quality and noise levels, these are the summary of findings.

9.2 Findings

Air Pollution

Particulate Matter (PM10 & PM2.5) contents of ambient air are higher than National Environmental Quality (Emission) Guidelines. Sulfur Dioxide level of ambient air is also slightly higher than guidelines. Other parameters are within the permissible limits of the guidelines. The Particulate Matter (PM10 & PM2.5) contents of workplace air analysis are within the guideline values and there is no issue.

Water Pollution

It has been noticed that turbidities of waste water and tube well water are slightly higher than the guideline values. The drinking water quality is within the WHO guideline limits. The other parameters of all water sources are within the guideline values and there are no issues.

Noise Pollution

The ambient noise level is within the permissible level. Noise level monitoring in several workplaces are conducted and in most of the workplaces the noise levels are within

the allowable limits. Based on the evaluation of the significance of impacts qualitatively, these are the summary of findings.

Solid Waste Generation

There is found dispose of the solid waste systematically accord to the guidelines and no critical issue of solid waste disposal.

For operational phase, air pollution, water pollution, soil pollution, socio-economic aspects and health and safety issues have moderate risks and fire hazard is major risk. But after implementation of mitigation measures, the residual impacts are low risks and it is acceptable. For decommissioning phase, air pollution, water pollution, socio-economic impacts, health and safety issues are moderate risks and noise pollution is major risk. But after implementing the mitigation measures, the residual impacts will likely to be low risks and it would be acceptable.

9.3 Recommendations

Based on potential impacts figured out, an Environmental Management Plan (EMP) is prepared and presented in this report, as a solution for environmental, social, health and safety issues for operational phase and decommissioning phase. EMP is prepared in compliance with the existing environmental policy, laws, rules and instructions of the Republic of the Union of Myanmar. Many of the impacts are localized. As the project, fire hazard is a critical concern. The other concerns are water resource depletion and electricity consumption. The recommendations are

- To reduce the risk of fire, Fire Prevention Plan (as in EMP) need to be implemented and adhered to it.
- To minimize the water consumption, it is recommended that to install water meter and water saving equipment.
- To reduce electricity consumption, it is recommended that to use natural light as much as possible in the daytime, energy saving lamps, auto pump, and variable speed drive motor and inverter type air conditioners.
- To minimize Sulfur Dioxide emission level, low Sulfur content diesel should be used for generators.
- To reduce PM2.5 and PM10 emission within premises, grow more plants. It is also advised that to maintain good housekeeping. Spray water to suppress the dust generation.
- To reduce turbidity of tube well water, let the particles settle first for sedimentation in the water storage tank before using.
- To reduce turbidity of waste water, put the sedimentation pond and discharge the waste water only after treating to the waste water treatment plant.
- To reduce the risks of incidents, preventive measures for health, safety and fire must be followed by all employees.
- The proponent should follow environmental policy, laws, rules and instructions of Union of Myanmar.
- Implement EMP once it is approved by relevant authorities.
- Keep all the records of EMP for environmental audit.


- Review the annual environmental audit report and take necessary actions for any concerns raised.
- To boost the socio economic of the local environment and social welfares of the employees, the effective CSR should be developed and implemented.
- The effective implementation and adherence to EMP might assist for minimizing of the negative environmental and social impacts to acceptable levels.

APPENDIX


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APPENDIX (1): Certificate for Transitional Consultant Registration



REPUBLIC OF THE UNION OF MYANMAR
Ministry of Natural Resources and Environmental Conservation
CERTIFICATE FOR TRANSITIONAL CONSULTANT REGISTRATION
 (ကြားကာလအကြံပေးလုပ်ကိုင်သူမှတ်ပုံတင်ခြင်းအထောက်အထားလက်မှတ်)





No. 0006 Date 11 / 03 / 2018

The Ministry of Natural Resources and Environmental Conservation, hereby, issues this certificate to the organization under Environmental Impact Assessment Procedure, Notification No. 616/2015.

(ပတ်ဝန်းကျင် ထိခိုက်မှုဆန်းစစ်ခြင်းဆိုင်ရာ လုပ်ထုံးလုပ်နည်း၊ အမိန့်ကြော်ငြာစာအမှတ်၊ ၆၁၆/၂၀၁၅ အရ သယ်စာတန့်နှင့် သဘာဝပတ်ဝန်းကျင်ထိန်းသိမ်းရေးဝန်ကြီးဌာနသည် ဤအထောက်အထားလက်မှတ်ကို အဖွဲ့အစည်းအား ထုတ်ပေးလိုက်သည်။)

(a) Name of Organization (အဖွဲ့အစည်းအမည်)	Green Myanmar Environmental Services Co., Ltd.
(b) Name of the representative in the organization (အဖွဲ့အစည်းကိုယ်စားလှယ်၏ အမည်)	Engr. U Sein Thuang Oo
(c) Citizenship of the representative in the organization (အဖွဲ့အစည်းကိုယ်စားလှယ်၏ နိုင်ငံသား)	Myanmar
(d) Identity Card /Passport Number of the representative person in the organization (အဖွဲ့အစည်းကိုယ်စားလှယ်၏ မှတ်ပုံတင်/နိုင်ငံကူးလက်မှတ် အမှတ်)	12/ Ma Ya Ka (N) 082871
(e) Address of organization (ဆက်သွယ်ရန်လိပ်စာ)	115, Kanaung Min Thargyi Road, Hlaing Thar Yar Industrial City, Zone (1), Hlaing Thar Yar Township, Yangon. gmescompany@gmail.com , 09 5122448
(f) Type of Consultancy (အကြံပေးလုပ်ကိုင်မှုအမျိုးအစား)	Organization
(g) Duration of validity (သက်တမ်းကုန်ဆုံးရက်)	31 March 2018

EXTENSION
 ထက်တမ်းတိုးခြင်း
 The VALIDITY of this certificate is extended for one year from (1.4.2018) to (31.3.2019)
 ဤလက်မှတ်အား (၀-၅-၂၀၁၈) မှတ်ပုံတင် (၁၀-၃-၂၀၁၉) မှတ်ပုံတင် ထက်တမ်းတိုးခြင်း

 For Director General
 (Soe Naing, Director)
 Environmental Conservation Department


 Director General
 Environmental Conservation Department
 Ministry of Natural Resources and Environmental Conservation

Areas of Expertise Permitted
(ခွင့်ပြုသည့် ကျွမ်းကျင်မှုနယ်ပယ်များ)

1. Air Pollution Control
2. Facilitation of meeting
3. Meteorology, Modeling for Air Quality
4. Risk Assessment and Hazard Management
5. Socio-Economy
6. Water Pollution Control
7. Waste Management
8. Chemical Engineering Plant Design
9. Chemical Engineering Process Design
10. Chemical Engineering, Laboratory Analysis for water and waste water
11. Environmental Management
12. Industrial Management

EXTENSION
သက်တမ်းတိုးပေးခြင်း
The VALIDITY of this certificate is extended for one year from (1.1.2022) to (31.12.2022)
ဤသက်တမ်း(၁-၁-၂၀၂၂) ရက်မှ (၃၁-၁၂-၂၀၂၂) ရက်အထိ တစ်နှစ်သက်တမ်းတိုးပေးသည်။
Soe Naing
For Director General
(Soe Naing, Director)
Environmental Conservation Department


EXTENSION
သက်တမ်းတိုးပေးခြင်း
The VALIDITY of this certificate is extended for six months from (1.7.2021) to (31.12.2021)
ဤသက်တမ်း(၁-၇-၂၀၂၁) ရက်မှ (၃၁-၁၂-၂၀၂၁) ရက်အထိ ခြောက်လသက်တမ်းတိုးပေးသည်။
Soe Naing
For Director General
(Soe Naing, Director)
Environmental Conservation Department

EXTENSION
သက်တမ်းတိုးပေးခြင်း
The VALIDITY of this certificate is extended for six months from (1.1.2019) to (31.12.2019)
ဤသက်တမ်း(၁-၁-၂၀၁၉) ရက်မှ (၃၁-၁၂-၂၀၁၉) ရက်အထိ ခြောက်လသက်တမ်းတိုးပေးသည်။
Soe Naing
For Director General
(Soe Naing, Director)
Environmental Conservation Department


EXTENSION
သက်တမ်းတိုးပေးခြင်း
The VALIDITY of this certificate is extended for six months from (1.7.2021) to (31.12.2021)
ဤသက်တမ်း(၁-၇-၂၀၂၁) ရက်မှ (၃၁-၁၂-၂၀၂၁) ရက်အထိ ခြောက်လသက်တမ်းတိုးပေးသည်။
Soe Naing
For Director General
(Soe Naing, Director)
Environmental Conservation Department

EXTENSION
သက်တမ်းတိုးပေးခြင်း
The VALIDITY of this certificate is extended for one year from (1.1.2020) to (31.12.2020)
ဤသက်တမ်း(၁-၁-၂၀၂၀) ရက်မှ (၃၁-၁၂-၂၀၂၀) ရက်အထိ တစ်နှစ်သက်တမ်းတိုးပေးသည်။
Soe Naing
For Director General
(Soe Naing, Director)
Environmental Conservation Department

APPENDIX (2): Certificate for Transitional Consultant (Person)



REPUBLIC OF THE UNION OF MYANMAR
Ministry of Natural Resources and Environmental Conservation
CERTIFICATE FOR TRANSITIONAL CONSULTANT REGISTRATION
 (ဤစာတမ်းသည် အကြံပေးလုပ်ကိုင်သူမှတ်ပုံတင်ခြင်းအထောက်အထားလက်မှတ်)



No. **0019** Date **14/3/2018**

The Ministry of Natural Resources and Environmental Conservation, hereby, issues this certificate to the person under Environmental Impact Assessment Procedure, Notification No. 616/2015.
 (ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်းဆိုင်ရာ လုပ်ထုံးလုပ်နည်း၊ အမိန့်ကြော်ငြာစာအမှတ်၊ ၆၁၆/၂၀၁၅ အရ သယ်စာတစ်ခုနှင့် သဘာဝပတ်ဝန်းကျင်ထိန်းသိမ်းရေးဝန်ကြီးဌာနသည် ဤအထောက်အထားလက်မှတ်ကို လူပုဂ္ဂိုလ်အားထုတ်ပေးလိုက်သည်။)

(a) Name of Consultant (အကြံပေးပုဂ္ဂိုလ်အမည်)	Engr. U Kyaw Soe Win
(b) Citizenship (နိုင်ငံသား)	Myanmar
(c) Identity Card / Passport Number (မှတ်ပုံတင်/နိုင်ငံကူးလက်မှတ် အမှတ်)	12/ Ou Ka Ta (Naing) 038453
(d) Address (ဆက်သွယ်ရန်လိပ်စာ)	No. 155, Kanaung Min Thargyi Road, Hlaing Thar Yar Industrial City, Zone(I), Hlaing Thar Yar Township, Yangon gmesccompany@email.com ksw1963@gmail.com . 09 5081451
(e) Organization (အဖွဲ့အစည်း)	Green Myanmar Environmental Services Company Limited
(f) Type of Consultancy (အကြံပေးလုပ်ကိုင်မှုအမျိုးအစား)	Person
(g) Duration of validity (သက်တမ်းကုန်ဆုံးရက်)	31 March 2018

EXTENSION
သက်တမ်းတိုးပွင့်ခြင်း

The VALIDITY of this certificate is extended for one year from (1.4.2018) to (31.3.2019)
ဤစာတမ်းသည် (၁-၄-၂၀၁၈) ရက်နေ့မှ (၂၀၁၉-၀၃-၃၁) ရက်နေ့အထိ တစ်နှစ်သက်တမ်းတိုးပွင့်သည်။

Soe Naing
For Director General
(Soe Naing, Director)
Environmental Conservation Department

Soe Naing
Director General
Environmental Conservation Department
Ministry of Natural Resources and Environmental Conservation

Areas of Expertise Permitted
(ဇွင့်ပြုသည့် ကျွမ်းကျင်မှုနယ်ပယ်များ)

1. Facilitation of meeting
2. Industrial Management

EXTENSION
သက်တမ်းတိုးပွင့်ခြင်း

The VALIDITY of this certificate is extended for six month from (1.1.2021) to (30.6.2021)
ဤစာတမ်းသည် (၁-၁-၂၀၂၁) ရက်နေ့မှ (၂၀၂၁-၀၆-၃၀) ရက်နေ့အထိ (၆)လ သက်တမ်းတိုးပွင့်သည်။

Soe Naing
For Director General
(Soe Naing, Director)
Environmental Conservation Department

EXTENSION
သက်တမ်းတိုးပွင့်ခြင်း

The VALIDITY of this certificate is extended for nine month from (1.4.2019) to (31.12.2019)
ဤစာတမ်းသည် (၁-၄-၂၀၁၉) ရက်နေ့မှ (၂၀၁၉-၁၂-၃၁) ရက်နေ့အထိ (၉)လ သက်တမ်းတိုးပွင့်သည်။

Soe Naing
For Director General
(Soe Naing, Director)
Environmental Conservation Department

EXTENSION
သက်တမ်းတိုးပွင့်ခြင်း

The VALIDITY of this certificate is extended for six months from (1.7.2021) to (31.12.2021)
ဤစာတမ်းသည် (၁-၇-၂၀၂၁) ရက်နေ့မှ (၂၀၂၁-၁၂-၃၁) ရက်နေ့အထိ (၆)လ သက်တမ်းတိုးပွင့်သည်။

Soe Naing
For Director General
(Soe Naing, Director)
Environmental Conservation Department

EXTENSION
သက်တမ်းတိုးပွင့်ခြင်း


The VALIDITY of this certificate is extended for one year from (1.1.2020) to (31.12.2020)
ဤစာတမ်းသည် (၁-၁-၂၀၂၀) ရက်နေ့မှ (၂၀၂၀-၁၂-၃၁) ရက်နေ့အထိ တစ်နှစ်သက်တမ်းတိုးပွင့်သည်။

Soe Naing
For Director General
(Soe Naing, Director)
Environmental Conservation Department

EXTENSION
သက်တမ်းတိုးပွင့်ခြင်း

The VALIDITY of this certificate is extended for one year from (1.1.2022) to (31.12.2022)
ဤစာတမ်းသည် (၁-၁-၂၀၂၂) ရက်နေ့မှ (၂၀၂၂-၁၂-၃၁) ရက်နေ့အထိ တစ်နှစ်သက်တမ်းတိုးပွင့်သည်။

Soe Naing
For Director General
(Soe Naing, Director)
Environmental Conservation Department



REPUBLIC OF THE UNION OF MYANMAR
Ministry of Natural Resources and Environmental Conservation
CERTIFICATE FOR TRANSITIONAL CONSULTANT REGISTRATION
(ကြားကာလအကြိမ်ပေးလုပ်ကိုင်သူမှတ်ပုံတင်ခြင်းအထောက်အထားလက်မှတ်)



No. 10021 Date 13.03.2018

The Ministry of Natural Resources and Environmental Conservation, hereby, issues this certificate to the person under Environmental Impact Assessment Procedure, Notification No. 616/2015.
(ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်းဆိုင်ရာ လုပ်ထုံးလုပ်နည်း၊ အမိန့်ကြော်ငြာစာအမှတ်၊ ၆၁၆/၂၀၁၅ အရ သယံဇာတနှင့် သဘာဝပတ်ဝန်းကျင်ထိန်းသိမ်းရေးဝန်ကြီးဌာနသည် ဤအထောက်အထားလက်မှတ်ကို လူပုဂ္ဂိုလ်အားထုတ်ပေးလိုက်သည်။)

(a) Name of Consultant (အကြံပေးပုဂ္ဂိုလ်အမည်)	Engr. Daw Khin Swe Aye
(b) Citizenship (နိုင်ငံသား)	Myanmar
(c) Identity Card / Passport Number (မှတ်ပုံတင်/နိုင်ငံကူးလက်မှတ် အမှတ်)	12/Sa Kha Na (N) 017708
(d) Address (ဆက်သွယ်ရန်လိပ်စာ)	14 B, Wai Lu Wun Main Street, Sanchaung, Yangon. khinsweave.daw@gmail.com , 09 5015475
(e) Organization (အဖွဲ့အစည်း)	Green Myanmar Environmental Services Co.,Ltd.
(f) Type of Consultancy (အကြံပေးလုပ်ကိုင်မှုအမျိုးအစား)	Person
(g) Duration of validity (သက်တမ်းကုန်ဆုံးရက်)	31 March 2018

EXTENSION
သက်တမ်းတိုးခြင်း

The VALIDITY of this certificate is extended for one year from (1.4.2018) to (31.3.2019)
ဤလက်မှတ်အား (၁-၄-၂၀၁၈) မှတ်ပုံတင် (၂၀၁၈-၂၀၁၉) မှတ်ပုံတင် (၃၁-၃-၂၀၁၉) မှတ်ပုံတင် တစ်နှစ်သက်တမ်း တိုးပေးသည်။

Soe Naing
13.3.2018
For Director General
(Soe Naing, Director)
Environmental Conservation Department

Soe Naing
13.3.2018
Director General
Environmental Conservation Department
Ministry of Natural Resources and Environmental Conservation

Areas of Expertise Permitted
(ခွင့်ပြုသည့် ကျွမ်းကျင်မှုနယ်ပယ်များ)

1. Air Pollution Control
2. Waste Management

EXTENSION
သက်တမ်းတိုးခြင်း

The VALIDITY of this certificate is extended for six months from (1.1.2021) to (30.6.2021)
ဤလက်မှတ်အား (၁-၁-၂၀၂၁) မှတ်ပုံတင် (၂၀၂၁-၆-၃၀) မှတ်ပုံတင် (၆) လ သက်တမ်းတိုးပေးသည်။

Soe Naing
For Director General
(Soe Naing, Director)
Environmental Conservation Department

EXTENSION
သက်တမ်းတိုးခြင်း

The VALIDITY of this certificate is extended for nine months from (1.4.2019) to (31.12.2019)
ဤလက်မှတ်အား (၁-၄-၂၀၁၉) မှတ်ပုံတင် (၂၀၁၉-၁၂-၃၁) မှတ်ပုံတင် (၉) လ သက်တမ်း တိုးပေးသည်။

Soe Naing
For Director General
(Soe Naing, Director)
Environmental Conservation Department

EXTENSION
သက်တမ်းတိုးခြင်း


The VALIDITY of this certificate is extended for six months from (1.7.2021) to (31.12.2021)
ဤလက်မှတ်အား (၁-၇-၂၀၂၁) မှတ်ပုံတင် (၂၀၂၁-၁၂-၃၁) မှတ်ပုံတင် (၆) လ သက်တမ်းတိုးပေးသည်။

Soe Naing
For Director General
(Soe Naing, Director)
Environmental Conservation Department


EXTENSION
သက်တမ်းတိုးခြင်း

The VALIDITY of this certificate is extended for one year from (1.1.2022) to (31.12.2022)
ဤလက်မှတ်အား (၁-၁-၂၀၂၂) မှတ်ပုံတင် (၂၀၂၂-၁၂-၃၁) မှတ်ပုံတင် တစ်နှစ်သက်တမ်းတိုးပေးသည်။

Soe Naing
13.3.2022
For Director General
(Soe Naing, Director)
Environmental Conservation Department



REPUBLIC OF THE UNION OF MYANMAR
Ministry of Natural Resources and Environmental Conservation
CERTIFICATE FOR TRANSITIONAL CONSULTANT REGISTRATION
 (ကြားကာလအကြံပေးလုပ်ကိုင်သူမှတ်ပုံတင်ခြင်းအထောက်အထားလက်မှတ်)



No. 0022 Date 21.03.2018

The Ministry of Natural Resources and Environmental Conservation, hereby, issues this certificate to the person under Environmental Impact Assessment Procedure, Notification No. 616/2015.
 (ဗဟိုဝန်ကြမ်းကိုင်ထိခိုက်မှုဆန်းစစ်ခြင်းဆိုင်ရာ လုပ်ထုံးလုပ်နည်း၊ အမိန့်ကြော်ငြာစာအမှတ်၊ ၆၁၆/၂၀၁၅ အရ သယံဇာတနှင့် သဘာဝပတ်ဝန်းကျင်ထိခိုက်သိမ်းစေမှုဆိုင်ရာဌာနသည် ဤအထောက်အထားလက်မှတ်ကို လူပုဂ္ဂိုလ်အားထုတ်ပေးလိုက်သည်။)

(a) Name of Consultant (အကြံပေးပုဂ္ဂိုလ်အမည်)	Daw Khin Shwe Htay
(b) Citizenship (နိုင်ငံသား)	Myanmar
(c) Identity Card / Passport Number (မှတ်ပုံတင်/နိုင်ငံကူးလက်မှတ် အမှတ်)	12/ Tha Ga Ka (N) 008808
(d) Address (အက်သွယ်ရန်လိပ်စာ)	No. 115, Kanaung Min Thargyi Road, Hlaing Thar Yar Industrial City, Zone (1), Hlaing Thar Yar Township, Yangon shwehtay.khin@gmail.com , 09 5032910
(e) Organization (အဖွဲ့အစည်း)	Green Myanmar Environmental Services Co.,Ltd.
(f) Type of Consultancy (အကြံပေးလုပ်ကိုင်မှုအမျိုးအစား)	Person
(g) Duration of validity (သက်တမ်းကုန်ဆုံးရက်)	31 March 2018

EXTENSION

သက်တမ်းတိုးခြင်း

The VALIDITY of this certificate is extended for one year from (1.4.2018) to (31.3.2019)
 ဤလက်မှတ်အား(၁-၄-၂၀၁၈) မှစ၍(၃၁-၃-၂၀၁၉) ရက်အထိ တစ်နှစ်သက်တမ်း တိုးပေးခြင်း

See Naing
 14.9.2018
 For Director General
 (See Naing, Director)
 Environmental Conservation Department

See Naing
 21.3.2018
 Director General
 Environmental Conservation Department
 Ministry of Natural Resources and Environmental Conservation

Areas of Expertise Permitted
(ခွင့်ပြုသည့် ကျွမ်းကျင်မှုနယ်ပယ်များ)

1. Water Pollution Control
2. Waste Management

EXTENSION

သက်တမ်းတိုးခြင်း

The VALIDITY of this certificate is extended for six month from (1.1.2021) to (30.6.2021)
 ဤလက်မှတ်အား(၁-၁-၂၀၂၁)မှစ၍(၃၀-၆-၂၀၂၁) ရက်အထိ (၆)လ သက်တမ်းတိုးပေးခြင်း

See Naing
 For Director General
 (See Naing, Director)
 Environmental Conservation Department

EXTENSION

သက်တမ်းတိုးခြင်း

The VALIDITY of this certificate is extended for nine months from (1.4.2019) to (31.12.2019)
 ဤလက်မှတ်အား(၁-၄-၂၀၁၉) မှစ၍(၃၁-၁၂-၂၀၁၉) ရက်အထိ (၉)လသက်တမ်း တိုးပေးခြင်း

See Naing
 12.6.2019
 For Director General
 (See Naing, Director)
 Environmental Conservation Department

EXTENSION

သက်တမ်းတိုးခြင်း

The VALIDITY of this certificate is extended for six months from (1.7.2021) to (31.12.2021)
 ဤလက်မှတ်အား(၁-၇-၂၀၂၁) မှစ၍(၃၁-၁၂-၂၀၂၁) ရက်အထိ (၆)လ သက်တမ်းတိုးပေးခြင်း

See Naing
 For Director General
 (See Naing, Director)
 Environmental Conservation Department

EXTENSION

သက်တမ်းတိုးခြင်း

The VALIDITY of this certificate is extended for one year from (1.1.2020) to (31.12.2020)
 ဤလက်မှတ်အား(၁-၁-၂၀၂၀) မှစ၍(၃၁-၁၂-၂၀၂၀) ရက်အထိ တစ်နှစ်သက်တမ်းတိုးပေးခြင်း

See Naing
 For Director General
 (See Naing, Director)
 Environmental Conservation Department

EXTENSION

သက်တမ်းတိုးခြင်း

The VALIDITY of this certificate is extended for one year from (1.1.2022) to (31.12.2022)
 ဤလက်မှတ်အား(၁-၁-၂၀၂၂)မှစ၍(၃၁-၁၂-၂၀၂၂) ရက်အထိ တစ်နှစ်သက်တမ်းတိုးပေးခြင်း

See Naing
 25.3.2022
 For Director General
 (See Naing, Director)
 Environmental Conservation Department



REPUBLIC OF THE UNION OF MYANMAR
Ministry of Natural Resources and Environmental Conservation
CERTIFICATE FOR TRANSITIONAL CONSULTANT REGISTRATION
(ကြားကာလအကြံပေးလုပ်ကိုင်သူမှတ်ပုံတင်ခြင်းအထောက်အထားလက်မှတ်)



No. 0023 Date 11.3.2018

The Ministry of Natural Resources and Environmental Conservation, hereby, issues this certificate to the person under Environmental Impact Assessment Procedure, Notification No. 616/2015.
(ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်းဆိုင်ရာ လုပ်ထုံးလုပ်နည်း၊ အမိန့်ကြော်ငြာစာအမှတ်၊ ၆၁၆/၂၀၁၅ အရ သယ်ဆောင်နှင့် သဘာဝပတ်ဝန်းကျင်ထိခိုက်သိမ်းဆေးရန်ကြီးကြပ်ရေးဌာနသည် ဤအထောက်အထားလက်မှတ်ကို လူပုဂ္ဂိုလ်အားထုတ်ပေးလိုက်သည်။)

(a) Name of Consultant (အကြံပေးပုဂ္ဂိုလ်အမည်)	Engr. U Sein Thaug Oo
(b) Citizenship (နိုင်ငံသား)	Myanmar
(c) Identity Card / Passport Number (မှတ်ပုံတင်/နိုင်ငံကူးလက်မှတ်အမှတ်)	12/ Ma Ya Ka (N) 082871
(d) Address (ဆက်သွယ်ရန်လိပ်စာ)	No. 17/D, Aung Theikdi Yeik Thar, Mayangone Township, Yangon. gmescompany@gmail.com , seinthaungoo@gmail.com 09 5122448
(e) Organization (အဖွဲ့အစည်း)	Green Myanmar Environmental Services Co.,Ltd.
(f) Type of Consultancy (အကြံပေးလုပ်ကိုင်မှုအမျိုးအစား)	Person
(g) Duration of validity (သက်တမ်းကုန်ဆုံးရက်)	31 March 2018

EXTENSION (သက်တမ်းတိုးခြင်း)
The VALIDITY of this certificate is extended for one year from (1.4.2018) to (31.3.2019)
ဤလက်မှတ်အား(၁-၄-၂၀၁၈) ရက်နေ့မှ (၃၁.၃.၂၀၁၉) ရက်နေ့ထိ ထပ်မံသက်တမ်းတိုးပေးခြင်း

Soe Naing
For Director General
(Soe Naing, Director)
Environmental Conservation Department

Soe Naing
Director General
Environmental Conservation Department
Ministry of Natural Resources and Environmental Conservation

Areas of Expertise Permitted
(စွင့်မြဲသည့် ကွမ်းကျင်မှုနယ်ပယ်များ)

1. Air Pollution Control
2. Chemical Engineering Process Design, Industrial Management

EXTENSION (သက်တမ်းတိုးခြင်း)
The VALIDITY of this certificate is extended for six months from (1.1.2021) to (30.6.2021)
ဤလက်မှတ်အား(၁-၁-၂၀၂၁) ရက်နေ့မှ (၃၀-၆-၂၀၂၁) ရက်နေ့ထိ ထပ်မံသက်တမ်းတိုးပေးခြင်း

Soe Naing
For Director General
(Soe Naing, Director)
Environmental Conservation Department

EXTENSION (သက်တမ်းတိုးခြင်း)
The VALIDITY of this certificate is extended for nine months from (1.4.2019) to (31.12.2019)
ဤလက်မှတ်အား(၁-၄-၂၀၁၉) ရက်နေ့မှ (၃၁.၁၂.၂၀၁၉) ရက်နေ့ထိ ထပ်မံသက်တမ်းတိုးပေးခြင်း

Soe Naing
For Director General
(Soe Naing, Director)
Environmental Conservation Department

EXTENSION (သက်တမ်းတိုးခြင်း)
The VALIDITY of this certificate is extended for six months from (1.7.2021) to (31.12.2021)
ဤလက်မှတ်အား(၁-၇-၂၀၂၁) ရက်နေ့မှ (၃၁-၁၂-၂၀၂၁) ရက်နေ့ထိ ထပ်မံသက်တမ်းတိုးပေးခြင်း


Soe Naing
For Director General
(Soe Naing, Director)
Environmental Conservation Department

EXTENSION (သက်တမ်းတိုးခြင်း)
The VALIDITY of this certificate is extended for one year from (1.1.2020) to (31.12.2020)
ဤလက်မှတ်အား(၁-၁-၂၀၂၀) ရက်နေ့မှ (၃၁-၁၂-၂၀၂၀) ရက်နေ့ထိ ထပ်မံသက်တမ်းတိုးပေးခြင်း


Soe Naing
For Director General
(Soe Naing, Director)
Environmental Conservation Department

EXTENSION (သက်တမ်းတိုးခြင်း)
The VALIDITY of this certificate is extended for one year from (1.1.2022) to (31.12.2022)
ဤလက်မှတ်အား(၁-၁-၂၀၂၂) ရက်နေ့မှ (၃၁-၁၂-၂၀၂၂) ရက်နေ့ထိ ထပ်မံသက်တမ်းတိုးပေးခြင်း

Soe Naing
For Director General
(Soe Naing, Director)
Environmental Conservation Department



REPUBLIC OF THE UNION OF MYANMAR
Ministry of Natural Resources and Environmental Conservation



CERTIFICATE FOR TRANSITIONAL CONSULTANT REGISTRATION
(ကြားကာလအကြံပေးလုပ်ကိုင်သူမှတ်ပုံတင်ခြင်းအထောက်အထားလက်မှတ်)

No. 0025 Date 14.3.2018

The Ministry of Natural Resources and Environmental Conservation, hereby, issues this certificate to the person under Environmental Impact Assessment Procedure, Notification No. 616/2015.
(ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်းဆိုင်ရာ လုပ်ထုံးလုပ်နည်း၊ အမိန့်ကြော်ငြာစာအမှတ်၊ ၆၁၆/၂၀၁၅ အရ သယံဇာတနှင့် သဘာဝပတ်ဝန်းကျင်ထိန်းသိမ်းရေးဝန်ကြီးဌာနသည် ဤအထောက်အထားလက်မှတ်ကို လူပုဂ္ဂိုလ်အားထုတ်ပေးလိုက်သည်။)

(a) Name of Consultant (အကြံပေးပုဂ္ဂိုလ်အမည်)	U Khin Aung
(b) Citizenship (နိုင်ငံသား)	Myanmar
(c) Identity Card / Passport Number (မှတ်ပုံတင်/နိုင်ငံကူးလက်မှတ်အမှတ်)	12/ Ma Ya Ka (N) 047032
(d) Address (ဆက်သွယ်ရန်လိပ်စာ)	115, Kanaung Min Thargyi Road, Hlaing Thar Yar Industrial City, Zone (1), Hlaing Thar Yar Township, Yangon. khinaung1@gmail.com , 09 43066741
(e) Organization (အဖွဲ့အစည်း)	Green Myanmar Environmental Services Co.,Ltd.
(f) Type of Consultancy (အကြံပေးလုပ်ကိုင်မှုအမျိုးအစား)	Person
(g) Duration of validity (သက်တမ်းကုန်ဆုံးရက်)	31 March 2018

EXTENSION
သက်တမ်းတိုးမြှင့်ခြင်း

The VALIDITY of this certificate is extended for one year from (1.4.2018) to (31.3.2019)
ဤလက်မှတ်အား(၁-၅-၂၀၁၈) ရက်နေ့မှ (၂၀၁၉-၃-၃၁) ရက်နေ့အထိ တစ်နှစ်သက်တမ်း တိုးမြှင့်သည်။

Soe Naing
14.3.2018
For Director General
(Soe Naing, Director)
Environmental Conservation Department

Soe Naing
Director General
Environmental Conservation Department
Ministry of Natural Resources and Environmental Conservation

Areas of Expertise Permitted
(ခွင့်ပြုသည့် ကွမ်းကျင်မှုနယ်ပယ်များ)

① Socio-Economy

EXTENSION
သက်တမ်းတိုးမြှင့်ခြင်း

The VALIDITY of this certificate is extended for six month from (1.1.2021) to (31.6.2021)
ဤလက်မှတ်အား(၁-၁-၂၀၂၁)ရက်နေ့မှ (၂၀၂၁-၆-၃၁) ရက်နေ့အထိ (၆)လ သက်တမ်းတိုးမြှင့်သည်။

Soe Naing
For Director General
(Soe Naing, Director)
Environmental Conservation Department

EXTENSION
သက်တမ်းတိုးမြှင့်ခြင်း

The VALIDITY of this certificate is extended for nine months from (1.4.2019) to (31.12.2019)
ဤလက်မှတ်အား(၁-၄-၂၀၁၉) ရက်နေ့မှ (၂၀၁၉-၁၂-၃၁) ရက်နေ့အထိ (၉)လသက်တမ်း တိုးမြှင့်သည်။

Soe Naing
For Director General
(Soe Naing, Director)
Environmental Conservation Department

EXTENSION
သက်တမ်းတိုးမြှင့်ခြင်း

The VALIDITY of this certificate is extended for six months from (1.7.2021) to (31.12.2021)
ဤလက်မှတ်အား(၁-၇-၂၀၂၁)ရက်နေ့မှ (၂၀၂၁-၁၂-၃၁) ရက်နေ့အထိ (၆)လ သက်တမ်းတိုးမြှင့်သည်။

Soe Naing
For Director General
(Soe Naing, Director)
Environmental Conservation Department

EXTENSION
သက်တမ်းတိုးမြှင့်ခြင်း

The VALIDITY of this certificate is extended for one year from (1.1.2022) to (31.12.2022)
ဤလက်မှတ်အား(၁-၁-၂၀၂၂)ရက်နေ့မှ (၂၀၂၂-၁၂-၃၁) ရက်နေ့အထိ တစ်နှစ်သက်တမ်းတိုးမြှင့်သည်။

Soe Naing
25.3.2022
For Director General
(Soe Naing, Director)
Environmental Conservation Department



REPUBLIC OF THE UNION OF MYANMAR
Ministry of Natural Resources and Environmental Conservation



CERTIFICATE FOR TRANSITIONAL CONSULTANT REGISTRATION
(ကြားကာလအကြိမ်ပေးလုပ်ကိုင်သူမှတ်ပုံတင်ခြင်းအထောက်အထားလက်မှတ်)

No. 0026 Date 11.03.2018

The Ministry of Natural Resources and Environmental Conservation, hereby, issues this certificate to the person under Environmental Impact Assessment Procedure, Notification No. 616/2015.
(ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်းဆိုင်ရာ လုပ်ထုံးလုပ်နည်း၊ အမိန့်ကြော်ငြာစာအမှတ်၊ ၆၁၆/၂၀၁၅ အရ သယ်စာတန်နှင့် သဘာဝပတ်ဝန်းကျင်ထိန်းသိမ်းရေးဝန်ကြီးဌာနသည် ဤအထောက်အထားလက်မှတ်ကို လူမှုပိုလ်အားထုတ်ပေးလိုက်သည်။)

(a) Name of Consultant (အကြံပေးပုဂ္ဂိုလ်အမည်)	U Myo Myint
(b) Citizenship (နိုင်ငံသား)	Myanmar
(c) Identity Card / Passport Number (မှတ်ပုံတင်/နိုင်ငံကူးလက်မှတ်အမှတ်)	12/ Pa Ba Ta (N) 015315
(d) Address (ဆက်သွယ်ရန်လိပ်စာ)	115, Kanaung Min Thargyi Road, Hlaing Thar Yar Industrial City, Zone (1), Hlaing Thar Yar Township, Yangon. gmescompany@gmail.com , 09-2012723
(e) Organization (အဖွဲ့အစည်း)	Green Myanmar Environmental Services Co.,Ltd.
(f) Type of Consultancy (အကြံပေးလုပ်ကိုင်မှုအမျိုးအစား)	Person
(g) Duration of validity (သက်တမ်းကုန်ဆုံးရက်)	31 March 2018

EXTENSION
သက်တမ်းတိုးပွင့်ခြင်း

The VALIDITY of this certificate is extended for one year from (1.4.2018) to (31.3.2019)
ဤလက်မှတ်အား(၁-၄-၂၀၁၈) မှတ်ပေး (၃၁-၃-၂၀၁၉) ရက်နေ့ထိ ထပ်မံသက်တမ်း တိုးပွင့်သည်။

Soe Naing
14.9.2018
For Director General
(Soe Naing, Director)
Environmental Conservation Department

Soe Naing
Director General
Environmental Conservation Department
Ministry of Natural Resources and Environmental Conservation

Areas of Expertise Permitted
(ခွင့်ပြုသည့် ကျွမ်းကျင်မှုနယ်ပယ်များ)

① Chemical Engineering, Laboratory Analysis for Water and Wastewater

EXTENSION
သက်တမ်းတိုးပွင့်ခြင်း

The VALIDITY of this certificate is extended for six month from (1.1.2018) to (30.6.2021)
ဤလက်မှတ်အား(၁-၁-၂၀၁၈) မှတ်ပေး (၃၀-၆-၂၀၂၁) ရက်နေ့ထိ ထပ်မံသက်တမ်း တိုးပွင့်သည်။

Soe Naing
For Director General
(Soe Naing, Director)
Environmental Conservation Department

EXTENSION
သက်တမ်းတိုးပွင့်ခြင်း

The VALIDITY of this certificate is extended for nine months from (1.4.2019) to (31.12.2019)
ဤလက်မှတ်အား(၁-၄-၂၀၁၉) မှတ်ပေး (၃၁-၁၂-၂၀၁၉) ရက်နေ့ထိ ထပ်မံသက်တမ်း တိုးပွင့်သည်။

Soe Naing
12.6.2019
For Director General
(Soe Naing, Director)
Environmental Conservation Department

EXTENSION
သက်တမ်းတိုးပွင့်ခြင်း

The VALIDITY of this certificate is extended for six months from (1.7.2021) to (31.12.2021)
ဤလက်မှတ်အား(၁-၇-၂၀၂၁) မှတ်ပေး (၃၁-၁၂-၂၀၂၁) ရက်နေ့ထိ ထပ်မံသက်တမ်း တိုးပွင့်သည်။

Soe Naing
For Director General
(Soe Naing, Director)
Environmental Conservation Department

EXTENSION
သက်တမ်းတိုးပွင့်ခြင်း


The VALIDITY of this certificate is extended for one year from (1.1.2020) to (31.12.2020)
ဤလက်မှတ်အား(၁-၁-၂၀၂၀) မှတ်ပေး (၃၁-၁၂-၂၀၂၀) ရက်နေ့ထိ ထပ်မံသက်တမ်း တိုးပွင့်သည်။

Soe Naing
For Director General
(Soe Naing, Director)
Environmental Conservation Department


EXTENSION
သက်တမ်းတိုးပွင့်ခြင်း

The VALIDITY of this certificate is extended for one year from (1.1.2022) to (31.12.2022)
ဤလက်မှတ်အား(၁-၁-၂၀၂၂) မှတ်ပေး (၃၁-၁၂-၂၀၂၂) ရက်နေ့ထိ ထပ်မံသက်တမ်း တိုးပွင့်သည်။

Soe Naing
30.3.2022
For Director General
(Soe Naing, Director)
Environmental Conservation Department



REPUBLIC OF THE UNION OF MYANMAR
Ministry of Natural Resources and Environmental Conservation
CERTIFICATE FOR TRANSITIONAL CONSULTANT REGISTRATION
 (ပြည်ထောင်စုအကြံပေးလုပ်ကိုင်သူမှတ်ပုံတင်ခြင်းအထောက်အထားလက်မှတ်)



No. 0028 Date 01.03.2018

The Ministry of Natural Resources and Environmental Conservation, hereby, issues this certificate to the person under Environmental Impact Assessment Procedure, Notification No. 616/2015.
 (ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်းဆိုင်ရာ လုပ်ထုံးလုပ်နည်း၊ အမိန့်ကြော်ငြာစာအမှတ်၊ ၆၁၆/၂၀၁၅ အရ သယ်စာတနှင့် သဘာဝပတ်ဝန်းကျင်ထိန်းသိမ်းရေးဝန်ကြီးဌာနသည် ဤအထောက်အထားလက်မှတ်ကို လူ့ချိုလ်အားထုတ်ပေးလိုက်သည်။)

(a) Name of Consultant (အကြံပေးပုဂ္ဂိုလ်အမည်)	Prof. Engr. Daw Tin May Soe
(b) Citizenship (နိုင်ငံသား)	Myanmar
(c) Identity Card / Passport Number (မှတ်ပုံတင်/နိုင်ငံကူးလက်မှတ် အမှတ်)	12/ Ka Ma Ya (N) 016072
(d) Address (အက်သွယ်ရန်လိပ်စာ)	115, Kanaung Min Thargyi Road, Hlaing Thar Yar Industrial City, Zone (1), Hlaing Thar Yar Township, Yangon. tinmaysoe949@gmail.com , 09 5077081
(e) Organization (အဖွဲ့အစည်း)	Green Myanmar Environmental Services Co., Ltd.
(f) Type of Consultancy (အကြံပေးလုပ်ကိုင်မှုအမျိုးအစား)	Person
(g) Duration of validity (သက်တမ်းကုန်ဆုံးရက်)	31 March 2018

EXTENSION (အထောက်အထားချိတ်ဆက်ခြင်း)
 The VALIDITY of this certificate is extended for one year from (1.4.2018) to (31.3.2019)
 ဤလက်မှတ်အား (၁-၄-၂၀၁၈) မှစ၍ (၃၁-၃-၂၀၁၉) မှန်ရက်ထိ တစ်နှစ်အထိ တိုးချဲ့ပေးခြင်း ဖြစ်သည်။

See Naing
 14.9.2018
 For Director General
 (See Naing, Director)
 Environmental Conservation Department

See Naing
 Director General
 Environmental Conservation Department
 Ministry of Natural Resources and Environmental Conservation

Areas of Expertise Permitted
(ခွင့်ပြုသည့် ကျွမ်းကျင်မှုနယ်ပယ်များ)

1. Water Pollution Control

2. Chemical Engineering Process Design

EXTENSION (အထောက်အထားချိတ်ဆက်ခြင်း)
 The VALIDITY of this certificate is extended for six month from (1.1.2021) to (31.12.2021)
 ဤလက်မှတ်အား (၁-၁-၂၀၂၁) မှစ၍ (၃၁-၁၂-၂၀၂၁) မှန်ရက်ထိ (၆)လအထိ တိုးချဲ့ပေးခြင်း ဖြစ်သည်။

See Naing
 For Director General
 (See Naing, Director)
 Environmental Conservation Department

EXTENSION (အထောက်အထားချိတ်ဆက်ခြင်း)
 The VALIDITY of this certificate is extended for nine months from (1.4.2019) to (31.12.2019)
 ဤလက်မှတ်အား (၁-၄-၂၀၁၉) မှစ၍ (၃၁-၁၂-၂၀၁၉) မှန်ရက်ထိ (၉)လအထိ တိုးချဲ့ပေးခြင်း ဖြစ်သည်။

See Naing
 For Director General
 (See Naing, Director)
 Environmental Conservation Department

EXTENSION (အထောက်အထားချိတ်ဆက်ခြင်း)
 The VALIDITY of this certificate is extended for six months from (1.7.2021) to (31.12.2021)
 ဤလက်မှတ်အား (၁-၇-၂၀၂၁) မှစ၍ (၃၁-၁၂-၂၀၂၁) မှန်ရက်ထိ (၆)လအထိ တိုးချဲ့ပေးခြင်း ဖြစ်သည်။

See Naing
 For Director General
 (See Naing, Director)
 Environmental Conservation Department

EXTENSION (အထောက်အထားချိတ်ဆက်ခြင်း)
 The VALIDITY of this certificate is extended for one year from (1.1.2020) to (31.12.2020)
 ဤလက်မှတ်အား (၁-၁-၂၀၂၀) မှစ၍ (၃၁-၁၂-၂၀၂၀) မှန်ရက်ထိ တစ်နှစ်အထိ တိုးချဲ့ပေးခြင်း ဖြစ်သည်။

See Naing
 For Director General
 (See Naing, Director)
 Environmental Conservation Department

EXTENSION (အထောက်အထားချိတ်ဆက်ခြင်း)
 The VALIDITY of this certificate is extended for one year from (1.1.2021) to (31.12.2023)
 ဤလက်မှတ်အား (၁-၁-၂၀၂၁) မှစ၍ (၃၁-၁၂-၂၀၂၃) မှန်ရက်ထိ တစ်နှစ်အထိ တိုးချဲ့ပေးခြင်း ဖြစ်သည်။

See Naing
 2023-2022
 For Director General
 (See Naing, Director)
 Environmental Conservation Department

APPENDIX (3): Calibration Certificate for Monitoring Instruments

Haz –Scanner (EPAS)

Certificate of Calibration
Certificate Number: EDCQP200-4.11.5

Environmental Devices Corporation certifies the Haz-Scanner model EPAS is calibrated to published specifications and NIST traceable.

Calibration Dust Specifications are NIST traceable using Coulter Mutisizer II e. ISO12103 –1 A2 Fine Test Dust and is designed to agree with EPA Class I and Class III FRM and FEM particulate samplers and monitors and EN 12341 and EN 14907 standards.

Gas sensors are Calibrated against NIST/EPA traceable Calibration Gas using NIST primary Flow Standard: LFE774300 to ISO 17025 and EPA Instrumental Test Methods as defined by 40 CFR Part 60.

Quality system standard to meet the requirements of ANSI/ASQC standard Q9000-1994 (ISO 9001), MIL-STD 45662A, and customer's specification if required.

Temperature = 22°C
Relative Humidity = 30%
Atmospheric Pressure = 760 mmHg
Measurement Uncertainty Estimated @ 95% Confidence Level (k=2) using ISO 17025 guidelines.

Model	Serial Number	Calibration Date	Next Calibration Due
EPAS	918153	November 23, 2020	November 2021

Calibration Span Accessory if purchased	Sensor A K=	Sensor B K=	Model :
	12.9K	21.K	CS-105

Technician	Supervisor
Dan Okuniewicz	Mark Sullivan

Environmental Devices Corporation
4 Wilder Drive Building #15
Plaistow, NH 03865
ISO-9001 Certified

Sound level Meter

Trust, only one you can find here!
Amigos
International Co., Ltd.

Head Office - SH- B5(4), Malika Housing, Yadanar Road, 14/ Bawamyint Quarter, Tsingangyun Township, Yangon, Myanmar.
Ph : 01-856 6717, 856 6135, 856 9732, 09 - 502 5972, Hot Line : 09 - 730 87709, 09 - 492 28864, 09 - 281 98609, 09 - 282 439734, 09 - 282 439735, Fax : 01 - 856 6717
Branch Office - No.(13/7), Mya Sandar Road, Between 26 x 27 & 62 x 63 Street, Mandalay. Ph: 09-281 98609, 09-280 678 505

To

Green Myanmar Environmental Service

Calibration Date : 18/2/2019

Service Certificate

We here by certified that Sound Level Meter, GM 1356, S/N- CX : 1294184 is servicing
by Amigos Service and Technical Support Department(Amigos International Co.,Ltd).


Ywet Nu Nge
Senior Engineer(Incharge)
Amigos International Co., Ltd

Kane 900 Combustion Analyzer (Stack Emission Monitoring Instrument)



www.kane.co.uk
Southern Service Centre
Kane International Limited
Kane House, 11 Beesamer Road, Walsley Garden City, Hertfordshire, AL7 1GF, UK
T: +44 (0) 1707 384834 F: +44 (0) 1707 384833 E: service@kane.co.uk

Certificate of Calibration
Issued by: Kane International
Date of Issue: 24/04/2017 Certificate Number: 0085343

Ambient Conditions
Temp 20 +/- 5 Deg C
RH 50% +/- 10%

Test Method:
Gas: The test gas is from a certified cylinder and is delivered via a nominal 5 mbar regulator with the instrument's pump on. The instrument is allowed to purge before the test gas is applied according to manufacturer's instructions.
Temperature: The test signal is a voltage generated from a thermocouple simulator with the wires referenced to International Thermocouple Reference Tables, BS EN60184-1:1995
Pressure: Applied pressure was generated with a calibrated pressure source.
The calibration is only valid for the results reported in the certificate.
This is to certify that the below instrument has been calibrated using equipment traceable to National Standards.

Traceability Equipment	Certificate Number	Calibrated
O2 4.95 %	0252104	22/12/16
O2 0 %	0148883	26/12/16
Thermocouple TS1A C	011285	31/03/16
CO 100 PPM	0252104	22/12/16
SO2 1500 PPM	0144200	14/02/16
CO 1012 PPM	0148883	26/12/16
Pressure 100 mbar	100734-14	06/05/14
NO2 205 ppm	0129767	06/11/16

Customer: Lee Hung Test Services PTE Limited
Description: Kane 900 Plus
Serial No/Indent: 022514242
Our Ref: 0111219

Page 1 of 2



www.kane.co.uk
Southern Service Centre
Kane International Limited
Kane House, 11 Beesamer Road, Walsley Garden City, Hertfordshire, AL7 1GF, UK
T: +44 (0) 1707 384834 F: +44 (0) 1707 384833 E: service@kane.co.uk

Certificate of Calibration
Issued by: Kane International
Date of Issue: 24/04/2017 Certificate Number: 0085343

Calibration Report:

Gas Value:	Instrument Reading:
O2 4.95 %	5.0 %
O2 0 %	0.0 %
CO 100 PPM	101 PPM
SO2 1500 PPM	1501 PPM
CO 1012 PPM	1019 PPM
Pressure 100 mbar	100.52 mbar
NO2 205 ppm	206 ppm

Thermocouple TS1A C	Instrument Reading
Applied Value	
0	1
100	101
500	502

The uncertainty assigned to the above measurements is 1 deg C for temperature, +/- 2% for Gas measurement and +/- 0.05% for pressure.

Authorised Signature: 

Page 2 of 2

APPENDIX (4): Analysis Results of Raw Materials

Alginate

19.72
24/08/17
DANISCO
First you add knowledge...

Berli Jucker Specialties Limited
99 Soi Rubia, Sukhumvit 42 Road
Kwang Prakanong, Khet Klongtoey
BANGKOK 10110
THAILAND

Certificate of Analysis

Date: 03 Aug 2016
Our ref. no.: 41951375 10
Your ref. 4433001428

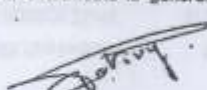
Material: 059378 ✓
Batch No.: 4502809218 ✓
Quantity: 3,000 KG

GRINDSTED Alginate FD 165 ✓
Best before date: 04 Jul 2017 ✓
Production date: 04 Jul 2016 ✓

Test	Result	Unit
Loss on drying	14.8	%
pH (1%)	6.2	
Particle Size (> 200µm)	3.0	%
Viscosity 1 %, Brookfield LV, 20 °C	470	mPa sec
Comments		

We hereby declare that the product conforms to the specifications stated in the PD 12001-16

This certificate is generated automatically

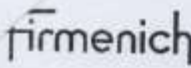

Patricia Cotivy
Quality Control Department

Danisco Landerneau SAS
Societe du Groupe DuPont
La Grande Palud
F-29800 LA FOREST-LANDERNEAU

Page:1/ 1

Apple Flavor

1040
21342



FIRMENICH (THAILAND) LTD
1126/2, Vanit II Building 12/F
Makkasan, Rajthevi
BANGKOK 10400
THAILAND
Tel: 66 2 022 4220 Fax: 66 2 2558554

Certificate of Analysis

Bangkok, 23-Mar-17

Page 1/1

<p>Product 052691 C APPLE FLAVOUR</p>	<p>Recipient SRINANAPORN MARKETING CO., LTD OM-NOI KRATUMBAN 99/99 MOO 4 SAMUTSAKHON 74130 THAILAND</p>			
<table style="width: 100%; border: none;"> <tr> <td style="width: 30%;">Reference</td> <td style="width: 30%; border: none;"> Batch: 1003107045 ✓ Production Date: 20-Oct-16 ✓ Order Number: 60007446 / 10 PO Number: PO04015569 </td> <td style="width: 30%; border: none;"> Country of Origin: Indonesia Best-Before-Date: 20-Oct-17 → Delivery Number: 84583029 Quantity Shipped: 75.000 KG </td> </tr> </table>		Reference	Batch: 1003107045 ✓ Production Date: 20-Oct-16 ✓ Order Number: 60007446 / 10 PO Number: PO04015569	Country of Origin: Indonesia Best-Before-Date: 20-Oct-17 → Delivery Number: 84583029 Quantity Shipped: 75.000 KG
Reference	Batch: 1003107045 ✓ Production Date: 20-Oct-16 ✓ Order Number: 60007446 / 10 PO Number: PO04015569	Country of Origin: Indonesia Best-Before-Date: 20-Oct-17 → Delivery Number: 84583029 Quantity Shipped: 75.000 KG		
<p>Remarks</p> <p style="text-align: center; font-size: 2em;">3</p>				
Characteristic	Result	[Specification]	MU	Method
Appearance	CONFORMS TO	[OILY AND LIMPID LIQUID]	NA	CQ-012
Colour	CONFORMS TO	[COLOURLESS]	NA	CQ-001
Odour	CONFORMS TO	[FIRMENICH STANDARD]	NA	CQ-022
Specific Gravity (d20/20)	1.030	[1.024 - 1.034]	NA	CQ-010
Specific Gravity (d25/25)	1.027	[1.021 - 1.031]	NA	CQ-010
Refractive Index (nD/20)	1.431	[1.428 - 1.434]	NA	CQ-015
Refractive Index (nD/25)	1.429	[1.426 - 1.432]	NA	CQ-015

Li Ling Lee
Quality Manager
li.ling.lee@firmenich.com

This computer generated Certificate of Analysis is valid without signature.

Additional Product Information

Flash Point : 65 °C / 149 °F
 Storage Condition : Dry area, unopened containers, optimum temp. 11-25 °C / 52-77 °F

This Certificate of Analysis does not relieve the purchaser from undertaking their own tests in order to assure the suitability of this product for its application and to comply with all relevant legal requirements for any goods into which this product is incorporated. The values and specifications are valid for the time of analysis.

DOC. Number: FLI LIQD000

Citric Acid

9:25
5-6-17



阳光国际
SUNSHINE

188 MOO 4 TAMBOLTHATOOM, SRIMAHAPHOTE, PRACHINBURI 25140
http://www.thaisunshine.net
Tel: 037278801 Fax: 037278801
Email: sunshinexsb@thaisunshine.net

阳光国际生物有限公司
SUNSHINE BIOTECH INTERNATIONAL CO., LTD.
CERTIFICATE OF ANALYSIS

COMMODITY: CITRIC ACID MONOHYDRATE BP93

DATE: 02/06/2017

BATCH NUMBER: AM-1705-5116 (B-80) MESH QUANTITY: 25KG / 600 BAGS/ 15,000 KG

MANUFACTURING DATE: 27/05/2017

DATE OF LOADING: 02/06/2017

EXPIRY DATE: 26/05/2020

ITEM	UNIT	STANDARD DATA	ACTUAL DATA
DESCRIPTION	---	COLOURLESS CRYSTAL WHITE	AS STANDARD
IDENTIFICATION & SOLUBILITY	---	PASS TEST	PASS TEST
CLARITY & COLOR OF SOLUTION	---	PASS TEST	PASS TEST
READILY CARBONISABLE SUBSTANCES	---	PASS TEST	PASS TEST
EVALUATION OF INSOLUBLES	---	PASS TEST	PASS TEST
ODOR	---	PASS TEST	PASS TEST
BARIUM	%	PASS TEST	PASS TEST
CONTENT	%	99.50-101.0	100.04
WATER	%	7.5-9.0	8.57
HEAVY METALS (AS Pb)	PPM	≤5	1
OXALATE	PPM	≤350	30
ALUMINIUM	PPM	≤0.2	0.15
IRON	PPM	≤80	1
ARSENIC	PPM	≤1.0	0.1
MERCURY	PPM	≤1.0	0.24
LEAD	PPM	≤0.5	0.2
BACTERIAL ENDOTOXINS	I.U./MG	≤0.5	0.35
SULPHATED ASH	%	≤0.1	0.01
CHLORIDE	PPM	≤90	2
CALCIUM	PPM	≤100	5
SULFATES	PPM	≤150	45

CONCLUSION: THE QUALITY OF THIS LOT OF GOODS CONFORMING WITH THE STANDARD.
SHELF LIFE OF CITRIC ACID IS THREE YEARS.



Grape Flavor

08.404 12-05-17



CERTIFICATE OF ANALYSIS

VM/GRV/A0100249

Customer : SRINANAPORN MARKETING CO., LTD.
Lot No : 21708907
Production Date : 11 May 2017
Best Before : 11 May 2018

Analysis Data	Result	Specification
Odor / Taste	Conform	Mane Standard
Appearance	Conform	Mane Standard
Color	Conform	Colorless-Yellow
Refractive Index (20°C)	1.4353	1.420-1.450
Specific Gravity 20/20°C	1.0384	1.017-1.057

This document has been produced electronically and is valid without signature.

V. MANE FILS (THAILAND) CO., LTD.
Ladkrabang Industrial Estate, General Zone Phase III, 284 Moo 4, Chalongsirong Rd., Lamphabiew, Bangkok 10520 Thailand
Tel. (662) 326-0100 Fax. (662) 326-0155 www.mane.com

Printing date : 11 May 2017

Maltodextrin

11:40
19-4-17

青島市勝大商貿有限公司
QINGDAO SHENGDA COMMERCIAL & TRADE CO., LTD.
Tel: 86-532-85010535 Fax: 86-532-85012073
www.shengdatrade.com.cn Email: info@shengdatrade.com.cn

CERTIFICATE OF ANALYSIS


DATE: OCT 30, 2016

Product Name	Maltodextrin DE10-12	
Lot No:	HJ20161010 ✓	
DATE OF PRODUCTION	10/10/2016	
DATE OF EXPIRY	09/10/2018	
Test Standard	GB/T20884-2007	
Appearance	White powder and no fixed shape	
Smell	Has special smell of maltodextrin and no exceptional smell	
Taste	Sweetless or slightly sweetness, no other taste	
Items	Standards	Results
DE%(m/m)	10-12	11.6
Starch Test	Negative	Conform
Moisture%(m/m)	≤6.0	5.6
Solubility%(m/m)	≥98	98.9
PH	4.5-6.5	5.3
Ash%(m/m)	<0.6	0.04
Iodine Experiment	NO blue reaction	Conform
HEAVY METAL ANALYSIS		
As mg/kg	≤0.1	0.03
Pb mg/kg	≤0.5	0.03
Cu mg/kg	≤5.0	0.03
Sulfur Dioxide Residual g/kg	≤0.04	0.01
MICROBIOLOGICAL ANALYSIS		
Total Plate Count CFU/g	≤3000	1.2×10 ⁴
cell group MPN/100g	≤30	≤30
Pathogenic Bacterium (Salmonella, Shigella, Staphylococcus Aureus)	Not detected	Conform


青島市勝大商貿有限公司
王春燕

Orange Flavor

01-06-17. 112

**萬德國際香料有限公司**
M-Tech Aroma International Ltd.

CERTIFICATE OF ANALYSIS

PRODUCT NAME	: ORANGE CONCENTRATE
PRODUCT NUMBER	: MF-11183
LOT NUMBER	: V323 ✓
CLASSIFICATION / DESCRIPTION	: NATURE IDENTICAL FLAVOR
APPEARANCE	: NON-VISCOUS YELLOW COLOR LIQUID
REFRACTIVE INDEX AT 25 DEG C	: 1.4746
SPECIFIC GRAVITY AT 20 DEG C	: 0.9017
STORAGE CONDITION	: KEEP IN WELL-FILLED AIR-TIGHT CONTAINER AND AWAY FROM DIRECT HEAT / LIGHT.
APPLICATION	: CANDY
RECOMMENDED DOSAGE	: 0.1%
ORIGIN	: HONG KONG
SIGNATURE	: 
ISSUED BY	: EVA CHU
DATE	: APRIL 10, 2017 ✓
EXPIRY DATE	: 2 YEARS ✓

1/F., Gloria Weaving & Knitting Fty. Bldg., No. 1 Tung Yuen Street, Yau Tong Bay, Kowloon, Hong Kong.
Tel: (852) 2515 0563, 2595 9336 Fax: (852) 2348 1806
E-mail: info@mtecharoma.com Web Site: http://www.mtecharoma.com
香港九龍怡和灣東源街一號大業威造廠大廈一樓

ISO Certify Company

Plastic Film

13.03
20/03/17


Huhtamaki

Certificate of Analysis

TO THAI FASTER PRODUCTS CO.,LTD.	FROM Quality Assurance	
ATTN	FAX NO.	034-403-081
FAX NO.	TEL.	034-403-000 EXT. 1215-1218
DELIVERY DATE 20/03/2017	DATE	20/03/2017

CUSTOMER NAME THAI FASTER PRODUCTS CO.,LTD.
 PRODUCT NAME ROLL JELLY HERO BOY 20 G. 40 LINES EDIT TEXT
 JOB ORDER J1702614
 PO NO. SPEC. PET12/INK/PE20/ESP35
 QTY.

TYPICAL PROPERTIES	UNIT	SPECIFICATION	RESULT
Dimension Check			
Tolerance Thickness	Micron	70.00 (66.00 - 74.00)	67.00-74.00
Dimension of Reel			
Slitting Size	mm	940.00 (938.00 - 942.00)	939.00
Repeat Length	mm	105.00 (104.00 - 106.00)	105.00
Retention Solvent			
Total amount of retained solvent	mg/m ²	≤ 20.00	0.45
Bonding Strength			
PET/PE	gf/25 mm	≥ 250.00	760.00-1,288.00
PE/ESP	gf/25 mm		Can not separate



Remark :
 Report QA O
 20/03/2017

APPENDIX (5): Quality Control Report of Products

Daiya Moto

SRINANAPORN MARKETING CO.,LTD. BRANCH NO.00001				LABORATORY ANALYSIS DEPARTMENT										FM - LA - 207 / R00									
Microbiological Report for Jelly and Beverage Product														01-07-16									
Sample Description		Plastic Cup		Manufactured By :		Thai Faster(MK11)		Kind of Product :		Daiyamon Light Kit Mook		Flavour : Strawberry		<input type="radio"/> Finished Product		<input checked="" type="radio"/> Shelf life							
Report Number	Date		sample no.	Lot No.	MFG	Result of Microorganism							Chemical result		Remark	Final Result		Reported By	Verified By	Approved By	CC : Plant Manager / QC Manager		
	Received	Analysis				Reported	TPC (cfu/g)	Y/M (cfu/g)	coliform (cfu/g)	E.coli (cfu/g)	Flat sour	B. cereus	S. aureus	%Brix		pH	Pass					NC	
F0907903	04/07/16	04/07/16	09/07/16	FG04003	09/03/16	<10	<10	<10	<10	-	-	-	4.25	4.50	/								


Hero Boys

SRINANAI BORN MARKETING CO., LTD. BRANCH NO.00001						LABORATORY ANALYSIS DEPARTMENT						FM - LA - 207 / R00										
Microbiological Report for Jelly and Beverage Product												01-07-16										
Sample Description : Plastic Cup		Manufactured By : Thai Faster(TH1)			Kind of Product : Datamato Light Kit Mask			Flavour : Strawberry			<input type="radio"/> Finished Product		<input checked="" type="radio"/> Shelf life									
Report Number	Received	Date		sample no.	Lot No.	MFG	Result of Microorganism						Chemical result		Remark	Final Result		Reported By	Verified By	Approved By	CC : Plant Manager / QC Manager	
		Analysis	Reported				TPC (cfu/g)	Y/M (cfu/g)	coliform (cfu/g)	E.coli (cfu/g)	Flat sour	B. cereus	S. aureus	%Brix		pH	Pass					NC
P0907003	04/07/16	04/07/16	09/07/16	EG04003		09/03/16	<10	<10	<10	<10	-	-	-	4.25	4.00	/						
Page 1 of 1																						

APPENDIX (6): Company License



APPENDIX (7): Private Industrial License



ပြည်ထောင်စုသမ္မတမြန်မာနိုင်ငံတော်အစိုးရ
စက်မှုဝန်ကြီးဌာန
စက်မှုကြီးကြပ်ရေးနှင့်စစ်ဆေးရေးဦးစီးဌာန
ပုဂ္ဂလိကစက်မှုလုပ်ငန်းမှတ်ပုံတင်လက်မှတ်

စက်မှုမှတ်ပုံတင်အမှတ် ၅၈/ကြီး/၄၄၉၇ ရက်စွဲ ၁၉.၁၂.၂၀၁၆

လုပ်ငန်းအရွယ်အစား အကြီးစား ပြည်ထောင်စုနယ်မြေ/တိုင်းဒေသကြီး/ပြည်နယ် ရန်ကုန်

အောက်ပါလုပ်ငန်းသည် ပုဂ္ဂလိကစက်မှုလုပ်ငန်း ဥပဒေ ပုဒ်မ ၇ ပုဒ်မခွဲ (ဂ)အရ မှတ်ပုံတင်ပြီး ဖြစ်ပါသည်။

၁။ လုပ်ငန်းအမည် Thai Faster Products And M.K Co.,Ltd. လယ်လီအမျိုးမျိုးထုတ်လုပ်ခြင်းလုပ်ငန်း

၂။ လုပ်ငန်းအမျိုးအမည် စားသောက်ရေးဆိုင်ရာလုပ်ငန်း

၃။ အဓိကကုန်ချောပစ္စည်းအမျိုးအမည် Jelly (Strawberry, Orange, Grape, Apple, Pine apple)
"HERO BOYS, DATYA MOTU KIT" ကုန်အမှတ်တံဆိပ်

၄။ တည်နေရာလိပ်စာ အမှတ်(၄၆၇-က) ကနောင်မင်းသားကြီးလမ်း၊ မြေတိုင်းရပ်ကွက်အမှတ်(၂၅)၊ ရွှေလင် ပန်းစက်မှုရန်၊ လှိုင်သာယာမြို့နယ်၊ မြောက်ပိုင်းခရိုင်

၅။ ဝိုင်ဆိုင်မှုအမျိုးအစား ကုမ္ပဏီပိုင်

၆။ လုပ်ငန်းရှင်အမည် ဦးမြင့်ဦး(Director)



၇။ ကိုင်ဆောင်သည့်မှတ်ပုံတင်အမှတ် ၉/မမန(နိုင်)၀၈၈၇၇၇


၈။ ရင်းနှီးမြုပ်နှံမှုတန်ဖိုး(ကျပ်) ၈၀၉၀သန်း+USD ၁.၅၀ သန်းတည်ထောင်သည့်ခုနှစ် ၂၀၁၆

၉။ အသုံးပြုသည့်အားအမျိုးအစား ထရန်စဖော်မာ/လျှပ်ထုတ်စက် မြင်းကောင်ရေ ၃၃၈ HP/

၁၀။ အလုပ်သမားဦးရေ ၆၆ ဦး ၅၅၅ KVA

၁၁။ မှတ်ပုံတင်သက်တမ်းကုန်ဆုံးသည့်နေ့ရက် ၃၁.၁၂.၂၀၁၇



အေးအေးဝင်း
ဦးမြင့်ဦး

APPENDIX (8): Approval Letter of Transformer Using


ပြည်ထောင်စုမြန်မာနိုင်ငံတော်အစိုးရ
အမှတ်(၁)စက်မှုဝန်ကြီးဌာန
စက်မှုကြီးကြပ်ရေး နှင့် စစ်ဆေးရေးဦးစီးဌာန

စာအမှတ် - ၁၅၁၅(၅)လစ/ကဆ-၂/၂၀၁၁ (၈၉၄)
ရက်စွဲ - ၂၀၁၁ ခုနှစ် ၊ မတ်လ (၂၅) ရက်

အကြောင်းအရာ။ လှိုင်သာယာမြို့နယ်ရွှေလင်ပန်းစက်မှုဇုန်မြေကွက်အမှတ်(၄၆၇-က)ရှိ ဦးပြည့်ဖြိုး၏ အထွေထွေသိုလှောင်ရုံတွင်တည်ဆောက်ပြီးဖြစ်သော ၁၁/၀.၄ ကေဗီ(၃၁၅) ကေဗီအေ ဓာတ်အားခွဲခွဲစာတ်အားဖြန့်ဖြူးခွင့် ပြုခြင်းကိစ္စ

ရည်ညွှန်းချက်။ ၀။ ဓာတ်အားဖြန့်ဖြူးရေးဌာန၊ရန်ကုန်မြို့တော်လှုပ်စစ်ဓာတ်အားပေးရေးအဖွဲ့၏ ၁၇. ၃. ၂၀၁၀ ရက်စွဲပါစာအမှတ် ၉၈၀/အ ၂၆က(ဦးပြည့်ဖြိုး)/၂၀၁၀။ ၂။ လှုပ်စစ်စစ်ဆေးရေး ရန်ကုန်တိုင်း၏ ၂၂ . ၃. ၂၀၁၁ ရက်စွဲပါ စာအမှတ် ၁၅၁၅(၀၇)ရက-လဆရ/၂၀၁၁(၁၄၀၃)။

အထက်အကြောင်းအရာပါကိစ္စနှင့်ပတ်သက်၍ လှိုင်သာယာမြို့နယ်ရွှေလင်ပန်းစက်မှုဇုန်မြေကွက်အမှတ်(၄၆၇-က)ရှိ ဦးပြည့်ဖြိုး ၏ အထွေထွေသိုလှောင်ရုံတွင်တည်ဆောက်ပြီးဖြစ်သော ၁၁/၀.၄ ကေဗီ(၃၁၅) ကေဗီအေ ဓာတ်အားခွဲခွဲစာတ်စစ်ဆေးရာလှုပ်စစ်ဥပဒေဆိုင်ရာလုပ်ထုံးလုပ်နည်းများ နှင့်ကိုက်ညီကြောင်းစစ်ဆေးတွေ့ရှိရသဖြင့်အဆိုပါဓာတ်အားခွဲခွဲစာတ် ၂၀၁၁ ခုနှစ်၊မတ်လ (၂၄) ရက်နေ့မှစတင်၍ ဓာတ်အားဖြန့်ဖြူးခွင့်ပြုကြောင်း ခွင့်ပြုမိန့်တစ်စောင်ကိုပေးပို့ပါသည်။


 ညွှန်ကြားရေးမှူးချုပ် (မြေအား)
 စစ်းဝင်း - ညွှန်ကြားရေးမှူး

ညွှန်ကြားရေးမှူးချုပ်
ရန်ကုန်မြို့တော်လှုပ်စစ်ဓာတ်အားပေးရေးအဖွဲ့

မိတ္တူကူး-

- တပ်ကိုင်နိယာချုပ်၊ရန်ကုန်မြို့တော်လှုပ်စစ်ဓာတ်အားပေးရေးအဖွဲ့။
- ဗဟိုယဉ်ကျေးရေးမှူးချုပ်လှုပ်စစ်စစ်ဆေးရေးရန်ကုန်တိုင်း။
- ခရိုင်အုပ်ချုပ်ရေးမှူး၊မြောက်ပိုင်းခရိုင်၊ရန်ကုန်မြို့တော်လှုပ်စစ်ဓာတ်အားပေးရေးအဖွဲ့။
- မြို့နယ်အုပ်ချုပ်ရေးမှူးလှိုင်သာယာမြို့နယ်ရန်ကုန်မြို့တော်လှုပ်စစ်ဓာတ်အားပေးရေးအဖွဲ့။
- နားလက်။




ပြည်ထောင်စုသမ္မတမြန်မာနိုင်ငံတော်
စက်မှုဝန်ကြီးဌာန
ရန်ကုန်တိုင်းဒေသကြီး စက်မှုကြီးကြပ်ရေးနှင့်စစ်ဆေးရေးဦးစီးဌာန
လျှပ်စစ်စစ်ဆေးရေး
အမှတ်-၁၉၂၊ ကမ္ဘာအေးဘုရားလမ်း၊ ဗဟန်းမြို့နယ်၊ ရန်ကုန်မြို့

အကြောင်းအရာ။ ဒီဇယ်အင်ဂျင်လျှပ်ထုတ်စက် နှစ်ပတ်လည်စစ်ဆေးခြင်း


၁။ အထက်အကြောင်းအရာပါကိစ္စနှင့်စပ်လျဉ်း၍ အောက်ဖော်ပြပါ ဒီဇယ်အင်ဂျင်လျှပ်ထုတ်စက်ကို (၂၀၂၂-၂၀၂၃) ခု တက္ကသိုလ်ရေးနှစ်အတွက် ဤတိုင်းလျှပ်စစ်စစ်ဆေးရေးဌာနမှ (၂၀ . ၄ . ၂၀၂၂) ရက်နေ့တွင် စစ်ဆေးခဲ့ပြီး ဖြစ်ပါသည်။

၂။ လျှပ်ထုတ်စက် စစ်ဆေးခအတွက် ပေးသွင်းလာသော (၂၂ . ၄ . ၂၀၂၂) ရက်စွဲပါ ချွန်အမှတ် (၇၂/ ၃၄) ကိုလည်း လက်ခံရရှိပြီးကြောင်း ပြန်ကြားအပ်ပါသည်။

(က) လျှပ်ထုတ်စက်ကေဗီအေ	75 kVA
(ခ) သတ်မှတ်ဗို့အား	200/ 400 V
(ဂ) လျှပ်ထုတ်စက်အမျိုးအစား	DH85A-M (Denyo)
(ဃ) လျှပ်ထုတ်စက်နံပါတ်	3303815
(င) လျှပ်ထုတ်စက်တည်နေရာ	အမှတ်(၄၆၇-က)၊ ကနောင်မင်းသားကြီးလမ်း၊ ရွှေလင်ပန်းစက်မှုဇုန်၊ လှိုင်သာယာမြို့နယ်။


 တိုင်းလျှပ်စစ်စစ်ဆေးရေးမှူး
 (ရန်ကုန်တိုင်းဒေသကြီး)

ဦးမြင့်ဦး
 ဂျပန်အမျိုးမျိုးထုတ်လုပ်ငန်း (Thai Faster Products And M.K Co., Ltd)
 အမှတ်(၄၆၇-က)၊ ကနောင်မင်းသားကြီးလမ်း၊
 ရွှေလင်ပန်းစက်မှုဇုန်၊ လှိုင်သာယာမြို့နယ်။




ပြည်ထောင်စုသမ္မတမြန်မာနိုင်ငံတော်
စက်မှုဝန်ကြီးဌာန
ရန်ကုန်တိုင်းဒေသကြီး စက်မှုကြီးကြပ်ရေးနှင့်စစ်ဆေးရေးဦးစီးဌာန
လျှပ်စစ်စစ်ဆေးရေး
အမှတ်-၁၉၂၊ ကမ္ဘာအေးဘုရားလမ်း၊ ဗဟန်းမြို့နယ်၊ ရန်ကုန်မြို့

အကြောင်းအရာ။ ဒီဇယ်အင်ဂျင်လျှပ်ထုတ်စက် နှစ်ပတ်လည်စစ်ဆေးခြင်း

၁။ အထက်အကြောင်းအရာပါကိစ္စနှင့်စပ်လျဉ်း၍ အောက်ဖော်ပြပါ ဒီဇယ်အင်ဂျင်လျှပ်ထုတ်စက်ကို (၂၀၂၂-၂၀၂၃) ခု ဘဏ္ဍာရေးနှစ်အတွက် ဤတိုင်းလျှပ်စစ်စစ်ဆေးရေးဌာနမှ (၂၀ . ၄ . ၂၀၂၂) ရက်နေ့တွင် စစ်ဆေးခဲ့ပြီး ဖြစ်ပါသည်။

၂။ လျှပ်ထုတ်စက် စစ်ဆေးခအတွက် ပေးသွင်းလာသော (၂၂ . ၄ . ၂၀၂၂) ရက်စွဲပါ ချလန်အမှတ် (၇၂/ ၃၄) ကိုလည်း လက်ခံရရှိပြီးကြောင်း ပြန်ကြားအပ်ပါသည်။

(က) လျှပ်ထုတ်စက်ကေဗီအေ	500 kVA
(ခ) သတ်မှတ်ဗို့အား	230/ 400 V
(ဂ) လျှပ်ထုတ်စက်အမျိုးအစား	LSA47.2M7J6/4 (Partner)
(ဃ) လျှပ်ထုတ်စက်နံပါတ်	048592003
(င) လျှပ်ထုတ်စက်တည်နေရာ	အမှတ်(၄၆၇-က)၊ ကနောင်မင်းသားကြီးလမ်း၊ ရွှေလင်ပန်းစက်မှုဇုန်၊ လှိုင်သာယာမြို့နယ်။


 တိုင်းလျှပ်စစ်စစ်ဆေးရေးမှူး
 (ရန်ကုန်တိုင်းဒေသကြီး)

ဦးမြင့်ဦး

ဂျပန်အမျိုးမျိုးထုတ်လုပ်ငန်း (Thai Faster Products And M.K Co., Ltd)

အမှတ်(၄၆၇-က)၊ ကနောင်မင်းသားကြီးလမ်း၊

ရွှေလင်ပန်းစက်မှုဇုန်၊ လှိုင်သာယာမြို့နယ်။

APPENDIX (10): Certificate of Boiler Using



APPENDIX (12): Air Quality Analysis Results

Ambient Air Quality Results



Green Myanmar
Environmental Services Co., Ltd.
111, Kamang Mit Thar Gyi Road Industrial Zone (1), Hlaing Thar Yar Industrial City,
Yangon, Myanmar
Tel: 01-485172, 01-485171, 09-5017433, 09-5122448 E-mail: ghm@ghm.com.mm

Company Name: Thai Faster Products and M.K. Company Limited

Project Name: Manufacturing and Distribution of Various Types of Jellies

Project Address: Plot No. 467/A, Ka Naung Min Thar Gyi Street, Shwe Lin Pan Industrial Zone, Hlaing Thar Yar Township, Yangon Region, Myanmar

Monitoring Date:

Site	Location
Location-1 (SP-1)	Outside of Factory Building

No.	Parameters	Unit	Measured Data	National Environmental Quality Emission Guidelines (2015)	
				Avg. Period	Guideline Value ($\mu\text{g}/\text{m}^3$)
1	Oxygen	mol %	21.20	-	-
2	Carbon Monoxide	ppm	0.14	-	-
3	Carbon Dioxide	ppm	278.88	-	-
4	Ammonia	ppm	24.78	-	-
5	Nitrogen Dioxide	$\mu\text{g}/\text{m}^3$	79.656	1-hour	200
6	Sulphur Dioxide	$\mu\text{g}/\text{m}^3$	0.131	24-hour	20
7	Particulate Matter PM_{10}	$\mu\text{g}/\text{m}^3$	218.93	24-hour	50
8	Particulate Matter $\text{PM}_{2.5}$	$\mu\text{g}/\text{m}^3$	126.57	24-hour	25
9	Ozone	$\mu\text{g}/\text{m}^3$	42.61	8-hour	100
10	Total Volatile Organic Compound (TVOC)	ppm	0.38345	24-hour	-

Analyzed By



U Aung Kyaw Than
Technician 2

Checked By



U Myo Min Htun
Technician 1

Approved By



U Myo Thet Naung
Monitoring Supervisor

Workplace Air Quality Results



Green Myanmar
Environmental Services Co., Ltd

15, Kaung Min Thar Gyi Road Industrial Zone (1), Hlaing Thar Yar Industrial City,
Yangon, Myanmar
Tel: 485572, 01-655571, 09-5081451, 09-5122448 E-mail: gmescorpany@gmail.com

Company Name: Thai Faster Products and M.K. Company Limited
Project Name: Manufacturing and Distribution of Various Types of Jellies
Project Address: Plot No. 467/A, Ka Naung Min Thar Gyi Street, Shwe Lin Pan Industrial Zone, Hlaing Thar Yar Township, Yangon Region, Myanmar
Monitoring Date:

Site	Location
Location-2 (SP-2)	Raw Material Storage Area
Location-3 (SP-3)	Adjust Substance Room
Location-4 (SP-4)	Adjust Flavor & Color Room
Location-5 (SP-5)	Mixing Room
Location-6 (SP-6)	Packing Area
Location-7 (SP-7)	Boiler Section

Parameters	Average period	Unit	Location ID						
			2	3	4	5	6	7	
Total Volatile Organic Compound (TVOC)	1hr	ppm	0.317	0.208	0.517	0.933	0.667	0.075	
Particulate Matter, PM ₁₀	8hr	μg/m ³	2.792	1.844	3.875	0.117	0.083	0.009	
Particulate Matter, PM _{2.5}		μg/m ³	2.24	1.719	1.719	2.094	2.271	1.969	

Analyzed By

U Aung Kyaw Than
Technician 2





Checked By

U Myo Min Htun
Technician 1


Approved By

U Myo Thet Naung
Monitoring Supervisor

Boiler Stack Emission Gas Results

	Green Myanmar Environmental Services Co., Ltd				
	No.111, Kawang Min Thar Gyi Road Industrial Zone (1), Hlaing Thar Yar Industrial City, Yangon, Myanmar Tel: 01-689572, 01-689573, 09-5881451, 09-5125488 E-mail: gmec@greenmyanmar.com				
Company Name:	Thai Faster Products and M.K. Company Limited				
Project Name:	Manufacturing and Distribution of Various Types of Jellies				
Project Address:	Plot No. 467/A, Ka Naung Min Thar Gyi Street, Shwe Lin Pan Industrial Zone, Hlaing Thar Yar Township, Yangon Region, Myanmar				
Location -7	Parameters and Unit				
	Oxygen (O ₂), mol %	Carbon monoxide (CO), mg/m ³	Carbon dioxide (CO ₂), mol %	Nitrogen oxide (NO)	Sulfur dioxide (SO ₂)
Boiler Stack	20.5	966	20	0	0
NEQG (Small combustion facilities Emission)	-	-	-	650 mg/Nm ³	2,000 mg/Nm ³
Analyzed By	Checked By	Approved By			
					
U Aung Kyaw Than Technician 2	U Myo Min Htun Technician 1	U Myo Thet Naung Monitoring Supervisor			

APPENDIX (13): Noise Level Analysis Results



Green Myanmar
Environmental Services Co., Ltd.
No. 5, Kattay Ma Thu Gyi Road Industrial Zone (1), Haing Thar Yar Industrial City,
Yangon, Myanmar
Tel: 00-65572 81-65571, 00-961411, 00-912248 E-mail: greenmyanmar@gmail.com

Company Name: Thai Faster Products and M.K. Company Limited

Project Name: Manufacturing and Distribution of Various Types of Jellies


Project Address: Plot No. 467/A, Ka Naung Min Thar Gyi Street, Shwe Lin Pan Industrial Zone, Haing Thar Yar Township, Yangon Region, Myanmar

Monitoring Date:

Site	Location
Location-2 (SP-2)	Raw Material Storage Area
Location-3 (SP-3)	Adjust Substance Room
Location-4 (SP-4)	Adjust Flavor & Color Room
Location-5 (SP-5)	Mixing Room
Location-6 (SP-6)	Packing Area
Location-7 (SP-7)	Boiler Section


ID	Average Noise Level, L_{Aeq} dB(A)	Period	National guideline for Industrial Zone (Day & Night)
Sampling Point	76.345 56.59	Day Night	70 dBA
Location-5	70.95 (working hour)	1 hr	US OHS guideline for 1 hour average: 105 dBA
Location-7	71.2 (working hour)	1 hr	

Analyzed By




U Aung Kyaw Than
Technician 2

Checked By



U Myo Min Htun
Technician 1


Approved By



U Myo Thet Naung
Monitoring Supervisor

APPENDIX (14): Water Analysis Results

Direct from Tube Well



Green Myanmar

Environmental Services Co., Ltd

No.115, Kamsung Min Thar Gyi Road, Industrial Zone (1), Hlaing Thar Yur Industrial City,
Yangon, Myanmar
Tel: 01-3685572, 01-3685571, 09-5081451, 09-5122448 E-mail: gmescompany@gmail.com

Name of Client : Thai Faster Products and M.K Co., Ltd. Date of Arrival at Lab : 31.3.2018
Date of Collection : 30.3.2018 Date of Issue of Results : 26.4.2018

Laboratory Analysis Results of Ground Water

Sr. No.	Parameters	Unit	Analysis Value	Drinking Water Standards		
			Type of Water	WHO (2011)	EPA (Spring 2012)	Indian Specification (IS :10500,2012)
			Tube well			
1.	Aluminum	ppm	0.03	0.2	0.2	0.03
2.	Chloride	ppm	158	250	250	250
3.	Copper	ppm	ND	2	1	0.05
4.	Cyanide	ppm	ND	0.07	0.2	0.05
5.	Manganese	ppm	ND	0.4	0.05	0.1
6.	pH	-	6.54	6.5-8.5	6.5-8.5	6.5-8.5
7.	Sulfate	ppm	2.5	250	250	200
8.	Total Alkalinity as CaCO ₃	ppm	112	-	-	200
9.	Total Dissolved Solids	ppm	420	600	500	500
10.	Total Hardness as CaCO ₃	ppm	9	500	-	200
11.	Total Iron	ppm	<0.1	0.3	0.3	0.3
12.	Turbidity	NTU	1.92	5	-	1

ND-Not Detected

Analyzed By



Daw Aye Thuzar Hein
Technician (Laboratory)

Checked By



Daw Wint Phyu Htway
Incharge (Laboratory)

Approved By



Daw Cherry Thwin
Manager (Laboratory)



ပတ်ဝန်းကျင်ရေးရာဓာတ်ခွဲခန်း

Ecological Laboratory



ပိမ်ကောင်းအစီအစဉ် ဖြည့်တင်းစာကန်ရေးဆောင် (Advancing Life and Regenerating Motherland, ALARM)

Reference Number/ တာအမှတ်: EL-R / 02239
Date / ရက်စွဲ: 6 April, 2018

Laboratory Analysis Report / ဓာတ်ခွဲစစ်ဆေးမှုအစီအရင်ခံစာ

Sample Profile များစုစုပေါင်း

နမူနာအမည် / Sample Name	အစိစိစု	နမူနာအမှတ် / Sample ID	3608
နေရာ (မြို့နယ်) / Location (Township)	မန္တလေးတိုင်းဒေသကြီး၊ လှိုင်သာယာ	လတ္တီတွဒ် / Latitude	
နေရာ (တိုင်းပြည်နယ်) / Location (Division/State)	Yangon	စတင်လတ္တီတွဒ် / Longitude	
ပေးပို့သူအမည် / Sender Name	Thai Faster Product And M.K (GMES)	နမူနာတောက်ယူရက် (နေ့၊ နာရီ) / Sampling Time (Date, Time)	28.3.2018
အဖွဲ့အစည်း / Organisation		နမူနာရောက်ရှိရက် (နေ့၊ နာရီ) / Arriving Time (Date, Time)	2.4.2018
ဆက်သွယ်ရန် / Contact			

(This laboratory analysis report is based solely on the sample submitted by the customer)
(ဤဓာတ်ခွဲစစ်ဆေးမှုအစီအရင်ခံစာသည် ပေးပို့သူမှပေးပို့သော နမူနာကိုသာ အခြေခံထားပါသည်။)

Analysis Results စစ်ဆေးမှုရလဒ်များ

စဉ် / Sr.	အထွတ်အမြတ်ညွှန်းကိန်း / Quality Parameter	ရလဒ် / Results		နည်းလမ်း / Method	သောက်သုံးရန် / Drinking Standard	စွန့်ထုတ်ရန် / Effluent Standard	မှတ်ချက် / Remarks
၁	အခက် အခဲ / Hardness	45	mg/L	Lowband SpectroDirect Method No. 200	≤ 60 mg/L	NG	Soft
၂	ကလိုရိုက် / Chloride	78	mg/L	Lowband SpectroDirect Method No. 90	≤ 250 mg/L	NG	Normal
၃	အိန်ဒါ / Arsenic	0.025	mg/L	Lowband Arsenic test kit code no -400700	≤ 0.01 mg/L	≤ 0.1 mg/L *	Above DW limit
၄	ထံ ကတ္တုအက် / Iron	<0.1	mg/L	Lowband SpectroDirect Method No. 220	≤ 0.2 mg/L	≤ 3.5 mg/L *	Normal

* Myanmar Emission Guideline 2015 NG=No Guideline ND= Not Detected

စစ်ဆေးခြင်း / Tested by:  စစ်ဆေးခြင်း / Checked by:  တာဝန်ခံ / Approved by: 

Daw Myat Myat Aung
Lab. Technician
Ecological Laboratory
ALARM

Daw Linn Myat Myat Aung
Lab. Technician
Ecological Laboratory
ALARM

Dr. Aye Aye Win
Project Team Leader
Ecological Laboratory
ALARM

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Purified Drinking Water from Tap



Green Myanmar
Environmental Services Co., Ltd

No.115, Kamung Min Thar Gyi Road, Industrial Zone (1), Hlaing Thar Yar Industrial City,
Yangon, Myanmar
Tel: 01-3685572, 01-3685571, 09-5081451, 09-5122448 E-mail: gmescompany@gmail.com

Name of Client : Thai Faster Products and M.K Co., Ltd. Date of Arrival at Lab : 31.3.2018
Date of Collection : 30.3.2018 Date of Issue of Results : 26.4.2018

Laboratory Analysis Results of Ground Water

Sr. No.	Parameters	Unit	Analysis Value	Drinking Water Standards		
			Type of Water	WHO (2011)	EPA (Spring 2012)	Indian Specification (IS :10500,2012)
			Drinking Water			
1.	Aluminum	ppm	0.02	0.2	0.2	0.03
2.	Chloride	ppm	134	250	250	250
3.	Copper	ppm	ND	2	1	0.05
4.	Cyanide	ppm	ND	0.07	0.2	0.05
5.	Manganese	ppm	ND	0.4	0.05	0.1
6.	pH	-	7.24	6.5-8.5	6.5-8.5	6.5-8.5
7.	Sulfate	ppm	2.5	250	250	200
8.	Total Alkalinity as CaCO ₃ -	ppm	112	-	-	200
9.	Total Dissolved Solids	ppm	420	600	500	500
10.	Total Hardness as CaCO ₃	ppm	ND	500	-	200
11.	Total Iron	ppm	<0.1	0.3	0.3	0.3
12.	Turbidity	NTU	0.84	5	-	1

ND-Not Detected

Analyzed By

Daw Aye Thuzar Hein
Technician (Laboratory)

Checked By

Daw Wint Phyu Htway
Incharge (Laboratory)

Approved By

Daw Cherry Thwin
Manager (Laboratory)



ပတ်ဝန်းကျင်ရေးရာဓာတ်ခွဲခန်း

Ecological Laboratory



စိမ်းလန်းအေးမြပြည့် ဖြူတိုးတက်ရေးအသင်း (Advancing Life and Regenerating Motherland, ALARM)

Reference Number/ ဓာတ်ခွဲခန်း: EL-R / 02238
Date / ရက်စွဲ: 6 April, 2018

Laboratory Analysis Report / ဓာတ်ခွဲခန်းစမ်းသပ်မှုအစီအစဉ်

Sample Profile နမူနာအချက်အလက်

နမူနာအမည် / Sample Name	စတားဂရု	နမူနာအမှတ် / Sample ID	3607
နေရာ (မြို့နယ်) / Location (Township)	မန္တလေးတိုင်းဒေသကြီး၊ လှိုင်သာယာ	လတ္တီတွဒ် / Latitude	
နေရာ (ပြည်နယ်) / Location (Division/State)	Yangon	လောင်ဂျီတွဒ် / Longitude	
ပေးပို့သူအမည် / Sender Name	Thai Faster Product And M.K (GMS)	နမူနာကောက်ယူချိန် (နေ့၊ နာရီ) / Sampling Time (Date, Time)	28.3.2018
အဖွဲ့အစည်း / Organisation	-	နမူနာရောက်ရှိချိန် (နေ့၊ နာရီ) / Arriving Time (Date, Time)	2.4.2018
ဆက်သွယ်ရန် / Contact	-		

(This laboratory analysis report is based solely on the sample submitted by the customer)
(ဤဓာတ်ခွဲခန်းစမ်းသပ်မှုအစီအစဉ်သည် ပေးပို့သူမှပေးပို့သော နမူနာကိုသာ အခြေခံထားပါသည်။)

Analysis Results စစ်ဆေးရက်စွဲအကျဉ်းချုပ်

စဉ် / Sr.	စစ်ဆေးရက်စွဲ / Quality Parameter	ရလဒ် / Results	နည်းစနစ် / Method	သောက်သုံးရန် / Drinking Standard	ရွှေ့ထုတ်ရန် / Effluent Standard	မှတ်ချက် / Remarks
၁	ခဲစက် အသွင် (Hardness)	2 mg/L	Lovibond SpectroDirect Method No. 200	≤ 60 mg/L	NG	Soft
၂	ကလိုရိုက် (Chloride)	98 mg/L	Lovibond SpectroDirect Method No. 90	≤ 250 mg/L	NG	Normal
၃	ဇိန်တင် (Arsenic)	0 mg/L	Lovibond Arsenic test kit code.no -400700	≤ 0.01 mg/L	≤ 0.1 mg/L *	Normal
၄	သံ ဝတ္တုဓာတ် (Iron)	<0.1 mg/L	Lovibond SpectroDirect Method No. 220	≤ 0.2 mg/L	≤ 3.5 mg/L *	Normal

* Myanmar Emission Guideline 2015

စစ်ဆေးပြီး / Tested by



Daw Mya Myat Aung
Lab. Technician
Ecological Laboratory
ALARM

NG=No Guideline

စစ်ဆေးပြီး / Checked by



Daw Lhi Myat Myat Aung
Lab. Technician
Ecological Laboratory
ALARM

ND= Not Detected

တာဝန်ခံ / Approved by



Dr. Aye Aye Win
Project Team Leader
Ecological Laboratory
ALARM

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Cooling Water



Green Myanmar
Environmental Services Co., Ltd

No.115, Kanung Min Thar Gyi Road, Industrial Zone (1), Hlaing Thar Yar Industrial City,
Yangon, Myanmar
Tel: 01-3685572, 01-3685571, 09-5081451, 09-5122448 E-mail: gmescompany@gmail.com

Name of Client : Thai Faster Products and M.K Co., Ltd. Date of Arrival at Lab : 31.3.2018

Date of Collection : 30.3.2018

Date of Issue of Results : 26.4.2018

Laboratory Analysis Results of Waste Water

Sr. No.	Parameters	Unit	Analysis Value	National Environmental Quality Emission Guidelines (2015)
			Type of Waste Water	General Applications
			Cooling Water	
1.	5-day Biochemical Oxygen Demand	ppm	137	50
2.	Ammonia	ppm	ND	10
3.	Chemical Oxygen Demand	ppm	495	250
4.	Chromium (VI)	ppm	ND	0.1
5.	Chromium (total)	ppm	0.03	0.5
6.	Copper	ppm	ND	0.5
7.	Cyanide (total)	ppm	ND	1
8.	Iron (total)	ppm	<0.1	3.5
9.	Nickel	ppm	ND	0.5
10.	Oil and Grease	ppm	ND	10
11.	pH	-	6.35	6-9
12.	Phenols	ppm	ND	0.5
13.	Sulfide	ppm	ND	1
14.	Total Suspended Solids	ppm	140	50
15.	Zinc	ppm	ND	2

ND-Not Detected

Analyzed By

Daw Aye Thuzar Hein
Technician (Laboratory)

Checked By

Daw Wint Phyu Htway
Incharge (Laboratory)

Approved By

Daw Cherry Thwin
Manager (Laboratory)



ပတ်ဝန်းကျင်ရေးရာဓာတ်ခွဲခန်း

Ecological Laboratory



ပတ်ဝန်းကျင်ထိခိုက်မှုပြုတ်ဖောက်ရေးအဖွဲ့ (Advancing Life and Regenerating Motherland, ALARM)

Reference Number/ စာအမှတ်: EL-R / 02241
Date / ရက်စွဲ: 11 April, 2018

Laboratory Analysis Report / ဓာတ်ခွဲခန်းစမ်းသပ်မှုအစီအစဉ်

Sample Profile များအရပေး

မူပိုင်ခွင့် / Sample Name	Cooking Water	မူပိုင်ခွင့် / Sample ID	3610
နေရာ (ဧရိယာ) / Location (Township)	မန္တလေးမြို့နယ်၊ ဝါးတန်း	လတ္တီတွဒ် / Latitude	
နေရာ (တိုင်းပြည်နယ်) / Location (Division/State)	Yangon	စတင်ရှီတွဒ် / Longitude	
ပို့ဆောင်သူ / Sender Name	Thai Faster Product And M.K (GMES)	မူပိုင်ခွင့် / နမူနာ (မူပိုင်) / Sampling Time (Date, Time)	26.3.2018
ပို့ဆောင်ရေးအဖွဲ့ / Organisation	-	မူပိုင်ခွင့် / ရောက်ရှိချိန် (မူပိုင်) / Arriving Time (Date, Time)	2.4.2018
ဆက်သွယ်ရန် / Contact			

(This laboratory analysis report is based solely on the sample submitted by the customer)
(ဤဓာတ်ခွဲခန်းစမ်းသပ်မှုအစီအစဉ်သည် မူပိုင်ခွင့်ပေးထားသော နမူနာပေါ်တွင်သာ အခြေခံထားပါသည်။)

Analysis Results စစ်ဆေးရက်စွဲ

စဉ် / Sr.	စစ်ဆေးရက်စွဲ / Quality Parameter	ရလဒ် / Results		နည်းလမ်း / Method	စားသုံးရန် / Drinking Standard	ပစ်ချရန် / Effluent Standard	မှတ်ချက် / Remarks
၁	ဆိုင်ရာမုန် / (TSS)	0	mg/L	Lovibond SpectroDirect Method No. 383	NG	≤ 50 mg/L *	Normal
၂	အောက်ဆီဂျင် / (BOD ₅)	215	mg/L	Estimated by Eco-Lab with Jenway Dissolved Oxygen Meter (Model 970)	≤ 3 mg/L	≤ 50 mg/L *	Above the limits
၃	အောက်ဆီဂျင် / (COD)	382	mg/L	Lovibond SpectroDirect Method No. 130, 131, 132	NG	≤ 250 mg/L *	Above the limit

* Myanmar Emission Guideline 2015 NG=No Guideline ND= Not Detected

စစ်ဆေးပြီး / Tested by စစ်ဆေးပြီး / Checked by တာဝန်ခံ / Approved by



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Dr. Aye Aye Win
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Ecological Laboratory
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(ဤစစ်ဆေးရက်စွဲသည် မူပိုင်ခွင့်ပေးထားသော နမူနာပေါ်တွင်သာ အခြေခံထားပါသည်။ မူပိုင်ခွင့်ပေးထားသော နမူနာပေါ်တွင်သာ အခြေခံထားပါသည်။)

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Boiler Blow-down Water



Green Myanmar
Environmental Services Co., Ltd

No.115, Kamung Min Thar Gyi Road, Industrial Zone (1), Hlaing Thar Yar Industrial City,
Yangon, Myanmar
Tel: 01-3685572, 01-3685571, 09-5081451, 09-5122448 E-mail: greencompany@gmail.com

Name of Client : Thai Faster Products and M.K Co., Ltd. Date of Arrival at Lab : 31.3.2018

Date of Collection : 30.3.2018

Date of Issue of Results : 26.4.2018

Laboratory Analysis Results of Waste Water

Sr. No.	Parameters	Unit	Analysis Value	National Environmental Quality Emission Guidelines (2015)
			Type of Waste Water	General Applications
			Boiler Blow-down	
1.	5-day Biochemical Oxygen Demand	ppm	ND	50
2.	Ammonia	ppm	ND	10
3.	Chemical Oxygen Demand	ppm	25	250
4.	Chromium (VI)	ppm	ND	0.1
5.	Chromium (total)	ppm	ND	0.5
6.	Copper	ppm	ND	0.5
7.	Cyanide (total)	ppm	ND	1
8.	Iron (total)	ppm	0.5	3.5
9.	Nickel	ppm	ND	0.5
10.	Oil and Grease	ppm	ND	10
11.	pH	-	12.78	6-9
12.	Phenols	ppm	ND	0.5
13.	Sulfide	ppm	ND	1
14.	Total Suspended Solids	ppm	610	50
15.	Zinc	ppm	0.03	2

ND-Not Detected

Analyzed By

Daw Aye Thuzar Hein
Technician (Laboratory)

Checked By

Daw Wint Phyu Htway
Incharge (Laboratory)

Approved By

Daw Cherry Thwin
Manager (Laboratory)



ပတ်ဝန်းကျင်ရေးရာဓာတ်ခွဲခန်း

Ecological Laboratory

စိမ်းလန်းစေမိမြေပွင့် ဖွံ့ဖြိုးတိုးတက်ရေးအဖွဲ့ (Advancing Life and Regenerating Motherland, ALARM)



Reference Number/ ဓာတ်ခွဲခန်း: EL-R / 02242
Date / ဇယ့်: 11 April, 2018

Laboratory Analysis Report / ဓာတ်ခွဲစစ်ဆေးမှုအစီအစဉ်

Sample Profile များအရအစဉ်

နမူနာအမည် / Sample Name	Boiler Blow Down	နမူနာအမှတ် / Sample ID	3611
နေရာ (မြို့နယ်) / Location (Township)	မန္တလေးခရိုင်၊ ဝဏ္ဏသာယာ	လတ္တီကျုဒ် / Latitude	
နေရာ (တိုင်းပြည်နယ်) / Location (Division/State)	Yangon	စတင်ချိန် / Longitude	
ပေးပို့သူအမည် / Sender Name	Thai Faster Product And M.K (GMS)	နမူနာကောက်ယူချိန် (မနု နာရီ) / Sampling Time (Date, Time)	28.3.2018
ပေးပို့သူအဖွဲ့အစည်း / Organisation		နမူနာရောက်ရှိချိန် (မနု နာရီ) / Arriving Time (Date, Time)	2.4.2018
ဆက်သွယ်ရန် / Contact			

(This laboratory analysis report is based solely on the sample submitted by the customer)
(ဤဓာတ်ခွဲစစ်ဆေးမှုအစီအစဉ်သည် ပေးပို့သူမှ/ပေးပို့သူ၏အမည်အောက်တွင်သာ အခြေခံထားပါသည်။)

Analysis Results စစ်ဆေးရက်စာရင်း

စဉ် / Sr.	စစ်ဆေးရက်စာရင်း / Quality Parameter	ရလဒ် / Results		နည်းလမ်း / Method	စံသတ်မှတ်ချက် / Drinking Standard	ပွင့်လှစ် ရန်ပုံစံ / Effluent Standard	မှတ်ချက် / Remarks
		ဂ /	mg/L				
၁	မိုက်နက်မှုမာမတ် (TSS)	၀	mg/L	Lowbond SpectroDirect Method No. 383	NG	≤ 50 mg/L *	Normal
၂	ဝိသေ့ဓာတ် ထောက်ခံချက် (BOD ₅)	15	mg/L	Estimated by Eco-Lab with Jersey Dissolved Oxygen Meter (Model 970)	≤ 3 mg/L	≤ 50 mg/L *	Above DW limit
၃	ဓာတ်ဆိုင်ရာ ထောက်ခံချက် (COD)	46	mg/L	Lowbond SpectroDirect Method No. 131, 131, 132	NG	≤ 250 mg/L *	Normal

* Myanmar Emission Guideline 2015

စစ်ဆေးပြီး / Tested by



Daw Mye Myat Khine
Lab. Technician II
Ecological Laboratory
ALARM

NG=No Guideline

စစ်ဆေးပြီး / Checked by



Daw Lin Myat Myat Aung
Lab. Technician I
Ecological Laboratory
ALARM

ND= Not Detected


တာဝန်ခံ / Approved by



Dr. Aye Aye Win
Project Team Leader
Ecological Laboratory
ALARM

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 (ဤစာတမ်းသည် မူရင်းအတိုင်း ပြန်လည်ထုတ်ဝေခြင်း မပြုရန်နှင့် မူရင်းအတိုင်း ပြန်လည်ထုတ်ဝေခြင်း မပြုရန်အတွက် အတည်ပြုထားပါသည်။)
 A-2, Kat Street, Hsing Township, 11051, Yangon, Myanmar. Tel: +95 1 503301 | Fax: +95 1 503302
 Email: alarm.myanmar@gmail.com | website: www.myanmaralarm.com

Factory Inside drain channel



Green Myanmar

Environmental Services Co., Ltd

No.115, Kanung Min Thar Gyi Road, Industrial Zone (1), Hlaing Thar Yir Industrial City,
Yangon, Myanmar
Tel: 01-3685572, 01-3685571, 09-5081451, 09-5122448 E-mail: gmescorpany@gmail.com


Name of Client : Thai Faster Products and M.K Co., Ltd. Date of Arrival at Lab : 31.3.2018
Date of Collection : 30.3.2018 Date of Issue of Results : 26.3.2018

Laboratory Analysis Results of Waste Water


Sr. No.	Parameters	Unit	Analysis Value	National Environmental Quality Emission Guidelines (2015)
			Type of Waste Water	Food and Beverage Processing
			ရေစိမ်း	
1.	5-day Biochemical Oxygen Demand	ppm	2170	50
2.	Chemical Oxygen Demand	ppm	5190	250
3.	Oil and Grease	ppm	6	10
4.	pH	-	4.36	6-9
5.	Total Suspended Solids	ppm	320	50

ND-Not Detected


Analyzed By


Daw Aye Thuzar Hein
Technician (Laboratory)

Checked By


Daw Wint Phyu Htway
Incharge (Laboratory)

Approved By


Daw Cherry Thwin
Manager (Laboratory)



ပတ်ဝန်းကျင်ရေးရာဓာတ်ခွဲခန်း

Ecological Laboratory



စိမ်းလန်းသစ်ပြည့် ဦးတည်ဘက်ရေးသား (Advancing Life and Regenerating Motherland, ALARM)

Reference Number/ ဓာတ်ခွဲခန်း: EL-R / 02240

Date / ရက်စွဲ: 11 April, 2018

Laboratory Analysis Report /ဓာတ်ခွဲစစ်ဆေးမှုအစီအစဉ်

Sample Profile များအရောင်း

နမူနာအမည် / Sample Name	ပုစွန် ပစ်ခဲ	နမူနာအမှတ် / Sample ID	3809
နေရာ (မြို့နယ်) / Location (Township)	မန္တလေးတိုင်းဒေသကြီး၊ လှိုင်သာယာ	လတ္တီတွဒ် / Latitude	
နေရာ (တိုင်း/ပြည်နယ်) / Location (Division/State)	Yangon	စတုရန်းစွန်း / Longitude	
ပေးပို့သူအမည် / Sender Name	Thai Faster Product And M.K (GMES)	နမူနာအောက်ယူချိန် (နေ့၊ နာရီ) / Sampling Time (Date, Time)	28.3.2018
အဖွဲ့အစည်း / Organisation		နမူနာအောက်ယူချိန် (နေ့၊ နာရီ) / Arriving Time (Date, Time)	2-4-2018
ဆက်သွယ်ရန် / Contact			

(This laboratory analysis report is based solely on the sample submitted by the customer)

(ဤဓာတ်ခွဲစစ်ဆေးမှုအစီအစဉ်သည် ပေးပို့သူမှပေးပို့သော နမူနာကိုသာ အခြေခံထားပါသည်။)

Analysis Results စစ်ဆေးရလဒ်များ

စဉ် / Sr.	အစစ်ဆေးရမည့် ပါဝင်မှု / Quality Parameter	ရလဒ် / Results		နည်းလမ်း / Method	ဝင်ရောက်မှု စံနှုန်း / Drinking Standard	ပုစွန် စံနှုန်း / Effluent Standard	မှတ်ချက် / Remarks
		ဝ /	mg/L				
၁	ဆိုင်နိုက်ဒရစ် (TSS)	၀	mg/L	Lowbend SpectroDirect Method No. 383	NG	≤ 50 mg/L *	Normal
၂	အောက်ဆီဂျင်ပမာဏ (DO ₅)	650	mg/L	Estimated by Eco-Lab with Jenway Dissolved Oxygen Meter (Model 971)	≤ 3 mg/L	≤ 50 mg/L *	Above the limits

* Myanmar Emission Guideline 2015 NG=No Guideline ND= Not Detected

စစ်ဆေးသူ / Tested by စစ်ဆေးသူ / Checked by တာဝန်ခံ / Approved by



Daw My Myat Khin
Lab Technician II
Ecological Laboratory
ALARM



Daw Lin Mye
Lab Technician
Ecological Laboratory
ALARM



Dr. Aye Aye Win
Project Team Leader
Ecological Laboratory
ALARM


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ဤစစ်ဆေးမှုအစီအစဉ်သည် ပေးပို့သူမှပေးပို့သော နမူနာကိုသာ အခြေခံထားပါသည်။ မူပိုင်ခွင့်ရှိသူ၏ ရွေးချယ်မှုများကို အခြေခံထားပါသည်။

A-2, Kan Street, Hlaing Township, 11051, Yangon, Myanmar. Tel: +95 1 553301 | Fax: +95 1 553302
Email: alam.myanmar@gmail.com | Website: www.myanmaraffairs.com

APPENDIX (15): Wastewater Analysis Results

Processing wastewater



Green Myanmar

Environmental Services Co., Ltd

No. 115, Kanaung Min Thar Gyi Road, Industrial Zone (1), Hlung Thar Yar Industrial City,
Yangon, Myanmar
Tel: 09-897 978 296, 09-5081451 E-mail: amete.compserv@gmail.com, info@gms-mn.com

WASTEWATER QUALITY TEST RESULT FORM




Name of Customer: Thai Faster Products and MK Co., Ltd. **Date of Sample Collection:** 14.6.2022

Name of Person: **Date of Sample Arrival to Lab:** 14.6.2022

Contact: **Date of Issued of Result:** 1.7.2022

WASTEWATER QUALITY ANALYSIS RESULT

Sr. No.	Parameters	Unit	Analysis Values	Minimum Measurement Range of Methods	NEQG (Food and Beverage Processing)
Jelly Product Processing ခေ့ခေ့					
1.	5-day Biochemical Oxygen Demand	mg/l	2060	30	50
2.	Chemical Oxygen Demand	mg/l	5070	30	250
3.	Oil and Grease	mg/l	5	5	10
4.	pH	-	4.08	0.1	6 ~ 9
5.	Total Nitrogen	mg/l	8	5	-
6.	Total Phosphorous	mg/l	2.8	0.02	2
7.	Total Suspended Solids	mg/l	38	1	50

Analyzed By	Checked by	Approved By
		
U Myo Min Ko Lab Technician (Laboratory)	U Thet Min Paing Lab Supervisor (Laboratory)	Daw Aye Thuzar Hein In-Charge (Laboratory)



ပတ်ဝန်းကျင်ရေးရာဓာတ်ခွဲခန်း

Ecological Laboratory

စိမ်းလန်းအေးမြပြည့် ဦးထက်ရေးအောင် (Advancing Life and Regenerating Motherland, ALARM)
531-D, Marlar Myaing Yek Thar Street, 8 Ward, Kamayut Township, Yangon. Telephone: +95 1 503301



စာအမှတ်/Reference Number: EL (M)-R / 673
နေ့စွဲ/Date: 21st June , 2022

ဓာတ်ခွဲစစ်ဆေးမှုအစီအရင်ခံစာ/Laboratory Analysis Report

နမူနာအမည် /Sample Profile

နမူနာအမည် /Sample Name	Jelly Product Processing အတွက်	နမူနာအမှတ် / Sample ID	673
နေရာ (မြို့နယ်) Location (Township)	Yangon	လတ္တီတွဒ် Latitude	
နေရာ (တိုင်း/ပြည်နယ်) Location (Region/State)	Yangon	လောင်ဂျီတွဒ် Longitude	
ပေးပို့သူအမည် /Sender Name	Thai Faster Product, and M.K Co.Ltd.,	နမူနာခံယူရက် (နေ့၊ နာရီ) Sampling Time (Date, Time)	14.6.2022 -
အဖွဲ့အစည်း /Organisation	Thai Faster Product, and M.K Co.Ltd.,	နမူနာရောက်ရှိရက် (နေ့၊ နာရီ) Arriving Time (Date, Time)	20.6.2022 -
ဆက်သွယ်ရန် /Contact	09-976543060, laboratory.gmes@gmail.com		

(This laboratory analysis report is based solely on the sample submitted by the customer)
(ဤဓာတ်ခွဲစစ်ဆေးမှုအစီအရင်ခံစာသည် ပေးပို့သူမှပေးပို့သော ခွဲယူမှုအပေါ်အခြေခံထားပါသည်။)

Analysis Results/စစ်ဆေးရက်အကျဉ်းချုပ်

စဉ် Sr.	အရည်အသွေးညွှန်းကိန်း Quality Parameter	ရလဒ် အကျဉ်း Results	နည်းစဉ် Method	စံသတ်မှတ်ချက် Drinking Standard	မှတ်ချက် Remarks
1	Total plate count (CFU/ml)		Total plate count method	0	
2	Total coliform count (MPN/100 ml) (Presumption test)	>1100	Most Probable Number method	0	
3	Total faecal coliform count (MPN/100ml) (Presumption test)		Most Probable Number method	0	
4	Total coliform count (CFU/ml) (Confirm test)		Eosin Methyl blue agar plate test	0	
5	Complete test for coliform bacteria		Gram staining test	-	
6	Total coliform count (CFU/ml)		3M Pate count method	0	
7	Total E.coli count (CFU/ml)		3M Pate count method	0	

Note: The target sample needs to test some additional tests to confirm total coliform and total faecal coliform.

စစ်ဆေးပြီး
Tested by



May Zaw
Research Assistant
ALARM

စစ်ဆေးပြီး
Checked by




May Myat Nyein
Research Assistant
ALARM

တာဝန်ခံ
Approved by



Ni Tar Nwe
Research Scientist
ALARM

Influent of Wastewater Treatment Plant



Green Myanmar
Environmental Services Co., Ltd

No.115, Kanaung Min Thar Gyi Road, Industrial Zone (1), Hlaing Thar Yar Industrial City,
Yangon, Myanmar
Tel: 09 897 978 296, 09-5081451 E-mail: gmescoservice@gmail.com, info@gmesc-nm.com

WASTEWATER QUALITY TEST RESULT FORM




Name of Customer: Thai Faster Products and MK Co., Ltd. **Date of Sample Collection: 14.6.2022**


Name of Person: **Date of Sample Arrival to Lab: 14.6.2022**

Contact: **Date of Issued of Result: 1.7.2022**

WASTEWATER QUALITY ANALYSIS RESULT

Sr. No.	Parameters	Unit	Analysis Values	Minimum Measurement Range of Methods	NEQG (Food and Beverage Processing)
Influent of Wastewater					
1.	5-day Biochemical Oxygen Demand	mg/l	380	30	50
2.	Chemical Oxygen Demand	mg/l	1260	30	250
3.	Oil and Grease	mg/l	<5	5	10
4.	pH	-	4.32	0.1	6 ~ 9
5.	Total Nitrogen	mg/l	<5	5	-
6.	Total Phosphorous	mg/l	0.15	0.02	2
7.	Total Suspended Solids	mg/l	24	1	50

Analyzed By	Checked by	Approved By
		
U Myo Min Ko Lab Technician (Laboratory)	U Thet Min Paung Lab Supervisor (Laboratory)	Daw Aye Thuzar Hein In-Charge (Laboratory)




ပတ်ဝန်းကျင်ရေးရာဓာတ်ခွဲခန်း

Ecological Laboratory

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531-D, Marlar Myaing Yek Thar Street, 8 Ward, Kamayut Township, Yangon. Telephone: +95 1 501301



စာအမှတ်/Reference Number: EL (M)-R / 674
နေ့စွဲ/Date: 21st June , 2022

ဓာတ်ခွဲခန်းဆေးမှုအစီအစဉ်/ Laboratory Analysis Report

နမူနာအမည် / Sample Profile

နမူနာအမည် /Sample Name	Influent of Waste Water	နမူနာအမှတ် / Sample ID	674	
နေရာ (မြို့နယ်) /Location (Township)	Yangon	လတ္တီတွဒ် /Latitude		
နေရာ (တိုင်းပြည်နယ်) /Location (Region/State)	Yangon	လောင်ဂျီတွဒ် /Longitude		
ပေးပို့သူအမည် /Sender Name	Thai Faster Product, and M.K Co.Ltd.,	နမူနာကောက်ယူချိန် (နေ့ နာရီ) /Sampling Time (Date, Time)	14.6.2022	-
အဖွဲ့အစည်း /Organisation	Thai Faster Product, and M.K Co.Ltd.,	နမူနာရောက်ရှိချိန် (နေ့ နာရီ) /Arriving Time (Date, Time)	20.6.2022	-
ဆက်သွယ်ရန် /Contact	09-976543060, laboratory.gmes@gmail.com			


(This laboratory analysis report is based solely on the sample submitted by the customer)
(ဤဓာတ်ခွဲခန်းဆေးမှုအစီအစဉ်သည် ပေးပို့သူမှပေးပို့သည့်နမူနာကိုသာအခြေခံထားပါသည်။)

Analysis Results/စမ်းသပ်ချက်အဖြေ

စဉ် /Sr.	အရည်အသွေးညွှန်းကိန်း /Quality Parameter	ရလဒ် အဖြေ /Results	နည်းစဉ် /Method	စံသတ်မှတ်ချက် /Drinking Standard	မှတ်ချက် /Remarks
1	Total plate count (CFU/ml)		Total plate count method	0	
2	Total coliform count (MPN/100 ml) (Presumption test)	150	Most Probable Number method	0	
3	Total faecal coliform count (MPN/100ml) (Presumption test)		Most Probable Number method	0	
4	Total coliform count (CFU/ml) (Confirm test)		Eosin Methyl blue agar plate test	0	
5	Complete test for coliform bacteria		Gram staining test	-	
6	Total coliform count (CFU/ml)		3M Pate count method	0	
7	Total <i>E.coli</i> count (CFU/ml)		3M Pate count method	0	


Note: The target sample needs to test some additional tests to confirm total coliform and total faecal coliform.

စမ်းသပ်ပြီး / Tested by




May Zaw
Research Assistant
ALARM

စစ်ဆေးပြီး / Checked by




May Myat Nyein
Research Assistant
ALARM

တာဝန်ခံ / Approved by



Ni Tar Nwe
Research Scientist
ALARM

Effluent of Wastewater Treatment Plant



Green Myanmar

Environmental Services Co., Ltd

No.115, Kanaung Min Thar Gyi Road, Industrial Zone (1), Hlaing Thar Yar Industrial City,
Yangon, Myanmar
Tel: 09 897 978 296, 09-5081451 E-mail: gmescompany@email.com, info@gmes-mm.com

WASTEWATER QUALITY TEST RESULT FORM




Name of Customer: Thai Faster Products and M.K Co., Ltd. **Date of Sample Collection:** 21.7.2022


Name of Person: **Date of Sample Arrival to Lab:** 21.7.2022

Contact: **Date of Issued of Result:** 3.8.2022

WASTEWATER QUALITY ANALYSIS RESULT

Sr. No.	Parameters	Unit	Analysis Values	Minimum Measurement Range of Methods	National Environmental Quality (Emission) Guidelines Food and Beverage Processing
Effluent of Wastewater					
1.	5-day Biochemical Oxygen Demand	mg/l	170	30	50
2.	Chemical Oxygen Demand	mg/l	580	30	250
3.	Oil and Grease	mg/l	<5	5	10
4.	pH	-	6.95	0.1	6 ~ 9
5.	Total Nitrogen	mg/l	<5	5	10
6.	Total Phosphorous	mg/l	0.02	0.02	2
7.	Total Suspended Solids	mg/l	22	1	50
8.	Temperature	°C	26	1	< 3 ^b

Analyzed By	Checked by	Approved By
		
U Myo Min Ko Lab Technician (Laboratory)	U Thet Min Paing Lab Supervisor (Laboratory)	Daw Aye Thuzar Hein In-Charge (Laboratory)



ပတ်ဝန်းကျင်ရေးရာဓာတ်ခွဲခန်း

Ecological Laboratory

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စာအမှတ်/Reference Number: EL (M)-R / 705
နေ့စွဲ/Date: 2nd August, 2022

ဓာတ်ခွဲစစ်ဆေးမှုအစီအရင်ခံစာ/Laboratory Analysis Report

နမူနာအမည် / Sample Profile

နမူနာအမည် / Sample Name	Final Outlet	နမူနာအမှတ် / Sample ID	705	
နေရာ (မြို့နယ်) Location (Township)	Hlaing Thar Yar	လတ္တီတွဒ် Latitude		
နေရာ (တိုင်း/ပြည်နယ်) Location (Region/State)	Yangon	လောင်ဂျီတွဒ် Longitude		
ပေးပို့သူအမည် / Sender Name	Thet Min Paing	နမူနာကောက်ယူချိန် (နေ့၊ နာရီ) Sampling Time (Date, Time)	21.7.2022	
အဖွဲ့အစည်း / Organisation	Thai faster Products and M.R Co.,Ltd.	နမူနာရောက်ရှိချိန် (နေ့၊ နာရီ) Arriving Time (Date, Time)	27.7.2022	2:00PM
ဆက်သွယ်ရန် / Contact	09-976543060			

(This laboratory analysis report is based solely on the sample submitted by the customer)
(ဤဓာတ်ခွဲစစ်ဆေးမှုအစီအရင်ခံစာသည် ပေးပို့သူမှပေးအပ်ခဲ့သည့်နမူနာကိုသာအခြေခံထားပါသည်။)

Analysis Results/စမ်းသပ်ချက်အဖြေ

စဉ် Sr.	အရည်အသွေးညွှန်းကိန်း Quality Parameter	ရလဒ် အဖြေ Results	နည်းစဉ် Method	စံသတ်မှတ်ချက် Drinking Standard	မှတ်ချက် Remarks
1	Total plate count (CFU/ml)		Total plate count method	0	
2	Total coliform count (MPN/100 ml) (Presumption test)	>1100	Most Probable Number method	0	
3	Total faecal coliform count (MPN/100ml) (Presumption test)		Most Probable Number method	0	
4	Total coliform count (CFU/ml) (Confirm test)		Eosin Methyl blue agar plate test	0	
5	Complete test for coliform bacteria		Gram staining test	-	
6	Total coliform count (CFU/ml)		3M Pate count method	0	
7	Total E.coli count (CFU/ml)		3M Pate count method	0	

Note: The target sample needs to test some additional tests to confirm total coliform and total faecal coliform.

စမ်းသပ်ပြီး
Tested by




May Myat Nyein
Research Assistant
ALARM

စစ်ဆေးပြီး
Checked by



May Zaw
Research Assistant
ALARM

တာဝန်ခံ
Approved by



Ni Tar Nwe
Research Scientist
ALARM

APPENDIX (16): Soil Quality Analysis Results



Green Myanmar

Environmental Services Co., Ltd


No.115, Kanning Min Thar Gyi Road, Industrial Zone (1), Hlaing Thar Yir Industrial City,
Yangon, Myanmar
Tel: 011-3685572, 01-3685571, 09-5081451, 09-5122448 E-mail: gmesc@msmy.com

Name of Client : Thai Faster Products and M.K Co., Ltd. Date of Arrival at Lab : 31.3.2018
Date of Collection : 30.3.2018 Date of Issue of Results : 26.4.2018


Laboratory Analysis Results of Soils

Sr. No.	Parameters	Unit	Analysis Value
			0.00 0.25 0.50 0.75 1.00
1.	Aluminum	mg/kg soil	0.15
2.	Chloride	g/kg soil	0.63
3.	Copper	g/kg soil	ND
4.	Cyanide	mg/kg soil	ND
5.	Extractable Acidity	cmol/kg soil	1.125
6.	Manganese (Mn)	g/kg soil	ND
7.	P - Alkalinity	mmol/l extract	0
8.	pH	-	7.53
9.	Total Alkalinity	mmol/l extract	1.305
10.	Total Iron	mg/kg soil	10

ND-Not Detected

Analyzed By  Daw Aye Thuzar Hein Technician (Laboratory)	Checked By  Daw Wint Phyu Htway Incharge (Laboratory)	Approved By  Daw Cherry Thwin Manager (Laboratory)
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APPENDIX (17): Attendance List of Public Consultation Meeting



Green Myanmar

Environmental Services Co., Ltd

No.115, Kansung Min Thar Gyi Road, Industrial Zone (1), Hlaing Thar Yar Industrial City,
Yangon, Myanmar
Tel: 01-3685572, 01-3685571, 09-3081431, 09-5122448 E-mail: gmescompany@gmail.com

ထိုင်းအော်(စ်)စတာကုန်ထုတ်လုပ်ငန်းနှင့် M.K. ကုမ္ပဏီလီမိတက် ၏ မြေပြင်အမှတ် ၄၆၇/တ
 ကနောင်မင်းသာရိက္ခလမ်း၊ ရွှေလင်းပန်းစက်မှုရုံး၊ လှိုင်သာယာမြို့နယ်၊ ရန်ကင်းတိုင်းဒေသကြီးတွင်
 အကောင်အထည်ဖော်ဆောင်ရွက်နေသည့်
 ဂျယ်လီနှင့်ထုတ်လုပ်ဖြန့်ဖြူးရေးလုပ်ငန်း

ပတ်ဝန်းကျင်စီမံခန့်ခွဲမှုအစီအစဉ်အစီရင်ခံစာဆွေးနွေးပွဲသို့ တက်ရောက်သူများစာရင်း
 ရက်စွဲ ။ ၂၀၁၈ ခုနှစ်၊ ဩဂုတ်လ (၄) ရက်

စဉ်	အမည်	နေရပ်လိပ်စာ	လက်မှတ်
၁	ဒေါ်မိုးမိုး	ဧရာဝတီလမ်း ၁၁၀	
၂	ဒေါ်အေးအေး	၁၆/ ၀၄၉ ၊ အင်းကြီးလမ်း	
၃	ဒေါ်ခင်ခင်	၁၅ ၊ ဧရာဝတီလမ်း	
၄	ဒေါ်အိအိ	၆၁၀ ၊ အင်းကြီးလမ်း	
၅	ဒေါ်အိအိ	"	
၆	ဒေါ်အိအိ	"	
၇	ဒေါ်အိအိ	၁၆၂ အင်းကြီးလမ်း	
၈	ဒေါ်အိအိ	၁၆၂ အင်းကြီးလမ်း	
၉	ဒေါ်အိအိ	ဧရာဝတီလမ်း	
၁၀	ဒေါ်အိအိ	အင်းကြီးလမ်း	
၁၁	ဒေါ်အိအိ	အင်းကြီးလမ်း	
၁၂	ဒေါ်အိအိ	"	
၁၃	ဒေါ်အိအိ	အင်းကြီးလမ်း	
၁၄	ဒေါ်အိအိ	အင်းကြီးလမ်း	
၁၅	ဒေါ်အိအိ	အင်းကြီးလမ်း	
၁၆	ဒေါ်အိအိ	အင်းကြီးလမ်း	
၁၇	ဒေါ်အိအိ	အင်းကြီးလမ်း	
၁၈	ဒေါ်အိအိ	အင်းကြီးလမ်း	
၁၉	ဒေါ်အိအိ	အင်းကြီးလမ်း	
၂၀	ဒေါ်အိအိ	အင်းကြီးလမ်း	
၂၁	ဒေါ်အိအိ	အင်းကြီးလမ်း	
၂၂	ဒေါ်အိအိ	အင်းကြီးလမ်း	

ထိုင်ဆော်တော့ကုန်ထုတ်လုပ်နေမိမ့် M.K. ကုမ္ပဏီလီမိတက် ၏ မြေတွက်အမှတ် ၄၆၅/၀၁
ကနောင်မင်းသာကြီးရွာ၊ ဓမ္မလင်ခင်းစက်မှုနှင့် လှိုင်သာယာမြို့နယ် ရန်ကင်းတိုင်းဒေသကြီးတွင်
အတောင်အထည်ခတ်ဆောင်ရွက်နေသည့်
ကုန်လုံခြုံရေးထုတ်လုပ်ခြင်း ဖြစ်စေရလုပ်ငန်းနှင့်ပတ်သက်၍ အကြံပြုစာ

ရင်းနှီးမြှုပ်နှံလုပ်ငန်း အကြံပြုရေးသားနိုင်ပါကြောင်းနှင့် လူကြီးပင်သတ်၏ အကြံပြုချက်များကို စိမ့်ကိန်း
တာဝန်ရှိသူများနှင့် တင်ပြဆွေးနွေးပေးသွားမည် ဖြစ်ပါသည်။

ရပ်	မထွေးနေအကြံပြုချက်
	ခေတ္တ ပါတဝန်း ကျင့် ဒဂုံ-၇၆-၆၃၇၃၆ ဗဟို ဆာဂျ ဂျပ်စတော်ပေး ၆၆၆၆၆၆၆၆

လက်မှတ် _____
အမည် _____
မှတ်ပုံတင်အမှတ် _____
ရာထူး _____
ရန်နှံ့မိတ် _____
ဆက်သွယ်ရန်လိစာ _____

ထိုင်ဆော်တော့ကုန်ထုတ်လုပ်နေမိမ့် M.K. ကုမ္ပဏီလီမိတက် ၏ မြေတွက်အမှတ် ၄၆၅/၀၁
ကနောင်မင်းသာကြီးရွာ၊ ဓမ္မလင်ခင်းစက်မှုနှင့် လှိုင်သာယာမြို့နယ် ရန်ကင်းတိုင်းဒေသကြီးတွင်
အတောင်အထည်ခတ်ဆောင်ရွက်နေသည့်
ကုန်လုံခြုံရေးထုတ်လုပ်ခြင်း ဖြစ်စေရလုပ်ငန်းနှင့်ပတ်သက်၍ အကြံပြုစာ

ရင်းနှီးမြှုပ်နှံလုပ်ငန်း အကြံပြုရေးသားနိုင်ပါကြောင်းနှင့် လူကြီးပင်သတ်၏ အကြံပြုချက်များကို စိမ့်ကိန်း
တာဝန်ရှိသူများနှင့် တင်ပြဆွေးနွေးပေးသွားမည် ဖြစ်ပါသည်။

ရပ်	မထွေးနေအကြံပြုချက်
	ရတင်တော့ကုန်ထုတ်လုပ်ခြင်း ကို အကြံပြုစာ ပေးအပ်ခြင်းပါသည်။

လက်မှတ် _____
အမည် _____
မှတ်ပုံတင်အမှတ် _____
ရာထူး _____
ရန်နှံ့မိတ် _____
ဆက်သွယ်ရန်လိစာ _____

ထိုင်ဆော်တော့ကုန်ထုတ်လုပ်နေမိမ့် M.K. ကုမ္ပဏီလီမိတက် ၏ မြေတွက်အမှတ် ၄၆၅/၀၁
ကနောင်မင်းသာကြီးရွာ၊ ဓမ္မလင်ခင်းစက်မှုနှင့် လှိုင်သာယာမြို့နယ် ရန်ကင်းတိုင်းဒေသကြီးတွင်
အတောင်အထည်ခတ်ဆောင်ရွက်နေသည့်
ကုန်လုံခြုံရေးထုတ်လုပ်ခြင်း ဖြစ်စေရလုပ်ငန်းနှင့်ပတ်သက်၍ အကြံပြုစာ

ရင်းနှီးမြှုပ်နှံလုပ်ငန်း အကြံပြုရေးသားနိုင်ပါကြောင်းနှင့် လူကြီးပင်သတ်၏ အကြံပြုချက်များကို စိမ့်ကိန်း
တာဝန်ရှိသူများနှင့် တင်ပြဆွေးနွေးပေးသွားမည် ဖြစ်ပါသည်။

ရပ်	မထွေးနေအကြံပြုချက်
	အိမ်က အထွေထွေ အား ကလေး ၆၅၅၅၅၅၊ ၁၇၅၅၅၊ အတွက် အိုးအေး ချော့ချော့ မိုး မုန် ဝတ္တည် များ ပေး နည်း ဖြစ် ပတ်ဝန်းကျင် အတွက် အထွေထွေ စေရမိပါ။ အစွဲလားတင် ဖြည့် အစီအစဉ် များ အား လုံး ၆၀၀၀၀ ပါ တယ် အထွေထွေ ပါ တယ်။

လက်မှတ် _____
အမည် _____
မှတ်ပုံတင်အမှတ် _____
ရာထူး _____
ရန်နှံ့မိတ် _____
ဆက်သွယ်ရန်လိစာ _____

ထိုင်ဆော်တော့ကုန်ထုတ်လုပ်နေမိမ့် M.K. ကုမ္ပဏီလီမိတက် ၏ မြေတွက်အမှတ် ၄၆၅/၀၁
ကနောင်မင်းသာကြီးရွာ၊ ဓမ္မလင်ခင်းစက်မှုနှင့် လှိုင်သာယာမြို့နယ် ရန်ကင်းတိုင်းဒေသကြီးတွင်
အတောင်အထည်ခတ်ဆောင်ရွက်နေသည့်
ကုန်လုံခြုံရေးထုတ်လုပ်ခြင်း ဖြစ်စေရလုပ်ငန်းနှင့်ပတ်သက်၍ အကြံပြုစာ

ရင်းနှီးမြှုပ်နှံလုပ်ငန်း အကြံပြုရေးသားနိုင်ပါကြောင်းနှင့် လူကြီးပင်သတ်၏ အကြံပြုချက်များကို စိမ့်ကိန်း
တာဝန်ရှိသူများနှင့် တင်ပြဆွေးနွေးပေးသွားမည် ဖြစ်ပါသည်။

ရပ်	မထွေးနေအကြံပြုချက်
	ပျံ့ပြန့် ပါတဝန်း အစည်း အဝေး အစဉ်အစား အစဉ်အစား အစည်း အဝေး ပြုစုပါ တယ် အစဉ်အစား တာဝန်ပေး မစားဝမ်း ကျွန် နဲ့ အစဉ်အစား ပြုစုပါ တယ် မိမိ ကျွန်ုပ်တို့ နဲ့ မစားဝမ်း ကျွန်ုပ်တို့ အစည်းအဝေး ပြုစု ခေတ် အစည်းအဝေး ပါ တယ်။

လက်မှတ် _____
အမည် _____
မှတ်ပုံတင်အမှတ် _____
ရာထူး _____
ရန်နှံ့မိတ် _____
ဆက်သွယ်ရန်လိစာ _____

ထိုင်းအစိစတာကုန်ထုတ်လုပ်ခြင်းနှင့် M.K. ကုမ္ပဏီလီမိတက် ၏ မြေကွက်အမှတ် ၄၆၇/၀၁
ကနောင်မင်းသာကြီးလမ်း၊ ရွှေလင်းခန်းစက်မှုရုံ၊ လှိုင်သာယာမြို့နယ်၊ ရန်ကင်းတိုင်းဒေသကြီးတွင်
အကောင်အထည်ဖော်ဆောင်ရွက်နေသည့်
ဂျပန်လီမိတက်လုပ်ငန်းဖြန့်ဖြူးရေးလုပ်ငန်းနှင့်ပတ်သက်၍ အကြံပြုစာ

ရင်းနှီးမြုပ်လင်းစွာ အကြံပြုရေးသားနိုင်ပါကြောင်းနှင့်လူကြိုက်ပင်ဆိုင်၍ အကြံပြုချက်များကို စီမံကိန်း
တာဝန်ရှိသူများနှင့် တစ်ပြိုင်ဆွေးနွေးပေးသွားမည် ဖြစ်ပါသည်။

စဉ်	ဆွေးနွေးအကြံပြုချက်
၁-	အကျင့်ထမ်း ၂၇ ဦး နှစ်ပတ်ပတ် ဖွဲ့စည်းပေးပြီး တာဝန်ယူပေး၍ ကျွမ်းကျင်မှု ရရှိအောင် စာတန်းပေးပို့ ပို့ချပေးပါ။ အကျင့်ထမ်း ၂၇ ဦး ပေးပို့ပေး ပေးပါ။

လက်မှတ် _____
အမည် _____
မှတ်ပုံတင်အမှတ် _____
ရာထူး _____
ရန်ကင်းတိုင်း _____
ဆက်သွယ်ရန်လိပ်စာ _____

ထိုင်းအစိစတာကုန်ထုတ်လုပ်ခြင်းနှင့် M.K. ကုမ္ပဏီလီမိတက် ၏ မြေကွက်အမှတ် ၄၆၇/၀၁
ကနောင်မင်းသာကြီးလမ်း၊ ရွှေလင်းခန်းစက်မှုရုံ၊ လှိုင်သာယာမြို့နယ်၊ ရန်ကင်းတိုင်းဒေသကြီးတွင်
အကောင်အထည်ဖော်ဆောင်ရွက်နေသည့်
ဂျပန်လီမိတက်လုပ်ငန်းဖြန့်ဖြူးရေးလုပ်ငန်းနှင့်ပတ်သက်၍ အကြံပြုစာ

ရင်းနှီးမြုပ်လင်းစွာ အကြံပြုရေးသားနိုင်ပါကြောင်းနှင့်လူကြိုက်ပင်ဆိုင်၍ အကြံပြုချက်များကို စီမံကိန်း
တာဝန်ရှိသူများနှင့် တစ်ပြိုင်ဆွေးနွေးပေးသွားမည် ဖြစ်ပါသည်။

စဉ်	ဆွေးနွေးအကြံပြုချက်
	အစီအစဉ် ဖောက်ခွဲပါသည်။ စားသုံးသူများ သေဥပဒေ ကန့်သတ်ချက်များ ဖြစ်ပေါ်စေ ကနောင်မင်းသာကြီးလမ်း၊ ရွှေလင်းခန်းစက်မှုရုံ၊ လှိုင်သာယာမြို့နယ်၊ ရန်ကင်းတိုင်းဒေသကြီးတွင် အကောင်အထည်ဖော်ဆောင်ရွက်နေသည့် ဂျပန်လီမိတက်လုပ်ငန်းဖြန့်ဖြူးရေးလုပ်ငန်းနှင့်ပတ်သက်၍ အကြံပြုစာ

လက်မှတ် _____
အမည် _____
မှတ်ပုံတင်အမှတ် _____
ရာထူး _____
ရန်ကင်းတိုင်း _____
ဆက်သွယ်ရန်လိပ်စာ _____

ထိုင်းအစိစတာကုန်ထုတ်လုပ်ခြင်းနှင့် M.K. ကုမ္ပဏီလီမိတက် ၏ မြေကွက်အမှတ် ၄၆၇/၀၁
ကနောင်မင်းသာကြီးလမ်း၊ ရွှေလင်းခန်းစက်မှုရုံ၊ လှိုင်သာယာမြို့နယ်၊ ရန်ကင်းတိုင်းဒေသကြီးတွင်
အကောင်အထည်ဖော်ဆောင်ရွက်နေသည့်
ဂျပန်လီမိတက်လုပ်ငန်းဖြန့်ဖြူးရေးလုပ်ငန်းနှင့်ပတ်သက်၍ အကြံပြုစာ

ရင်းနှီးမြုပ်လင်းစွာ အကြံပြုရေးသားနိုင်ပါကြောင်းနှင့်လူကြိုက်ပင်ဆိုင်၍ အကြံပြုချက်များကို စီမံကိန်း
တာဝန်ရှိသူများနှင့် တစ်ပြိုင်ဆွေးနွေးပေးသွားမည် ဖြစ်ပါသည်။

စဉ်	ဆွေးနွေးအကြံပြုချက်
	စက်ရုံ ထုတ်သွင်းမှုကို စီမံကိန်းအောင်မြင်စေရန် (ကျန်းမာရေး)

လက်မှတ် _____
အမည် _____
မှတ်ပုံတင်အမှတ် _____
ရာထူး _____
ရန်ကင်းတိုင်း _____
ဆက်သွယ်ရန်လိပ်စာ _____

ထိုင်းအစိစတာကုန်ထုတ်လုပ်ခြင်းနှင့် M.K. ကုမ္ပဏီလီမိတက် ၏ မြေကွက်အမှတ် ၄၆၇/၀၁
ကနောင်မင်းသာကြီးလမ်း၊ ရွှေလင်းခန်းစက်မှုရုံ၊ လှိုင်သာယာမြို့နယ်၊ ရန်ကင်းတိုင်းဒေသကြီးတွင်
အကောင်အထည်ဖော်ဆောင်ရွက်နေသည့်
ဂျပန်လီမိတက်လုပ်ငန်းဖြန့်ဖြူးရေးလုပ်ငန်းနှင့်ပတ်သက်၍ အကြံပြုစာ

ရင်းနှီးမြုပ်လင်းစွာ အကြံပြုရေးသားနိုင်ပါကြောင်းနှင့်လူကြိုက်ပင်ဆိုင်၍ အကြံပြုချက်များကို စီမံကိန်း
တာဝန်ရှိသူများနှင့် တစ်ပြိုင်ဆွေးနွေးပေးသွားမည် ဖြစ်ပါသည်။

စဉ်	ဆွေးနွေးအကြံပြုချက်
	အထူးအရေးကြီးမှုများကို စီမံကိန်းအောင်မြင်စေရန် (ကျန်းမာရေး)

လက်မှတ် _____
အမည် _____
မှတ်ပုံတင်အမှတ် _____
ရာထူး _____
ရန်ကင်းတိုင်း _____
ဆက်သွယ်ရန်လိပ်စာ _____

ထိုင်းဆတ်စတာကုန်ထုတ်လုပ်ခြင်းနှင့် M.K. ကုမ္ပဏီလီမိတက် ၏ မြေကွက်အမှတ် ၄၆၇/က၊
ကနောင်မင်းသာကြီးလမ်း၊ ဓမ္မလင်ခရိုင်၊ ရန်ကင်းတိုင်းဒေသကြီးတွင်
အကောင်အထည်ဖော်ဆောင်ရွက်နေသည့်
ဂျယ်လီများထုတ်လုပ်ခြင်း ဖြန့်ချိရေးလုပ်ငန်းနှင့်ပတ်သက်၍ အကြံပြုစာ

ရင်းနှီးမြုပ်လင်စွာ အကြံပြုရေးအဖွဲ့အစည်းနှင့်လူကြီးအသင်းတို့၏ အကြံပြုချက်များကို စိစစ်ပြီး
တာဝန်ရှိသူများနှင့် တစ်ပြိုင်နက်ဆွေးနွေးသဘောတူညီ ဖြစ်ပါသည်။

စဉ်	ဆွေးနွေးအကြံပြုချက်
	ခက်ရှုပ်ခဲနေသည့် အချက်များကို ဖွင့်ဆို နှိုင်းနှိုင်း ဖြေရှင်းပေးရန် အသုံးပြုနေသည့် ဂျယ်လီများကို ပေး-၆၆၆၆၆/၁၂၃၄

လက်မှတ် _____
အမည် _____
မှတ်ပုံတင်အမှတ် _____
ရာထူး _____
ရန်နှုန်းမိတ် _____
ဆက်သွယ်ရန်လိပ်စာ _____

ထိုင်းဆတ်စတာကုန်ထုတ်လုပ်ခြင်းနှင့် M.K. ကုမ္ပဏီလီမိတက် ၏ မြေကွက်အမှတ် ၄၆၇/က၊
ကနောင်မင်းသာကြီးလမ်း၊ ဓမ္မလင်ခရိုင်၊ ရန်ကင်းတိုင်းဒေသကြီးတွင်
အကောင်အထည်ဖော်ဆောင်ရွက်နေသည့်
ဂျယ်လီများထုတ်လုပ်ခြင်း ဖြန့်ချိရေးလုပ်ငန်းနှင့်ပတ်သက်၍ အကြံပြုစာ

ရင်းနှီးမြုပ်လင်စွာ အကြံပြုရေးအဖွဲ့အစည်းနှင့်လူကြီးအသင်းတို့၏ အကြံပြုချက်များကို စိစစ်ပြီး
တာဝန်ရှိသူများနှင့် တစ်ပြိုင်နက်ဆွေးနွေးသဘောတူညီ ဖြစ်ပါသည်။

စဉ်	ဆွေးနွေးအကြံပြုချက်
၁။	ခက်ရှုပ် ၅ ဝေ့တင် @ဆော့ ဓာတ်ကြော့ဇာရာ ဓာတ်ကြော့ ဓာတ်ကြော့၊ ဓာတ်ကြော့ ပါသည့် ဝေ့ ဓာတ်ကြော့ ဓာတ်ကြော့ ဂျယ်လီတင် ဖြစ် ဓာတ်ကြော့ပါသည့်

လက်မှတ် _____
အမည် _____
မှတ်ပုံတင်အမှတ် _____
ရာထူး _____
ရန်နှုန်းမိတ် _____
ဆက်သွယ်ရန်လိပ်စာ _____

ထိုင်းဆတ်စတာကုန်ထုတ်လုပ်ခြင်းနှင့် M.K. ကုမ္ပဏီလီမိတက် ၏ မြေကွက်အမှတ် ၄၆၇/က၊
ကနောင်မင်းသာကြီးလမ်း၊ ဓမ္မလင်ခရိုင်၊ ရန်ကင်းတိုင်းဒေသကြီးတွင်
အကောင်အထည်ဖော်ဆောင်ရွက်နေသည့်
ဂျယ်လီများထုတ်လုပ်ခြင်း ဖြန့်ချိရေးလုပ်ငန်းနှင့်ပတ်သက်၍ အကြံပြုစာ

ရင်းနှီးမြုပ်လင်စွာ အကြံပြုရေးအဖွဲ့အစည်းနှင့်လူကြီးအသင်းတို့၏ အကြံပြုချက်များကို စိစစ်ပြီး
တာဝန်ရှိသူများနှင့် တစ်ပြိုင်နက်ဆွေးနွေးသဘောတူညီ ဖြစ်ပါသည်။

စဉ်	ဆွေးနွေးအကြံပြုချက်
	သာသနာ့ ဝတ်စုံများ ဖြန့်ချိရေး ဖြစ်သည့် အကြံပြု ဇာရာ ဝတ်စုံ ဝတ်စုံ ဝတ်စုံ ဝတ်စုံ ဝတ်စုံ ဝတ်စုံ

လက်မှတ် _____
အမည် _____
မှတ်ပုံတင်အမှတ် _____
ရာထူး _____
ရန်နှုန်းမိတ် _____
ဆက်သွယ်ရန်လိပ်စာ _____


ထိုင်းဆတ်စတာကုန်ထုတ်လုပ်ခြင်းနှင့် M.K. ကုမ္ပဏီလီမိတက် ၏ မြေကွက်အမှတ် ၄၆၇/က၊
ကနောင်မင်းသာကြီးလမ်း၊ ဓမ္မလင်ခရိုင်၊ ရန်ကင်းတိုင်းဒေသကြီးတွင်
အကောင်အထည်ဖော်ဆောင်ရွက်နေသည့်
ဂျယ်လီများထုတ်လုပ်ခြင်း ဖြန့်ချိရေးလုပ်ငန်းနှင့်ပတ်သက်၍ အကြံပြုစာ

ရင်းနှီးမြုပ်လင်စွာ အကြံပြုရေးအဖွဲ့အစည်းနှင့်လူကြီးအသင်းတို့၏ အကြံပြုချက်များကို စိစစ်ပြီး
တာဝန်ရှိသူများနှင့် တစ်ပြိုင်နက်ဆွေးနွေးသဘောတူညီ ဖြစ်ပါသည်။

စဉ်	ဆွေးနွေးအကြံပြုချက်
	ခက်ရှုပ် ဝတ်စုံ ဝတ်စုံ ဝတ်စုံ ဝတ်စုံ ဝတ်စုံ ဝတ်စုံ ဝတ်စုံ ဝတ်စုံ ဝတ်စုံ ဝတ်စုံ ဝတ်စုံ ဝတ်စုံ ဝတ်စုံ ဝတ်စုံ ဝတ်စုံ ဝတ်စုံ ဝတ်စုံ ဝတ်စုံ

လက်မှတ် _____
အမည် _____
မှတ်ပုံတင်အမှတ် _____
ရာထူး _____
ရန်နှုန်းမိတ် _____
ဆက်သွယ်ရန်လိပ်စာ _____

APPENDIX (19): Attendance List of Employee Discussion Program



Green Myanmar

Environmental Services Co., Ltd

No.115, Kanaung Min Thar Gyi Road, Industrial Zone (1), Hlaing Thar Yar Industrial City,
Yangon, Myanmar.
Tel: 01-685572, 01-685571, 09-5081451, 09-5122448 E-mail: gmescompany@gmail.com

Thai Faster Products And M.K Co., Ltd.၏ ရန်ကုန်တိုင်းဒေသကြီး၊ လှိုင်သာယာမြို့နယ်၊ ဧရာဝတီပန်းစက်မှုရန်၊
ကနောင်မင်းသာကြီးလမ်း၊ အမှတ်(၄၆၇/က) တွင် အကောင်အထည်ဖော် ဆောင်ရွက်လျက်ရှိသော
လုပ်ငန်းစဉ်များအား ဆန်းစစ်ခြင်းနှင့်စစ်လျဉ်း၍
ပတ်ဝန်းကျင်ဆိုင်ရာစီမံခန့်ခွဲမှုအစီအစဉ်နှင့်ပတ်သက်သော ဆွေးနွေးပွဲသို့ တက်ရောက်သူများစာရင်း
ရက်စွဲ ၊ ၊ ၂၀၁၈ခုနှစ်၊ မတ်လ (၂၉)ရက်။

စဉ်	အမည်	ဌာန	လက်မှတ်
၀၁	မခင်နု နှစ်ထွန်း	(Packing)ခ.င	Kha
၀၂	မအေးအေးထွန်း	(Packing)ခ.င	Hed
၀၃	မအုန်းအုန်းလတ်	(Mixing)ခ.င	Xo
၀၄	မအေးအေးမြင့်	Packing	Zon
၀၅	မအေးအေးစိန်	Packing	cho
၀၆	မအေးအေးစိန်	Packing	wai
၀၇	မအေးအေးစိန်	stone	the
၀၈	မအေးအေးစိန်	စိုက်ခင်း	Son
၀၉	မအေးအေးစိန်	စက်ခန်း	Man
၀၁၀	မအေးအေးစိန်	စက်ခန်း	စော
၀၁၁			
၀၁၂			
၀၁၃			
၀၁၄			
၀၁၅			
၀၁၆			
၀၁၇			
၀၁၈			
၀၁၉			
၀၂၀			



Green Myanmar

Environmental Services Co., Ltd

No.115, Kanaung Min Thar Gyi Road, Industrial Zone (1), Hlaing Thar Yar Industrial City,

Yangon, Myanmar

Tel: 01-685572, 01-685571, 09-5081451, 09-5122448 E-mail: gmescompany@gmail.com

Thai Faster Products And MLK Co., Ltd. ၏ ရန်ကုန်တိုင်းဒေသကြီး၊ လှိုင်သာယာမြို့နယ်၊ ရွှေလင်းပန်းစက်မှုရန်၊
ကနောင်မင်းသာကြီးလမ်း၊ အမှတ်(၄၆၇/က) တွင် အကောင်အထည်ဖော် ဆောင်ရွက်လျက်ရှိသော
ဂျယ်လီစားသောက်ကုန် အမျိုးမျိုးထုတ်လုပ်ခြင်းနှင့်စပ်လျဉ်း၍
ပတ်ဝန်းကျင်ဆိုင်ရာစီမံခန့်ခွဲမှုအစီအစဉ်နှင့်ပတ်သက်သောဆွေးနွေးပွဲသို့ တက်ရောက်သူများစာရင်း
ရက်စွဲ ။ ။ ၂၀၁၈ခုနှစ်၊ မတ်လ (၂၉)ရက်။

စဉ်	အမည်	ဌာန	လက်မှတ်
၀၁	ပေါက်ငွေကျွန်စင်ယင်း	Parking	<i>[Signature]</i>
၂	မရွှန်းလိဂျင်ပွန်	Parking	<i>[Signature]</i>
၃	မောင်သန်စက်ရုံ	Store	<i>[Signature]</i>
၄	ခွင်မြေဝင်ရောက်		<i>[Signature]</i>
၅	မို့သန်ဆွေး	H-R	<i>[Signature]</i>
၆	မြင်းဆူစေ	parking	sc
၇	ဘင်ဆွေစင်	ပါကင်	စင်
၈	ဒီဇယ်	ဂျယ်လီ	စင်
၉	ပဒိုပဒို	ပါကင်	စင်
၁၀	အိမ်	ဂျယ်လီ	eit
၁၁	မောင်မောင်	ပစ္စည်း	<i>[Signature]</i>
၁၂			
၁၃			
၁၄			
၁၅			
၁၆			
၁၇			
၁၈			
၁၉			
၂၀			

Thai Faster Products And M.K Co., Ltd. ရန်ကင်းတိုင်းဒေသကြီး၊ လှိုင်သာယာမြို့နယ်၊ ရွှေလင်းမင်းစက်မှုဇုန်၊
ကနောင်မင်းသာကြီးလမ်း၊ အမှတ်(၄၆၇/က) တွင် အကောင်အထည်ဖော် ဆောင်ရွက်လျက်ရှိသော
ရည်လီစားသောက်ကုန် အမျိုးမျိုးထုတ်လုပ်ခြင်းနှင့်စပ်လျဉ်း၍ အကြံပြုစာ

၁။ လုပ်ငန်းခွင်တွင်အသုံးပြုသော အန္တရာယ်ကင်းရှင်းရေးပစ္စည်းများနှင့်စပ်လျဉ်း၍ အကြံပြုချက်

(က) လုပ်ငန်းခွင်အကာအကွယ်ပစ္စည်းများ - ၆၃၆၊ ၆၃၇၊ ၆၃၈ - ၆၃၉၊ ၅၀၅၊ ၅၀၆၊ ၅၀၇၊ ၅၀၈

(ခ) သောက်သုံးရေ - ပုံ စတင်ထုတ်လုပ်ခြင်း

(ဂ) သန့်စင်ရန်များ - ၆၅၂၁၆

(ဃ) ဆေးကြောသန့်ရှင်းရေးစနစ် - ၇

၂။ လုပ်ငန်းခွင်အလုပ်လုပ်ကိုင်မှုအခြေအနေအထား အကြံပြုချက်

(က) ရာသီဥတုအခြေအနေ - မရှိပါ

(ခ) အနံ့အသက်/အနိုးအဝှေ့များ - မရှိပါ

(ဂ) လုပ်ငန်းခွင်အလင်းအရောင် - မရှိပါ

(ဃ) အပူ/အမြှေးများအခြေအနေ - မရှိပါ

(င) လေဝင်လေထွက် - မရှိပါ

၃။ လုပ်ငန်းခွင် လူမှုထက်စပ်မှုအခြေအနေအထား အကြံပြုချက်

(က) လုပ်ငန်းခွင်ကြီးကြပ်သူ (ပီပီအထက်) - မရှိပါ


(ခ) လုပ်ကိုင်ကိုင်စက် (အဆင့်တူ) - မရှိပါ

(ဂ) လက်အောက်ဝန်ထမ်း (ပီပီလက်အောက်) - မရှိပါ

၄။ သီးခြားအကြံပြုချက်များ

လက်မှတ် Thun Htun ရာထူး H-R
အမည် Thun Htun ဌာန Prod. Section
နိုင်ငံသားစိစစ်ရေးအမှတ် ၅၂၁၃၆၂၆၂၁၇၀၆ လုပ်ငန်းခွင်မှတ် ၀၅-၂၅၂၀၂၀၁၆၄
လုပ်သက် ၆၅၆ ဆက်သွယ်ရန်ဖိလ်စာ ၀၅၂၅၂၀၁၆၄

**APPENDIX (21): Requesting Letter of GMES on the Suggestion of Public
Consultation Meeting**



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သို့
တာဝန်ခံ
Thai Faster Products and M.K. Co., Ltd.
မြေကွက်အမှတ်(၄၆၇/က)၊ ကနောင်မင်းသာကြီးလမ်း၊
ရွှေလင်းပန်းစက်မှုဇုန်၊ လှိုင်သာယာမြို့နယ်၊
ရန်ကုန်တိုင်းဒေသကြီး။

ရက်စွဲ - ၂၀၁၈ ခုနှစ် ဩဂုတ်လ (၁၇) ရက်

အကြောင်းအရာ ။ Thai Faster Products and M.K. Co., Ltd. ၏ ဂျယ်လီဖျော်
ထုတ်လုပ်ဖြန့်ဖြူးရေးလုပ်ငန်းအတွက် ပတ်ဝန်းကျင်ရုပ်သိမ်းခြင်းစာရွက်
အကြံပြုချက်များ ညှိနှိုင်းပြန်ကြား ပေးပါရန်ကိစ္စ။

ရည်ညွှန်းချက် ။ ၂၀၁၈ ခုနှစ် မတ်လ (၂၀) ရက် ရက်စွဲတွင် GMES Co., Ltd. နှင့် Thai Faster
Products and M.K. Co., Ltd. တို့၏ နှစ်ဦးသဘောတူစာချုပ်။


အထက်အကြောင်းအရာပါကိစ္စနှင့်စပ်လျဉ်း၍ GMES Co., Ltd. နှင့် Thai Faster Products
and M.K. Co., Ltd. တို့သည် ရန်ကုန်တိုင်းဒေသကြီး၊ လှိုင်သာယာမြို့နယ်၊ ရွှေလင်းပန်းစက်မှုဇုန်၊
ကနောင်မင်းသာကြီးလမ်း၊ မြေကွက်အမှတ်(၄၆၇/က) ရှိ ဂျယ်လီဖျော်ထုတ်လုပ်ဖြန့်ဖြူးရေးလုပ်ငန်း
စက်ရုံ အတွက် ပတ်ဝန်းကျင်စီမံခန့်ခွဲမှုအစီအစဉ် (EMP) ရေးဆွဲပေးရန် ရည်ညွှန်းပါသဘောတူစာချုပ်
ချုပ်ဆိုခဲ့ကြပါသည်။ EMP အစီရင်ခံစာတွင် အများပြည်သူသဘောထားရယူခြင်းနှင့် သတင်းအချက်
အလက်များထုတ်ပြန်ခြင်း ခေါင်းစဉ်အတွက် ရေးသားဖော်ပြရန် ၂၀၁၈ ခုနှစ် ဩဂုတ်လ (၅) ရက်နေ့
တွင် ရုပ်ကွက်ခန့်ရပ်မိရပ်စများနှင့် ညှိနှိုင်းအကြံပြုချက်များ ရယူခဲ့ပါသည်။ ယင်းအကြံပြုချက်များကို
ဖတ်ရှုလေ့လာခဲ့ရာတွင် ဖော်ပြပါအချက်များကို Thai Faster Products and M.K. Co., Ltd. မှ
ပြန်လည်ရှင်းလင်းပေးစေလိုပါသဖြင့် ဖြေရှင်းပေးရမည့် မေးခွန်းများကို အောက်တွင်ဖော်ပြ
ထားပါသည်။

(၁) ရုပ်ကွက်ခန့်ရပ်မိရပ်စပြည်သူများ၏အကြံပြုလွှာ

(က) ကလေးများကျန်းမာရေးအတွက် ဆိုးဆေး ရောင်းဆိုးပစ္စည်းအလျာချပြီး ကျန်းမာရေး
နှင့်ညီညွတ်စွာ ထုတ်လုပ်စေချင်ပါသည်။

- (ခ) ကျန်းမာရေးနှင့်ညီညွတ်သော အစားအစာထိတွေ့ရေးဂျာနယ်ပြစ်စေပဲ အာရုံစေရန်
ကောင်းမွန်စွာ ထုတ်လုပ်စေချင်ပါသည်။
- (ဂ) ဓာတုဆိုင်ရာဆေးယူသုံးစွဲခြင်းမပြုရန်
- (ဃ) ပစ္စည်းထုတ်ပို့မှုသန့်ရှင်းမှုရှိစေရန်
- (င) လေ၊ ရေ၊ မြေ၊ အသံနှင့်ပတ်သက်၍ ပတ်ဝန်းကျင်ကို ထိခိုက်မှုမရှိစေရန်
- (စ) စက်ရုံလုပ်သားများ၊ထိခိုက်မှုမရှိစေရန်၊ စက်ရုံပတ်ဝန်းကျင်သန့်ရှင်းစေရန်
- (ဆ) နိုင်ငံတော်အစိုးရလမ်းညွှန်မှုဖြင့် လုပ်ဆောင်ပြီး စက်ရုံပတ်ဝန်းကျင် ကျန်းမာရေး
လူမှုရေး ထိခိုက်မှုမရှိစေရန် လုပ်ဆောင်စေချင်ပါသည်။

လေးစားစွာဖြင့်


17/08/2018

Kyaw Soa Win
Managing Director

Green Myanmar Environmental Services Co., Ltd.

မိတ္ထီကုန် -

ရုံးလက်ခံ

**APPENDIX (22): Proponent Commitment Letter on Suggestion of Public
Consultation Meeting**



သို့

မန်နေဂျင်းဒါရိုက်တာ
စိမ်းလန်းမြန်မာပတ်ဝန်းကျင်ဆိုင်ရာဝန်ဆောင်မှုလုပ်ငန်းကုမ္ပဏီလီမိတက်
အမှတ်(၁၀၄)၊ ကနောင်မင်းသာကြီးလမ်း၊
လှိုင်သာယာစက်မှုဇုန်(၁)၊ လှိုင်သာယာမြို့နယ်၊
ရန်ကုန်တိုင်းဒေသကြီး။

ရက်စွဲ - ၂၀၁၈ ခုနှစ် ဩဂုတ်လ (၂၄) ရက်

အကြောင်းအရာ ။ Thai Faster Products and M.K. Co., Ltd. ၏ ဂျပန်လီမိတက်လုပ်
ငြိမ်းရေးလုပ်ငန်း စက်ရုံအပေါ် ပတ်ဝန်းကျင်ရုပ်မိရပ်ဒေသခံများ၏
အကြံပြုချက်များ ဆောင်ရွက်ပေးမည့် ပြန်ကြားခြင်းကိစ္စ။

ရည်ညွှန်းချက် ။ ၂၀၁၈ ခုနှစ် ဩဂုတ်လ (၁၇) ရက် နေ့တွင် စိမ်းလန်းမြန်မာပတ်ဝန်းကျင်ဆိုင်ရာ
ဝန်ဆောင်မှုလုပ်ငန်းကုမ္ပဏီလီမိတက်၏ ပေးပို့စာ။

အထက်ဖော်ပြပါကိစ္စနှင့်စပ်လျဉ်း၍ ရည်ညွှန်းပါစာဖြင့် Thai Faster Products and M.K. Co.,
Ltd. ၏ ဂျပန်လီမိတက်လုပ်ငြိမ်းရေးလုပ်ငန်း စက်ရုံအပေါ် ပတ်ဝန်းကျင်ရုပ်မိရပ်ဒေသခံများ၏
ဆွေးနွေးအကြံပြုချက်များကို စက်ရုံမှ ဆောင်ရွက်ပေးမည့် အစီအစဉ်များကို ပြန်ကြားအပ်ပါသည်။

ပူးတွဲ ။ ပတ်ဝန်းကျင်ရုပ်မိရပ်ဒေသခံများ၏ ဆန္ဒသဘောထားများအပေါ် စက်ရုံမှ
ဆောင်ရွက်ပေးမည့် အစီအစဉ်။

စက်ရုံတာဝန်ခံ



Thai Faster Products and M.K. Co., Ltd.

မြေကွက်အမှတ် (၄၆၇/က)၊ ကနောင်မင်းသာကြီးလမ်း၊
ရွှေလင်းပန်းစက်မှုဇုန်၊ လှိုင်သာယာမြို့နယ်၊
ရန်ကုန်တိုင်းဒေသကြီး။

Thai Faster Products and M.K. Co., Ltd. မှ ပတ်ဝန်းကျင်ထိခိုက်စေသော အန္တရာယ်များ၏
ဆန္ဒသဘောထားများအပေါ် စက်ရုံမှဆောင်ရွက်ပေးမည့် အစီအစဉ်

အကြံပြုချက်ဆန္ဒသဘောထားများ	ဆောင်ရွက်ပေးမည့်အစီအစဉ်
ရပ်ကွက်နေရပ်မိရပ်ဖြည့်သူများ၏ဆန္ဒသဘောထားများ	
(က) ကလေးများကျန်းမာရေးအတွက် ဆိုးဆေး ရွေးချယ်မှု၊ ပစ္စည်းလျော့ချပြီး ကျန်းမာရေး နှင့်ညီညွတ်စွာ ထုတ်လုပ်ပေးရမည်။	(က) တားမြစ်ဆိုးဆေးများသုံးစွဲခြင်း မရှိပါ။
(ခ) ကျန်းမာရေးနှင့်ညီညွတ်သော အစားအာဟာရထိတွေ့ရောဂါမဖြစ်စေပဲ အားရှိစေရန် ကောင်းမွန်စွာ ထုတ်လုပ်ပေးရမည်။	(ခ) ကျန်းမာရေးနှင့်ညီညွတ်သော အစားအာဟာရများ ကိုသာ ထုတ်လုပ်မည်။
(ဂ) ဓာတုဆိုးဆေးများသုံးစွဲခြင်းမပြုရန်	(ဂ) တားမြစ်ဆိုးဆေးများသုံးစွဲခြင်း မရှိပါ။
(ဃ) ပစ္စည်းထုတ်လုပ်မှုသန့်ရှင်းမှုရှိစေရန်	(ဃ) စနစ်တကျကြပ်မတ်ပြီး သန့်ရှင်းသင်ရပ်မည့် ထုတ်လုပ်မှုစနစ် ရှိပါသည်။
(င) လေ၊ ရေ၊ မြေ အသံနှင့်ပတ်သက်၍ ပတ်ဝန်းကျင်ကို ထိခိုက်မှုမရှိစေရန်	(င) ပတ်ဝန်းကျင်စီမံခန့်ခွဲမှုအစီအစဉ်ပါ လမ်းညွှန် ချက်နှင့်အညီ လိုက်နာဆောင်ရွက်ပါမည်။
(စ) စက်ရုံလုပ်သားများထိခိုက်မှုမရှိစေရန်၊ စက်ရုံပတ်ဝန်းကျင်သန့်ရှင်းစေရန်	(စ) လုပ်ငန်းခွင်ဘေးအန္တရာယ်ကင်းရှင်းရေး ပတ်ဝန်းကျင်သန့်ရှင်းရေးတို့အတွက် စက်ပစ္စည်း များစနစ်တကျလည်ပတ်ခြင်း၊ တံကိုယ်ရည်သုံး အကာအကွယ်ပစ္စည်းများ သုံးစွဲခြင်းတို့ကို ကြပ်မတ်ဆောင်ရွက်လျက်ရှိပါသည်။
(ဆ) နိုင်ငံတော်အစိုးရလမ်းညွှန်မှုဖြင့် လုပ်ဆောင်ပြီး စက်ရုံပတ်ဝန်းကျင် ကျန်းမာရေး၊ လူမှုရေး ထိခိုက်မှုမရှိရန် လုပ်ဆောင်ပေးရမည်။	(ဆ) ပတ်ဝန်းကျင်စီမံခန့်ခွဲမှုအစီအစဉ် လမ်းညွှန် ချက်နှင့်အညီ လိုက်နာဆောင်ရွက်ပါမည်။

APPENDIX (23): Recommendation for Health and safety

ကျန်းမာရေးဘေးအန္တရာယ်ကင်းရှင်းကြောင်း ထောက်ခံချက်လက်မှတ်

၂၀၁၈ခုနှစ်၊ ရန်ကုန်မြို့တော်စည်ပင်သာယာရေးဥပဒေပုဒ်မ- ၁၇၃၊ ၁၇၆၊ ၁၈၁ တို့အရ အများပြည်သူတို့အား ကျန်းမာရေးဘေးအန္တရာယ်ဖြစ်စေတတ်သော လုပ်ငန်းကို စစ်ဆေးရာတွင် ဥပဒေပါစည်းကမ်းချက်များနှင့် ကိုက်ညီကြောင်း စစ်ဆေးတွေ့ရှိရသဖြင့် အောက်ဖော်ပြပါလုပ်ငန်းအား အများပြည်သူအတွက် ကျန်းမာရေးဘေးအန္တရာယ်ကင်းရှင်းကြောင်း ထောက်ခံချက်လက်မှတ်ကို ထုတ်ပေးလိုက်သည်-

လုပ်ငန်းပိုင်ရှင်အမည်	: <u>ဦးမြင့်ဦး</u> (က)
လုပ်ငန်းအမျိုးအစား	: <u>Thai Faster Product & MK Co Ltd</u> (ရည်ခွက်ထုတ်လုပ်ရေး)
လုပ်ငန်းလိပ်စာ	: <u>၄၆၇/က၊ ကမ္ဘောဇလမ်း၊ ဧရာဝတီတိုင်းဒေသကြီး၊ ဝေဟင်မြို့နယ်၊ ဝေဟင်မြို့</u> <u>မြိုင်ဇာယာ (စတုရန်း) ဗဟို ၄၈</u>
ထောက်ခံချက်အမှတ်	: <u>၈၃၁၈(က)-၂၅၂-၂၅၃</u> အမှတ်ရရှိ
ထုတ်ပေးသည့်ရက်စွဲ	: <u>၂၅</u> နှစ်၊ <u>၆</u> လ၊ <u>၂</u> ရက်
ထောက်ခံချက်လက်မှတ်သက်တမ်း	: <u>ဘဏ္ဍာရေးနှစ်(၁) အတွက်သာ</u> (၁၄.၁၂.၂၀၂၂) (၁၄.၁၂.၂၀၂၃) ထိ

ရန်ကင်းရေးအဖွဲ့အား	
(က) အဆင့် ၁ အဖွဲ့ဝင်	(ခ) အဆင့် ၂ အဖွဲ့ဝင်
(ဂ) အဆင့် ၃ အဖွဲ့ဝင်	(င) အဆင့် ၄ အဖွဲ့ဝင်
(စ) အဆင့် ၅ အဖွဲ့ဝင်	(ဆ) အဆင့် ၆ အဖွဲ့ဝင်

ဌာနမှူး (ရန်ကင်း) _____

ပြည်သူ့ကျန်းမာရေး
ပြည်သူ့ကျန်းမာရေးနှင့်ဈေးများလုပ်ငန်းတာဝန်ခံအဖွဲ့
ရန်ကုန်မြို့တော်စည်ပင်သာယာရေးကော်မတီ

No. 311243.....

APPENDIX (24): Recommendation for Food Manufacturing



ကျန်းမာရေးနှင့်အားကစားဝန်ကြီးဌာန
Ministry of Health and Sports
အစားအသောက်နှင့်ဆေးဝါးကွပ်ကဲရေးဦးစီးဌာန
Department of Food and Drug Administration



အစားအသောက်ထုတ်လုပ်ခြင်းထောက်ခံချက်လက်မှတ်
RECOMMENDATION FOR FOOD MANUFACTURING

ကျန်းမာရေးနှင့်အားကစားဝန်ကြီးဌာန၊ အစားအသောက်နှင့်ဆေးဝါးကွပ်ကဲရေးဦးစီးဌာနသည် အမျိုးသား အစားအသောက်ဥပဒေ ပုဒ်မ(၉)အရ အောက်ပါလုပ်ငန်းအား ဤထောက်ခံချက်ကို ထုတ်ပေးလိုက်သည်။
 Ministry of Health and Sports, Department of Food and Drug Administration issued this certificate for the under-mentioned food manufacturing facility according to the Section (9) of the National Food Law.

လုပ်ငန်းအမည်	Thai Faster Products and M.K Co., Ltd
Name of Business :	Thai Faster Products and M.K Co., Ltd
လုပ်ငန်းလိပ်စာ	အမှတ်(၄၆၇-က) မြေတိုင်းရပ်ကွက်၊ အမှတ်(၂၅)၊ ကနောင်မင်းသာကြေးလမ်း၊ ရွှေလင်ပန်းစက်မှုဇုန်၊ လှိုင်သာယာမြို့နယ်၊ ရန်ကုန်တိုင်းဒေသကြီး
Address :	No. (467-Ka), Myaytine Block, No. 25, Kanaung Minthargyi Street, Shwelinpan Industrial Zone, Hlaingtharyar Township, Yangon Region, Myanmar.
ထောက်ခံချက်ထုတ်ပေးသည့် အစားအသောက်အမျိုးအစား	ဂျယ်လီ
Product range :	Jelly
ရည်ညွှန်းချက်	ဗဟိုအစားအသောက်နှင့်ဆေးဝါးကြီးကြပ်ကွပ်ကဲရေးကော်မတီ (၀၁/၂၀၁၇) အစည်းအဝေး
Reference :	Central Food and Drug Supervisory Committee (01/2017) Meeting
ထောက်ခံချက်အမှတ်	စ ၂/၁၇၀၄၇/ထလ
Registration No :	Sa 2/17047/Hta La
ထုတ်ပေးသည့်ရက်စွဲ	၂၀၂၀ ခုနှစ်၊ မတ်လ (၁၉)ရက်
Date of Issue :	19 th March, 2020
ကုန်ဆုံးရက်စွဲ	၂၀၂၂ ခုနှစ်၊ မတ်လ (၁၈)ရက်
Expiry Date :	18 th March, 2022

၂၀၂၀-၃-၂၀၂၀
 (ညွှန်ကြားရေးမှူးချုပ်)
 (Director General)

ညွှန်ကြားရေးမှူးချုပ်
 အစားအသောက်နှင့်ဆေးဝါးကွပ်ကဲရေးဦးစီးဌာန

(လိုက်နာရမည့် စည်းကမ်းချက်များ ကျောက်တိုင်)

APPENDIX (25): Certified of HALAL MYANMAR

ပြည်ထောင်စုသမ္မတမြန်မာနိုင်ငံတော်
အစ္စလာမ်သာသနာရေးရာကောင်စီဌာနချုပ်
المجلس الأعلى للشؤون الإسلامية - ميانما
THE REPUBLIC OF THE UNION OF MYANMAR, ISLAMIC RELIGIOUS AFFAIRS COUNCIL, (H.Q.)

ဟာလာလ်အသိအမှတ်ပြုလွှာ
အသိအမှတ်ပြုလွှာအမှတ် HCC 05184
ထုတ်ပေးသည့် ရက်စွဲ အောက်တိုဘာလ၊ ၂၀ ရက်၊ ၂၀၂၃

လုပ်ငန်းအမည် Thai Faster Products and M.K Co.,Ltd
ထုတ်ကုန်ပစ္စည်း Daiya Moto အမှတ်တံဆိပ် (Grape, Strawberry, Orange)
အနုအရသာ Jelly အမျိုးမျိုး

ပြည်ထောင်စုသမ္မတမြန်မာနိုင်ငံတော် အစ္စလာမ်သာသနာရေးရာကောင်စီဌာနချုပ်၊
“ဟာလာလ်” အသိအမှတ်ပြုလွှာထုတ်ပေးရေးကော်မတီသည် အထက်ဖော်ပြပါ ကုန်ပစ္စည်း
ထုတ်လုပ်မှုအဆင့်ဆင့်ကို စိစစ်ရာတွင် အစ္စလာမ်တရားတော်အရ စားသုံးဆိုင်ခွင့်ရှိကြောင်း
တွေ့ရှိရပါသဖြင့် ဤ “ဟာလာလ်” အသိအမှတ်ပြုလွှာကို ထုတ်ပေးလိုက်ပါသည်။

(၁) အထက်ဖော်ပြပါ “ဟာလာလ်” တံဆိပ်ကို ကုန်ပစ္စည်းခေါ်တွင် ရိုက်နှိပ်ဖော်ပြရမည်။
(၂) ဤအသိအမှတ်ပြုလွှာ၏ ကျွေးတက်ပါ ညှင်းကမ်းရက်များကို လိုက်နာရပါမည်။
(၃) ဤအသိအမှတ်ပြုလွှာ၏ သက်တမ်းသည် ၂၀၂၃ ခု ဇူလိုင်လ ၂၀ ရက် - ၂၀၂၄ ခု ဇူလိုင်လ ၂၀ ရက်
အထိသာဖြစ်သည်။

(အလ်ဟာရ်မောင်လန်နာရှိုက်င်အိုမရ်မြိုင်နိုင်)
မဒနီ - ရင်းတော်၊ အလ်အစ်ဟရ် - ကိုင်ရို
ဓမ္မသတ်ဆိုင်ရာအတိုင်ပင်ခံ



(ခေါက်တာစာနည်မင်းသိန်း)
M.B., B.S Ygn
ဆေးဘက်ဆိုင်ရာအတိုင်ပင်ခံ

(အလ်ဟာရ်မင်းသိန်း)
ဥက္ကဋ္ဌ
“ဟာလာလ်” အသိအမှတ်ပြုလွှာထုတ်ပေးရေးကော်မတီ

No. 183, Bo Sun Pat Street , Pabedan Township, Yangon, Myanmar. Ph : +951 252608 E-mail : irac@myanmammic.com

APPENDIX (26): Permitted of YCDC

ပြည်ထောင်စုသမ္မတမြန်မာနိုင်ငံတော်
ရန်ကင်းတိုင်းဒေသကြီးအစိုးရ
ရန်ကင်းမြို့တော်စည်ပင်သာယာရေးကော်မတီ
စီမံရေးရာဌာန


(၂၀၂၂/၂၀၂၃) အထူးနှစ်
လုပ်ငန်းလိုင်စင်


(စက်ရုံ၊ အလုပ်ရုံ၊ သို့လျှောက်ရုံသုံးစွဲရန် အထောက်အကူပစ္စည်းထုတ်လုပ်ခြင်း၊
ရောင်းချခြင်း၊ တည်ဆောက်ခြင်း၊ ဖြန့်ဖြူးခြင်း၊ ဝန်ဆောင်မှုလုပ်ငန်း၊ အခြားလုပ်ငန်း)

ရန်ကင်းမြို့တော်စည်ပင်သာယာရေးကော်မတီ၊ စီမံခန့်ခွဲရေးဆိုင်ရာ နည်းဥပဒေ၊ အခန်း (၂)
နည်းဥပဒေ ၃(ဈ)အရ အောက်အမည်ပါသူတို့အား လိုင်စင်နှုန်း ၁၀၀၀၀၀၀/- ကျပ် (စာဖြင့်၊ ကျပ်
တစ်ဆယ်သိန်းတိတိ) ပေးသွင်းစေပြီး လိုင်သာယာ(အရှေ့ပိုင်း) မြို့နယ်၊ ခွေလင်ပန်းစက်မှုရန်
ရပ်ကွက် ၊ ကနောင်မင်းသာကြီး လမ်း ၊ အမှတ် ၄၆၇/က၊ အခန်းအမှတ် - တွင် Thai Faster
Products and MK Co.,Ltd အမည်ပါ ဂျပန်အမျိုးမျိုးထုတ်လုပ်ဖြန့်ဖြူးရောင်းချခြင်း
ဆိုင်/လုပ်ငန်းအား လုပ်ကိုင်ခွင့်ပြု၍ ဤလုပ်ငန်းလိုင်စင်ကို ထုတ်ပေးလိုက်သည်။

ရက်	အမည်	လိုင်သာယာစီစစ်ရေး ကော်မရှင်အမှတ်	လိပ်စာ
၀၁	ဦးမြတ်ဦး	၉/မမန(နိုင်)၂၀၂၀၇၅၇	၄၆၇/က၊ ကနောင်မင်းသာကြီးလမ်း၊ ခွေလင်ပန်းစက်မှုရန်၊ လိုင်သာယာ(အရှေ့ပိုင်း) မြို့နယ်

ဤလုပ်ငန်းလိုင်စင်သည် ၂၀၂၃ခုနှစ် မတ်လ ၃၀ ရက်နေ့တွင် သက်တမ်းကုန်ဆုံးသည်။
ဤလုပ်ငန်းလိုင်စင်အား မြင်သာသောနေရာတွင် မှန်ဆောင်ဖြင့် ချိတ်ဆွဲထားရမည်။





ဦးနုအောင်
အစိုးရ

*ပူးတွဲပါလိုင်စင်စည်းကမ်းများအား လိုက်နာဆောင်ရွက်ရမည်။

APPENDIX (27): Contract of Land and Building leasing

ပြည်ထောင်စုသမ္မတမြန်မာနိုင်ငံတော်အစိုးရ
ဆောက်လုပ်ရေးဝန်ကြီးဌာန၊ မြို့ရွာနှင့်အိုးအိမ်ဖွံ့ဖြိုးရေးဦးစီးဌာန

၂၀၁၅ / ၂၀၁၃ ခုနှစ်တွင် ပြည်ပ ရောင်းချရေးအတွက်
ပုံနှိပ်ရေး/အိတ်အိတ်အိတ် ပြင်ဆင်ရေးအတွက်

အမည်ပေါက်

မြေပိုင်ဆိုင်မှုအမှတ် ၂၅

ယူဆရန်အတွက်အမှတ် ၅၅၀၀၀၀၀၀၀၀၀၀၀၀

မြေပိုင်ဆိုင်မှုအမှတ် ၄၆၇-၀၀

မြေအမျိုးအစား နှစ်ဂရမ်မြေအမျိုးအစား

အလျား... မြေပိုင်ဆိုင်မှုအမှတ် ၂၅
ကျယ်... မြေပိုင်ဆိုင်မှုအမှတ် ၂၅

မြေပိုင်ဆိုင်မှုအမှတ် ၂၅

၂၀၁၅ / ၂၀၁၃ ခုနှစ်တွင် ပြည်ပ ရောင်းချရေးအတွက်
ဆောက်လုပ်ရေး/အိတ်အိတ်အိတ် ပြင်ဆင်ရေးအတွက်
ဆောက်လုပ်ရေး (မြို့ရွာနှင့်အိုးအိမ်ဖွံ့ဖြိုးရေးဦးစီးဌာန)

၂၀၁၅ / ၂၀၁၃ ခုနှစ်တွင် ပြည်ပ ရောင်းချရေးအတွက်
ဆောက်လုပ်ရေး/အိတ်အိတ်အိတ် ပြင်ဆင်ရေးအတွက်
ဆောက်လုပ်ရေး (မြို့ရွာနှင့်အိုးအိမ်ဖွံ့ဖြိုးရေးဦးစီးဌာန)



ပြည်ထောင်စုသမ္မတမြန်မာနိုင်ငံတော်အစိုးရ
ဆောက်လုပ်ရေးဝန်ကြီးဌာန၊ မြို့ရွာနှင့်အိုးအိမ်ဖွံ့ဖြိုးရေးဦးစီးဌာန

အရာရှိအမည် (စာရင်း)	အရာရှိအမည်
ဦးစီးချုပ်	ဦးစီးချုပ် (Thai Faster Product and MK Company Limited လီမိတက်)
၂/မဟာ (၆၆) တက္ကသိုလ် အမှတ်-(၂-၁၁) ပြင်ဆင်ရေး	မှတ်ပုံတင် ၂/မဟာ (၆၆) တက္ကသိုလ်
(၅) ရင်းနှီးမြှုပ်နှံရေး ဝန်ကြီးဌာန	ရောင်းချ အမှတ်-(၃၃၃) ပြည်ထောင်စု ဆောက်လုပ်ရေး ဝန်ကြီးဌာန

၁။ ဆောက်လုပ်ရေး/အိတ်အိတ်အိတ် ပြင်ဆင်ရေး အတွက် ဝယ်ယူမှုအတွက်
ဆောက်လုပ်ရေး/အိတ်အိတ်အိတ် ပြင်ဆင်ရေး အတွက် ဝယ်ယူမှုအတွက်
(Thai Faster Product and MK Company Limited လီမိတက်)
ကို အသိပေးသည့်အတွက် ပုံနှိပ်ရေး/အိတ်အိတ်အိတ် ပြင်ဆင်ရေး
အတွက် ဝယ်ယူမှုအတွက် ဝယ်ယူမှုအတွက် ဝယ်ယူမှုအတွက်
အတွက် ဝယ်ယူမှုအတွက် ဝယ်ယူမှုအတွက် ဝယ်ယူမှုအတွက်

၂။ ဆောက်လုပ်ရေး/အိတ်အိတ်အိတ် ပြင်ဆင်ရေး အတွက် ဝယ်ယူမှုအတွက်
ဆောက်လုပ်ရေး/အိတ်အိတ်အိတ် ပြင်ဆင်ရေး အတွက် ဝယ်ယူမှုအတွက်
(၂၀၁၅ - ၂၀၁၆) အတွက် အမှတ် (၅) အိတ်အိတ်အိတ် (၂၀၁၅)
အမှတ် (၃၃၃) ပြည်ထောင်စု အိတ်အိတ်အိတ် (၂) လုံး (အိတ်အိတ်အိတ်
အိတ်အိတ်အိတ်) ဝယ်ယူမှုအတွက်

၃။ ဆောက်လုပ်ရေး/အိတ်အိတ်အိတ် ပြင်ဆင်ရေး အတွက် ဝယ်ယူမှုအတွက်
ဆောက်လုပ်ရေး/အိတ်အိတ်အိတ် ပြင်ဆင်ရေး အတွက် ဝယ်ယူမှုအတွက်
ဆောက်လုပ်ရေး/အိတ်အိတ်အိတ် ပြင်ဆင်ရေး အတွက် ဝယ်ယူမှုအတွက်
ဆောက်လုပ်ရေး/အိတ်အိတ်အိတ် ပြင်ဆင်ရေး အတွက် ဝယ်ယူမှုအတွက်

APPENDIX (29): Material Safety Data Sheet (MSDS)

Tri-potassium Citrate

Safety data sheet
according to Regulation (EC) No. 1907/2006 (REACH)

ROTH

tri-Potassium citrate monohydrate ≥ 99%, Ph.Eur., USP
article number: X888
Version: 2.0 em
Replaces version of: 2017-03-21
Version: (1)

date of compilation: 2017-03-21
Revision: 2022-04-19

SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1 Product identifier

Identification of the substance: tri-Potassium citrate monohydrate ≥ 99%, Ph.Eur., USP
Article number: X888
Registration number (REACH): 01-2119457580-38-xxxx
EC number: 212-755-5
CAS number: 6109-05-6
Alternative name(s): Citric acid potassium salt

1.2 Relevant identified uses of the substance or mixture and uses advised against

Relevant identified uses: Laboratory chemical
Laboratory and analytical use
Uses advised against: Do not use for products which come into contact with foodstuffs. Do not use for private purposes (Hausgebrauch).

1.3 Details of the supplier of the safety data sheet

Carl Roth GmbH + Co KG
Schwaningerstr. 3-5
D-76185 Karlsruhe
Germany
Telephone: +49 (0) 721 - 56 06 0
Telefax: +49 (0) 721 - 56 06 148
e-mail: sicherheit@carlroth.de
Website: www.carlroth.de
Competent person responsible for the safety data sheet: Department Health, Safety and Environment
e-mail (competent person): sicherheit@carlroth.de

1.4 Emergency telephone number

Name	Street	Postal code/City	Telephone	Website
National Poisons Information Centre Bournemouth Hospital	Bournemouth Road	Durton 1	01 885 7144	http://www.poisons.nhs.uk

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Safety data sheet
according to Regulation (EC) No. 1907/2006 (REACH)

ROTH

tri-Potassium citrate monohydrate ≥ 99%, Ph.Eur., USP
article number: X888

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture
Classification according to Regulation (EC) No 1272/2008 (CLP)
This substance does not meet the criteria for classification in accordance with Regulation No 1272/2008/EC.

2.2 Label elements
Labelling according to Regulation (EC) No 1272/2008 (CLP)
not required

2.3 Other hazards
Results of PBT and vPvB assessment
According to the results of its assessment, this substance is not a PBT or a vPvB.


SECTION 3: Composition/information on ingredients

3.1 Substances

Name of substance	tri-Potassium citrate monohydrate
Molecular formula	C ₆ H ₅ K ₃ O ₇ · H ₂ O
Molar mass	324,4 g/mol
REACH Reg. No	01-2119457580-38-xxxx
CAS No	6100-05-6
EC No	212-755-5

SECTION 4: First aid measures

4.1 Description of first aid measures



General notes
Take off contaminated clothing.
Following inhalation
Provide fresh air.
Following skin contact
Rinse skin with water/shower.
Following eye contact
Rinse cautiously with water for several minutes.
Following ingestion
Rinse mouth. Call a doctor if you feel unwell.
4.2 Most important symptoms and effects, both acute and delayed
Symptoms and effects are not known to date.

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Safety data sheet
according to Regulation (EC) No. 1907/2006 (REACH)


ROTH

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4.3 Indication of any immediate medical attention and special treatment needed
none

SECTION 5: Firefighting measures

5.1 Extinguishing media




Suitable extinguishing media
co-ordinate firefighting measures to the fire surroundings
water, foam, alcohol resistant foam, dry extinguishing powder, ABC-powder
Unsuitable extinguishing media
water jet

5.2 Special hazards arising from the substance or mixture
Combustible.
Hazardous combustion products
In case of fire may be liberated: Carbon monoxide (CO), Carbon dioxide (CO₂)

5.3 Advice for firefighters
In case of fire and/or explosion do not breathe fumes. Fight fire with normal precautions from a reasonable distance. Wear self-contained breathing apparatus.

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures



For non-emergency personnel
Control of dust.

6.2 Environmental precautions
Keep away from drains, surface and ground water.

6.3 Methods and material for containment and cleaning up
Advice on how to contain a spill
Covering of drains. Take up mechanically.
Advice on how to clean up a spill
Take up mechanically.
Other information relating to spills and releases
Place in appropriate containers for disposal.

6.4 Reference to other sections
Hazardous combustion products: see section 5. Personal protective equipment: see section 8. Incompatible materials: see section 10. Disposal considerations: see section 13.

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Safety data sheet
according to Regulation (EC) No. 1907/2006 (REACH)

ROTH

tri-Potassium citrate monohydrate ≥ 99%, Ph.Eur., USP
article number: X888

SECTION 7: Handling and storage

7.1 Precautions for safe handling
No special measures are necessary.
Advice on general occupational hygiene
Keep away from food, drink and animal feedingstuffs.

7.2 Conditions for safe storage, including any incompatibilities
Store in a dry place.
Incompatible substances or mixtures
Observe hints for combined storage.
Consideration of other advice:
Ventilation requirements
Use local and general ventilation.
Specific designs for storage rooms or vessels
Recommended storage temperature: 15 - 25 °C

7.3 Specific end use(s)
No information available.


SECTION 8: Exposure controls/personal protection

8.1 Control parameters
National limit values
Occupational exposure limit values (Workplace Exposure Limits)

Country	Name of agent	CAS No.	Exposure limit	TWA (mg/m ³)	STEL (mg/m ³)	Cell. Ing. C (mg/m ³)	Hazard class	Source
IE	dusts non-specific		ONLY	10			1	S.I. No. 619 of 2001
IE	dusts non-specific		ONLY	4			1	S.I. No. 619 of 2001

Notation:
Cell. Ing. C: Cellulose fraction
STEL: Short-term exposure limit: a limit value above which exposure should not occur and which is related to a 15-minute period (unless otherwise specified)
TWA: Time-weighted average (long-term exposure limit) measured or calculated in relation to a reference period of 8 hours (time-weighted average (unless otherwise specified))

8.2 Exposure controls
Individual protection measures (personal protective equipment)
Eye/face protection



Use safety goggles with side protection.

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Safety data sheet

according to Regulation (EC) No. 1907/2006 (REACH)



tri-Potassium citrate monohydrate ≥ 99%, Ph.Eur., USP

article number: X888

Skin protection



• hand protection

Wear suitable gloves. Chemical protection gloves are suitable, which are tested according to EN 374.

• type of material

NBR (Nitrile rubber)

• material thickness

>0,11 mm

• breakthrough times of the glove material

>480 minutes (permeation: level 6)

• other protection measures

Take recovery periods for skin regeneration. Preventive skin protection (barrier creams/ointments) is recommended.

Respiratory protection



Respiratory protection necessary at: Dust formation. Particulate filter device (EN 143), P1 (filters at least 80 % of airborne particles, colour code: White).

Environmental exposure controls

Keep away from drains, surface and ground water.

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

Physical state	solid
Form	crystals
Colour	white
Odour	odourless
Melting point/freezing point	>180 °C
Boiling point or initial boiling point and boiling range	not determined
Flammability	this material is combustible, but will not ignite readily
Lower and upper explosion limit	not determined
Flash point	not applicable
Auto-ignition temperature	not determined
Decomposition temperature	>230 °C
pH (value)	7,5 – 9 (in aqueous solution: 50 g/l, 20 °C)

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Safety data sheet

according to Regulation (EC) No. 1907/2006 (REACH)



tri-Potassium citrate monohydrate ≥ 99%, Ph.Eur., USP

article number: X888

SECTION 11: Toxicological information

11.1 Information on hazard classes as defined in Regulation (EC) No 1272/2008

Classification according to GHS (1272/2008/EC, CLP)

This substance does not meet the criteria for classification in accordance with Regulation No 1272/2008/EC.

Acute toxicity

Shall not be classified as acutely toxic.

Skin corrosion/irritation

Shall not be classified as corrosive/irritant to skin.

Serious eye damage/eye irritation

Shall not be classified as seriously damaging to the eye or eye irritant.

Respiratory or skin sensitisation

Shall not be classified as a respiratory or skin sensitiser.

Germ cell mutagenicity

Shall not be classified as germ cell mutagenic.

Carcinogenicity

Shall not be classified as carcinogenic.

Reproductive toxicity

Shall not be classified as a reproductive toxicant.

Specific target organ toxicity - single exposure

Shall not be classified as a specific target organ toxicant (single exposure).

Specific target organ toxicity - repeated exposure

Shall not be classified as a specific target organ toxicant (repeated exposure).

Aspiration hazard

Shall not be classified as presenting an aspiration hazard.

Symptoms related to the physical, chemical and toxicological characteristics

• If swallowed

Data are not available.

• If in eyes

Data are not available.

• If inhaled

Inhalation of dust may cause irritation of the respiratory system

• If on skin

Frequently or prolonged contact with skin may cause dermal irritation

• Other information

Substance not yet fully tested.

11.2 Endocrine disrupting properties

Not listed.

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according to Regulation (EC) No. 1907/2006 (REACH)



tri-Potassium citrate monohydrate ≥ 99%, Ph.Eur., USP

article number: X888

Kinematic viscosity	not relevant.
Solubility(ies)	
Water solubility	~1.500 g/l at 20 °C
Partition coefficient	
Partition coefficient n-octanol/water (log value):	this information is not available
Vapour pressure	not determined
Density and/or relative density	
Density	1,98 g/cm³ at 20 °C
Relative vapour density	Information on this property is not available
Particle characteristics	No data available.
Other safety parameters	
Oxidising properties	none
9.2 Other information	
Information with regard to physical hazard classes:	hazard classes acc. to GHS (physical hazards): not relevant
Other safety characteristics:	There is no additional information.

SECTION 10: Stability and reactivity

10.1 Reactivity

The product in the delivered form is not dust explosion capable; the enrichment of fine dust however leads to the danger of dust explosion.

10.2 Chemical stability

The material is stable under normal ambient and anticipated storage and handling conditions of temperature and pressure.

10.3 Possibility of hazardous reactions

Violent reaction with: strong oxidiser

10.4 Conditions to avoid

Keep away from heat. Decomposition takes place from temperatures above: >230 °C.

10.5 Incompatible materials

There is no additional information.

10.6 Hazardous decomposition products

Hazardous combustion products: see section 5.

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Safety data sheet

according to Regulation (EC) No. 1907/2006 (REACH)



tri-Potassium citrate monohydrate ≥ 99%, Ph.Eur., USP

article number: X888

11.3 Information on other hazards

There is no additional information.

SECTION 12: Ecological information

12.1 Toxicity

Shall not be classified as hazardous to the aquatic environment.

Biodegradation

Data are not available.

12.2 Process of degradability

Theoretical Oxygen Demand: 0,3452 mg/mg
Theoretical Carbon Dioxide: 0,814 mg/mg

12.3 Bioaccumulative potential

Data are not available.

12.4 Mobility in soil

Data are not available.

12.5 Results of PBT and vPvB assessment

Data are not available.

12.6 Endocrine disrupting properties

Not listed.

12.7 Other adverse effects

Data are not available.

SECTION 13: Disposal considerations

13.1 Waste treatment methods



Consult the appropriate local waste disposal expert about waste disposal.

Sewage disposal-relevant information

Do not empty into drains.

13.2 Relevant provisions relating to waste

The allocation of waste identity numbers/waste descriptions must be carried out according to the EEC, specific to the industry and process. Waste catalogue ordinance (Germany).

13.3 Remarks

Waste shall be separated into the categories that can be handled separately by the local or national waste management facilities. Please consider the relevant national or regional provisions.

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Safety data sheet

according to Regulation (EC) No. 1907/2006 (REACH)

tri-Potassium citrate monohydrate ≥ 99%, Ph.Eur., USP

article number: X888



SECTION 14: Transport information

- 14.1 UN number or ID number not subject to transport regulations
- 14.2 UN proper shipping name not assigned
- 14.3 Transport hazard class(es) none
- 14.4 Packing group not assigned
- 14.5 Environmental hazards non-environmentally hazardous acc. to the dangerous goods regulations
- 14.6 Special precautions for user There is no additional information.
- 14.7 Maritime transport in bulk according to IMO Instruments The cargo is not intended to be carried in bulk.
- 14.8 Information for each of the UN Model Regulations
Transport of dangerous goods by road, rail and inland waterway (ADR/RID/ADN) - Additional information
Not subject to ADR, RID and ADN.
International Maritime Dangerous Goods Code (IMDG) - Additional information
Not subject to IMDG.
International Civil Aviation Organization (ICAO-IATA/DGR) - Additional information
Not subject to ICAO-IATA.

SECTION 15: Regulatory information

- 15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture
Relevant provisions of the European Union (EU)
Restrictions according to REACH, Annex XVII
not listed
List of substances subject to authorisation (REACH, Annex XIV)/SVHC - candidate list
Not listed.

Seveso Directive

2012/18/EU (Seveso III)

No	Dangerous substance/hazard categories	Qualifying quantity (tonnes) for the application of lower and upper-tier requirements	Notes
	not assigned		

Deco-Point Directive

VOC content	0 % 0 %/1
-------------	--------------

Ireland (en)

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according to Regulation (EC) No. 1907/2006 (REACH)

tri-Potassium citrate monohydrate ≥ 99%, Ph.Eur., USP

article number: X888



Industrial Emissions Directive (IED)

VOC content	0 %
VOC content	0 %/1

Directive on the restriction of the use of certain hazardous substances in electrical and electronic equipment (RoHS)
not listed

Regulation concerning the establishment of a European Pollutant Release and Transfer Register (PRTR)
not listed

Water Framework Directive (WFD)

List of pollutants (WFD)

Name of substance	Name acc. to Inventory	CAS No	Listed in	Remarks
tri-Potassium citrate monohydrate	Metals and their compounds		a)	

Legend

A) Indicative list of the main pollutants

Regulation on the marketing and use of explosives precursors
not listed

Regulation on drug precursors
not listed

Regulation on substances that deplete the ozone layer (ODS)
not listed

Regulation concerning the export and import of hazardous chemicals (PIC)
not listed

Regulation on persistent organic pollutants (POP)
not listed

Other information

Directive 94/33/EC on the protection of young people at work. Observe employment restrictions under the Maternity Protection Directive (92/85/EEC) for expectant or nursing mothers.

National inventories

Country	Inventory	Status
AU	AIICS	substance is listed
CN	IECSC	substance is listed
EU	ECSI	substance is listed
MX	INSQ	substance is listed
NZ	NZiuc	substance is listed
PH	PICCS	substance is listed
TW	TCSI	substance is listed

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Legend

AIICS Australian Inventory of Chemical Substances
ECSI EC Substance Inventory (EINECS, ELINCS, NLP)
IECSC Inventory of Existing Chemical Substances Produced or Imported in China
INSQ National Inventory of Chemical Substances
NZiuc New Zealand Inventory of Chemicals
PICCS Philippine Inventory of Chemicals and Chemical Substances (PICCS)
TCSI Taiwan Chemical Substance Inventory

15.2 Chemical Safety Assessment

No Chemical Safety Assessment has been carried out for this substance.

SECTION 16: Other information

Indication of changes (revised safety data sheet)

Alignment to regulation: Regulation (EC) No. 1907/2006 (REACH), amended by 2020/878/EU

Restructuring: section 9, section 14

Section	Former entry (text/value)	Actual entry (text/value)	Safety-relevant
2.2	Signal word: not required		yes
2.3	Other hazards: There is no additional information.	Other hazards	yes
2.3		Results of PBT and vPvB assessment: According to the results of its assessment, this substance is not a PBT or a vPvB.	yes

Abbreviations and acronyms

Abbr.	Descriptions of used abbreviations
ADN	Accord européen relatif au transport international des marchandises dangereuses par voies de navigation intérieures (European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways)
ADR	Accord relatif au transport international des marchandises dangereuses par route (Agreement concerning the International Carriage of Dangerous Goods by Road)
CAS	Chemical Abstracts Service (service that maintains the most comprehensive list of chemical substances)
Celling-C	Celling value
CLP	Regulation (EC) No 1272/2008 on classification, labelling and packaging of substances and mixtures
DGR	Dangerous Goods Regulations (see IATA/DGR)
EC No	The EC Inventory (EINECS, ELINCS and the NLP-list) is the source for the seven-digit EC number, an identifier of substances commercially available within the EU (European Union)
EINECS	European Inventory of Existing Commercial Chemical Substances
ELINCS	European List of Notified Chemical Substances
GHS	"Globally Harmonized System of Classification and Labelling of Chemicals" developed by the United Nations
IATA	International Air Transport Association
IATA/DGR	Dangerous Goods Regulations (DGR) for the air transport (IATA)
ICAO	International Civil Aviation Organization

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according to Regulation (EC) No. 1907/2006 (REACH)

tri-Potassium citrate monohydrate ≥ 99%, Ph.Eur., USP

article number: X888



Abbr.	Descriptions of used abbreviations
IMDG	International Maritime Dangerous Goods Code
NLP	No-Longer Polymer
PBT	Persistent, Bioaccumulative and Toxic
REACH	Registration, Evaluation, Authorisation and Restriction of Chemicals
RID	Règlement concernant le transport International ferroviaire des marchandises Dangereuses (Regulations concerning the International carriage of Dangerous goods by Rail)
S.I. No. 619 of 2001	Safety, Health and Welfare at Work (Chemical Agents) Regulations 2001
STEL	Short-term exposure limit
SVHC	Substance of Very High Concern
TWA	Time-weighted average
VOC	Volatile Organic Compounds
vPvB	Very Persistent and very Bioaccumulative

Key literature references and sources for data

Regulation (EC) No 1272/2008 on classification, labelling and packaging of substances and mixtures. Regulation (EC) No. 1907/2006 (REACH), amended by 2020/878/EU.

Agreement concerning the International Carriage of Dangerous Goods by Road (ADR), Regulations concerning the International Carriage of Dangerous Goods by Rail (RID), International Maritime Dangerous Goods Code (IMDG), Dangerous Goods Regulations (DGR) for the air transport (IATA).

Disclaimer

This information is based upon the present state of our knowledge. This SDS has been compiled and is solely intended for this product.

Ireland (en)

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Maltodextrin

Section 1. Product and Company Identification	
Product Name	Maltodextrin
CAS Number	9050-36-6
Porcham - fine & specialty chemicals	
415 Huguenot Street New Rochelle, NY 10801 (914) 654-6800 (914) 654-6899 porcham.com info@porcham.com	
EMERGENCY RESPONSE NUMBER: CHEMTEL Toll Free US & Canada: 1 (800) 255-2924 All other Origins: 1 (813) 248-0585 Collect Calls Accepted	
Section 2. Hazards Identification	
Classification of the substance or mixture: Not classified as a hazardous substance or mixture according to OSHA Hazard Communication Standard 1910.1200.	
Emergency Overview: Product dust may be irritating to eyes, skin and respiratory system. Fine dust dispersed in air may ignite. Appearance: White Physical State: Powder Odor: Odorless	
Potential Health Effects Principle Routes of Exposure: Eye contact, Skin contact, and Inhalation.	
Acute Effects Eyes: May cause slight irritation Skin: May cause slight skin irritation Inhalation: May cause irritation of respiratory tract Ingestion: Health injuries are not known or expected under normal use. Chronic Effects: None known. Aggravated Medical Conditions: Skin disorders, Respiratory disorders. Potential Environmental Effects: See Section 12 for additional ecological information. Toxicological Information: See Section 11 for additional toxicological information.	

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Section 3. Composition / Information on Ingredients		
Common Name	Maltodextrin	
Formula	C ₆ H ₁₀ O ₅ n	
CAS Number	9050-36-6	
COMPONENT	CAS NUMBER	CONCENTRATION
Maltodextrin	9050-36-6	95%
Water	7732-18-5	5%
Section 4. First Aid Measures		
Eye Contact: Rinse thoroughly with plenty of water, also under the eyelids Skin Contact: Rinse with water Inhalation: Move to fresh air Ingestion: Clean mouth with water and afterwards drink plenty of water Notes to Physician: Treat symptomatically		
Section 5. Firefighting Measures		
Flammable Properties: Fine dust dispersed in air may ignite. Risk of ignition followed by flame propagation or secondary explosions should be prevented by avoiding accumulation of dust, e.g. on floors and ledges. Suitable Extinguishing Media: Use extinguishing measures that are appropriate to local circumstances and the surrounding environment. Water. Unsuitable Extinguishing Media: None known. Hazardous Combustion Products: Carbon monoxide (CO), Carbon dioxide (CO ₂).		
Explosion Data Sensitivity to Mechanical Impact: No information available. Sensitivity to Static Discharge: Yes (as dust). Specific Hazards Arising from the Chemical: None known Protective Equipment and Precautions for Firefighters: As in any fire, wear self-contained breathing apparatus pressure demand, MSHA/NIOSH (approved or equivalent) and full protective gear.		
NFPA Rating Health: 0 Flammability: 1 Reactivity: 0		
Section 6. Accidental Release Measures		
Personal Precautions: Avoid dust formation. Use personal protective equipment. Environmental Precautions: Local authorities should be advised if significant spillages cannot be contained. Methods for Clean-up: Sweep or snoop up.		

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Section 7. Handling and Storage	
Handling: Ensure adequate ventilation. Avoid dust formation in confined areas. Fine dust dispersed in air may ignite. Refer to NFPA 704, "Standard for the Prevention of Fires and Dust Explosions in Agricultural and Food Processing Facilities". Storage: Keep containers tightly closed in a dry, cool and well-ventilated place.	
Section 8. Exposure Controls / Personal Protection	
Exposure Limits Chemical Name: Particulates not otherwise regulated ACGIH TLV: TWA: 10 mg/m ³ TWA: 3 mg/m ³ OSHA PEL: TWA: 15 mg/m ³ TWA: 5 mg/m ³ NIOSH IDLH: N/A Mexico: N/A	
Engineering Measures: Ensure adequate ventilation, especially in confined areas. Apply technical measures to comply with the occupational exposure limits. However it is the duty of the user to verify this and follow given exposure limits of the workplace.	
Personal Protective Equipment Eye/Face Protection: Safety glasses with side-shields Skin and Body Protection: Long sleeved clothing Respiratory Protection: In case of insufficient ventilation wear suitable respiratory equipment General Hygiene Considerations: Handle in accordance with good industrial hygiene and safety practice.	
Section 9. Physical and Chemical Properties	
Appearance: White Physical State: Powder Odor: Odorless Odor Threshold: No information available Flash Point: Not applicable Auto-Ignition Temperature: No information available Boiling Point: Not applicable Melting/Freezing Point: No information available Flammability Limits in Air: No information available Explosion Limits: No information available pH: No information available Vapor Pressure: No information available Water Solubility: Soluble Specific Gravity: No information available	

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Evaporation Rate: No information available Vapor Density: No information available	
Section 10. Stability and Reactivity	
Chemical Stability: Stable under normal conditions. Conditions to Avoid: Avoid dust formation. Incompatible Materials: Strong oxidizing agents. Hazardous Decomposition Products: None known. Possibility of Hazardous Reactions: None under normal processing.	
Section 11. Toxicological Information	
Acute Toxicity Product Information LD50 Oral: No information available LD50 Dermal: No information available LC50 Inhalation: No information available	
Toxicology data for the components: No information available Chemical Name: Water Weight %: 5% LD50 Oral: 90 ml/kg rat LD50 Dermal: N/A LC50 Inhalation: N/A	
Chronic Effects Carcinogenicity: There are no known carcinogenic chemicals in this product. OSHA (Occupational Safety & Health Administration): Not Listed ACGIH (American Conference of Governmental Industrial Hygienists): Not Listed NTP (National Toxicity Program): Not Listed Mexico (Official Mexican Norm NOM-010-STPS-1999): Not Listed IARC (International Agency for Research on Cancer): Not Listed	
Sub-Chronic Toxicity: No information available Irritation: No information available Corrosivity: No information available Sensitization: No information available Neurological Effects: No information available Mutagenic Effects: No information available Reproductive Effects: No information available Developmental Effects: No information available Teratogenicity: No information available Target Organ Effects: Respiratory system, Eyes, Skin	

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Section 12. Ecological Information																																																											
<p>Ecotoxicity: Contains no substances known to be hazardous to the environment. Contains no substances known to be not degradable in waste water treatment plants.</p> <p>Persistence/Degradability: Readily biodegradable.</p> <p>Bioaccumulation/Accumulation: Not applicable.</p> <p>Mobility: Soluble in water.</p>																																																											
Section 13. Disposal Considerations																																																											
<p>Waste Treatment Methods: Dispose of product and contaminated packaging in accordance with all local, state, and federal environmental control regulations.</p>																																																											
Section 14. Transport Information																																																											
<p>Domestic Transport Regulations (USA) DOT: Not regulated</p> <p>Domestic Transport Regulations (Canada) TDG: Not regulated</p> <p>Domestic Transport Regulations (Mexico) MEI: Not regulated</p> <p>International Transport Regulations ICAO: Not regulated IATA: Not regulated IMDG/IMO: Not regulated</p>																																																											
Section 15. Regulatory Information																																																											
<p>International Inventories The components of this product are reported in the following inventories:</p> <table border="1"> <thead> <tr> <th>Chemical Name</th> <th>TSCA</th> <th>DSL</th> <th>NDGL</th> <th>ENECs</th> <th>ELINCS</th> <th>AKCS</th> <th>ENCS</th> <th>CHINA</th> <th>PCCS</th> <th>RECL</th> <th>NDIC</th> </tr> </thead> <tbody> <tr> <td>Maltodextrin</td> <td>Yes</td> <td>Yes</td> <td>No</td> <td>Yes 231-791-2</td> <td>No</td> <td>Yes</td> <td>No</td> <td>Yes</td> <td>Yes</td> <td>Yes 45-25400</td> <td>Yes</td> </tr> <tr> <td>Water</td> <td>Yes</td> <td>Yes</td> <td>No</td> <td>Yes 231-791-2</td> <td>No</td> <td>Yes</td> <td>No</td> <td>Yes</td> <td>Yes</td> <td>Yes 45-35400</td> <td>Yes</td> </tr> <tr> <td>Particulates not otherwise regulated</td> <td>N/A</td> <td>N/A</td> <td>N/A</td> <td>N/A</td> <td>N/A</td> <td>N/A</td> <td>N/A</td> <td>N/A</td> <td>N/A</td> <td>N/A</td> <td>N/A</td> </tr> </tbody> </table>												Chemical Name	TSCA	DSL	NDGL	ENECs	ELINCS	AKCS	ENCS	CHINA	PCCS	RECL	NDIC	Maltodextrin	Yes	Yes	No	Yes 231-791-2	No	Yes	No	Yes	Yes	Yes 45-25400	Yes	Water	Yes	Yes	No	Yes 231-791-2	No	Yes	No	Yes	Yes	Yes 45-35400	Yes	Particulates not otherwise regulated	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Chemical Name	TSCA	DSL	NDGL	ENECs	ELINCS	AKCS	ENCS	CHINA	PCCS	RECL	NDIC																																																
Maltodextrin	Yes	Yes	No	Yes 231-791-2	No	Yes	No	Yes	Yes	Yes 45-25400	Yes																																																
Water	Yes	Yes	No	Yes 231-791-2	No	Yes	No	Yes	Yes	Yes 45-35400	Yes																																																
Particulates not otherwise regulated	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A																																																
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USA
Federal Regulations
Ozone Depleting Substances: No Class I or Class II material is known to be used in the manufacture of, or contained, in this product.

SARA 313: Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA). This product is not known to contain any chemicals which are subject to the reporting requirements of the Act or regulations contained in 40 CFR 372.

SARA 311/312 Hazardous Categorization
Acute Health Hazard: No
Chronic Health Hazard: No
Fire Hazard: No
Sudden Release of Pressure Hazard: No
Reactive Hazard: No

Clean Air Act, Section 112 Hazardous Air Pollutants (HAPs) (see 40 CFR 61): This product is not known to contain any HAPs.

State Regulations
California Proposition 65
Proposition 65 chemicals are not expected to be found in this product above those naturally present in their agricultural source.
Proposition 65 exempts naturally occurring listed chemicals from an obligation to label.

State Right-to-Know
No known components subject to "Right-to-Know" legislation in the following States:

Chemical Name	Weight %	Illinois	Massachusetts	New Jersey	Pennsylvania	Rhode Island
Maltodextrin	95%	No	No	No	No	No
Water	5%	No	No	No	No	No

Canada
WHMIS Product Classification: Exempt: Food Product per Hazardous Products Act Part II Controlled Products Section 12.
WHMIS Ingredient Disclosure List IDL: No known component is listed on the WHMIS ingredients disclosure list.
(NPRI) Canadian National Pollutant Release Inventory: No known component is listed on NPRI.

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations (CPR) and the SDS contains all the information required by the CPR.

Mexico
Mexico - Grade: No information available.

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Section 16. Other Information

Disclaimer: The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. The information in this document is based on the present state of our knowledge and is applicable to the product with regard to appropriate safety precautions. It does not represent any guarantee of the properties of the product.

REVISION DATE: 7/21/2015

Citric-acid monohydrate

Material Safety Data Sheet Citric acid monohydrate

ACC# 84211

Section 1 - Chemical Product and Company Identification

MSDS Name: Citric acid monohydrate
Catalog Numbers: AC124910000, AC124910010, AC124910230, AC124912300, AC325250000, A104-10, A104-10LC, A104-250LB, A104-3, A104-800, A110-10, A110-10LC, A110-3, A110-90, A111-12, A111-12LC, A111-212, A111-SAM1, A111-SAM2, A111-SAM3, XXCITRAC50KG
Synonyms: 2-Hydroxy-1,2,3-propanetricarboxylic acid monohydrate.
Company Identification:
Fisher Scientific
1 Reagent Lane
Fair Lawn, NJ 07410
For information, call: 201-796-7100
Emergency Number: 201-796-7100
For CHEMTREC assistance, call: 800-424-9300
For International CHEMTREC assistance, call: 703-527-3807

Section 2 - Composition, Information on Ingredients

CAS#	Chemical Name	Percent	ETNCS/ELINCS
7949-29-1	Citric acid monohydrate	~97	unlisted

Section 3 - Hazards Identification

EMERGENCY OVERVIEW

Appearance: white crystalline powder.
DANGER! Causes severe eye irritation and possible injury. Causes skin and respiratory tract irritation.
Target Organs: respiratory system, eyes, skin.

Potential Health Effects

Eyes: Causes severe eye irritation and possible injury.
Skin: Causes skin irritation. Some references state that citric acid has allergenic properties but, no animal or human studies were found to support this claim. It does not seem likely that citric acid is a sensitizer since it is found in the body as an essential component of the citric acid cycle which releases energy for physiological functions. Citric acid is widely distributed in plants and in animal tissues and fluids.
Ingestion: May cause gastrointestinal irritation with nausea, vomiting and diarrhea. Excessive intake of citric acid may cause erosion of the teeth.
Inhalation: Causes respiratory tract irritation.
Chronic: Repeated exposure may cause erosion of teeth. Chronic exposure may cause effects similar to

https://hazmap.fisher.com/meds/84211.htm

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Section 8 - Exposure Controls, Personal Protection

Engineering Controls: Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower. Use adequate ventilation to keep airborne concentrations low.
Exposure Limits:

Chemical Name	ACGIH	NIOSH	OSHA - Final PELs
Citric acid monohydrate	none listed	none listed	none listed
Citric acid anhydrous	none listed	none listed	none listed

OSHA Vacated PELs: Citric acid monohydrate. No OSHA Vacated PELs are listed for this chemical. Citric acid anhydrous. No OSHA Vacated PELs are listed for this chemical.
Personal Protective Equipment:
Eyes: Wear appropriate protective eyeglasses or chemical safety goggles as described by OSHA's eye and face protection regulations in 29 CFR 1910.133 or European Standard EN166.
Skin: Wear appropriate protective gloves to prevent skin exposure.
Clothing: Wear appropriate protective clothing to prevent skin exposure.
Respirators: Follow the OSHA respirator regulations found in 29 CFR 1910.134 or European Standard EN 149. Use a NIOSH/MSHA or European Standard EN 149 approved respirator if exposure limits are exceeded or if irritation or other symptoms are experienced.

Section 9 - Physical and Chemical Properties

Physical State: Crystalline powder.
Appearance: white
Odor: Odorless.
pH: 2.2 (0.1N aq)
Vapor Pressure: 2.70E-009 mm Hg @ 25 deg C
Vapor Density: Not available.
Evaporation Rate: Not available.
Viscosity: Not available.
Boiling Point: 175 deg C
Freezing/Melting Point: 100 deg C
Decomposition Temperature: 175 deg C
Solubility: Freely Soluble.
Specific Gravity/Density: 1.542 g/cm³
Molecular Formula: C₆H₈O₇·H₂O
Molecular Weight: 210.15

Section 10 - Stability and Reactivity

Chemical Stability: Stable under normal temperatures and pressures.
Conditions to Avoid: Dust generation, moisture.
Incompatibilities with Other Materials: Metals, strong oxidizing agents, strong reducing agents, strong bases, metal nitrates.
Hazardous Decomposition Products: Carbon monoxide, irritating and toxic fumes and gases, carbon

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those of acute exposure.

Section 4 - First Aid Measures

Eyes: In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Get medical aid immediately.
Skin: In case of contact, flush skin with plenty of water. Remove contaminated clothing and shoes. Get medical aid if irritation develops and persists. Wash clothing before reuse.
Ingestion: If swallowed, do not induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. Get medical aid.
Inhalation: If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical aid.
Notes to Physicians: Treat symptomatically and supportively.

Section 5 - Fire Fighting Measures

General Information: As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear. During a fire, irritating and highly toxic gases may be generated by thermal decomposition or combustion. This material in sufficient quantity and reduced particle size is capable of creating a dust explosion.
Extinguishing Media: Use water spray, dry chemical, carbon dioxide, or chemical foam.
Flash Point: Not applicable.
Autoignition Temperature: 1010 deg C (1,850.00 deg F)
Explosion Limits, Lower: Not available.
Upper: Not available.
NFPA Rating: (estimated) Health: 3; Flammability: 1; Instability: 0

Section 6 - Accidental Release Measures

General Information: Use proper personal protective equipment as indicated in Section 8.
Spills/Leaks: Vacuum or sweep up material and place into a suitable disposal container. Clean up spills immediately, observing precautions in the Protective Equipment section. Avoid generating dusty conditions. Provide ventilation. Spill may be carefully neutralized with lime (calcium oxide, CaO).

Section 7 - Handling and Storage

Handling: Wash thoroughly after handling. Remove contaminated clothing and wash before reuse. Use with adequate ventilation. Minimize dust generation and accumulation. Keep container tightly closed. Avoid ingestion and inhalation. Do not get in eyes. Avoid contact with skin and clothing.
Storage: Store in a tightly closed container. Store in a cool, dry, well-ventilated area away from incompatible substances. Store protected from moisture.

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Hazardous Polymerization: Will not occur.

Section 11 - Toxicological Information

RTECS#:
CAS# 3949-29-1: O67810000
CAS# 77-92-9: O67350000
LD50/LC50:
Not available.
CAS# 77-92-9:
Draize test, rabbit, eye: 750 ug/24H Severe;
Draize test, rabbit, skin: 500 mg/24H Mild;
Oral, mouse: LD50 = 5040 mg/kg;
Oral, rat: LD50 = 3 gm/kg;

Carcinogenicity:
CAS# 3949-29-1: Not listed by ACGIH, IARC, NTP, or CA Prop 65.
CAS# 77-92-9: Not listed by ACGIH, IARC, NTP, or CA Prop 65.

Epidemiology: No information available.
Teratogenicity: No information available.
Reproductive Effects: No information available.
Mutagenicity: No information available.
Neurotoxicity: No information available.
Other Studies:

Section 12 - Ecological Information

No information available.

Section 13 - Disposal Considerations

Chemical waste generators must determine whether a discarded chemical is classified as a hazardous waste. US EPA guidelines for the classification determination are listed in 40 CFR Parts 261.2. Additionally, waste generators must consult state and local hazardous waste regulations to ensure complete and accurate classification.
RCRA P-Series: None listed.
RCRA U-Series: None listed.

Section 14 - Transport Information

	US DOT	Canada TDG
Shipping Name:	Not regulated	Not regulated

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Hazard Class:		
UN Number:		
Packing Group:		

Section 15 - Regulatory Information

US FEDERAL

TSCA

CAS# 5949-29-1 is not on the TSCA Inventory because it is a hydrate. It is considered to be listed if the CAS number for the anhydrous form is on the inventory (40CFR720.3(u)(2)).

CAS# 77-92-9 is listed on the TSCA inventory.

Health & Safety Reporting List

None of the chemicals are on the Health & Safety Reporting List.

Chemical Test Rules

None of the chemicals in this product are under a Chemical Test Rule.

Section 12b

None of the chemicals are listed under TSCA Section 12b.

TSCA Significant New Use Rule

None of the chemicals in this material have a SNUR under TSCA.

CERCLA Hazardous Substances and corresponding RQs

None of the chemicals in this material have an RQ.

SARA Section 302 Extremely Hazardous Substances

None of the chemicals in this product have a TPQ.

SARA Codes

CAS # 5949-29-1: immediate.

CAS # 77-92-9: immediate.

Section 313 No chemicals are reportable under Section 313.

Clean Air Act:

This material does not contain any hazardous air pollutants.

This material does not contain any Class 1 Ozone depleters.

This material does not contain any Class 2 Ozone depleters.

Clean Water Act:

None of the chemicals in this product are listed as Hazardous Substances under the CWA.

None of the chemicals in this product are listed as Priority Pollutants under the CWA.

None of the chemicals in this product are listed as Toxic Pollutants under the CWA.

OSHA:

None of the chemicals in this product are considered highly hazardous by OSHA.

STATE

CAS# 5949-29-1 is not present on state lists from CA, PA, MN, MA, FL, or NJ.

CAS# 77-92-9 is not present on state lists from CA, PA, MN, MA, FL, or NJ.

California Prop 65

California No Significant Risk Level: None of the chemicals in this product are listed.

European/International Regulations

European Labeling in Accordance with EC Directives

Hazard Symbols:

<https://fscimage.fishersci.com/msds/84211.htm>

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XI

Risk Phrases:

R 36/37/38 Irritating to eyes, respiratory system and skin.

Safety Phrases:

S 26 In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.

S 37/39 Wear suitable gloves and eye/face protection.

WGK (Water Danger/Protection)

CAS# 5949-29-1: 0

CAS# 77-92-9: 0

Canada - DSL/NDSL

CAS# 5949-29-1 is listed on Canada's DSL List.

CAS# 77-92-9 is listed on Canada's DSL List.

Canada - WHMIS

This product has a WHMIS classification of E.

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the MSDS contains all of the information required by those regulations.

Canadian Ingredient Disclosure List

CAS# 77-92-9 is listed on the Canadian Ingredient Disclosure List.

Section 16 - Additional Information

MSDS Creation Date: 2/09/1999

Revision #10 Date: 2/18/2008

The information above is believed to be accurate and represents the best information currently available to us. However, we make no warranty of merchantability or any other warranty, express or implied, with respect to such information, and we assume no liability resulting from its use. Users should make their own investigations to determine the suitability of the information for their particular purposes. In no event shall Fisher be liable for any claims, losses, or damages of any third party or for lost profits or any special, indirect, incidental, consequential or exemplary damages, howsoever arising, even if Fisher has been advised of the possibility of such damages.

Grap Flavor Symrise (GRS)

SECTION 1: PRODUCT IDENTIFICATION

PRODUCT NAME: GRAPE FLAVOR (Liquid) (Flavor)
PRODUCT CODE: 3961
SUPPLIER: MEDISCA Inc.
 Tel.: 1.800.832.1028 | Fax: 1.800.893.5858
 961 Route A, Unit C, Plattsburgh, NY, 12901
 3995 W. Meza Vista Ave., Unit A-10, Las Vegas, NV, 89119
 6041 N. Bell Line Road, Suite 130, Irving, TX, 75063
 MEDISCA Pharmaceuticals Inc.
 Tel.: 1.800.865.6534 | Fax: 914.338.1989
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 MEDISCA Australia PTY LTD
 Tel.: 1.300.786.392 | Fax: 61.2.6100.9947
 Unit 7, Heritage Business Park
 5-9 Roderdy Street, Mascot, NSW 2020

EMERGENCY PHONE: CHEMTREC: Day or Night Within USA and Canada: 1-800-424-9300
 NSW Poisons Information Centre: 131 123
 National Chemical Emergency Centre 440-2322970

USES: Flavoring agent

CHEMICAL NAME: Not applicable
BOTANICAL NAME: Not applicable
SYNONYM: Not applicable
CHEMICAL FORMULA: Not applicable
CAS NUMBER: Not applicable
ALTERNATE CAS NUMBER: Not applicable
MOLECULAR WEIGHT: Not applicable
COMPOSITION:

CHEMICAL NAME	CAS NUMBER	EC NUMBER	% BY WEIGHT
MIXTURE	Not applicable	Not applicable	Not applicable

NOTES:
 There are no additional ingredients present which, within the current knowledge of the supplier and in the concentrations applicable, are classified as health hazards and hence require reporting in this section. All flavor ingredients contained in this product are approved for use in a regulation of the Food and Drug Administration or are listed as being generally recognized as safe on the FEMA GRAS list. Flavoring components are considered trade secrets. Therefore the chemical name, exact compositional breakdown, or other chemical identification of the specific compounds of flavor ingredients are withheld in accordance with 1916.1205 of the Code of Federal Regulations. This product contains: Artificial flavor*, propylene glycol, water, proprietary flavor ingredient p1022 and p114.

SECTION 2: HAZARDS IDENTIFICATION

GHS CLASSIFICATION: Based on available data, the classification criteria are not met.
PICTOGRAM: Not applicable
SIGNAL WORD: Not applicable
HAZARD STATEMENT(S): May cause an allergic reaction. Causes irritation to the skin, eyes and respiratory tract. Repeated exposure may cause skin dryness or cracking.
ADVERSE PHYSICO-CHEMICAL, HUMAN HEALTH AND ENVIRONMENTAL EFFECTS:
PRECAUTIONARY STATEMENT(S):
 Prevention: Not applicable
 Response: Not applicable
 Storage: Not applicable
 Disposal: Not applicable
HMS CLASSIFICATION:
 Health Hazard: 1
 Reactivity: 6
 Flammability: 1
 Personal Protection: E

SECTION 4: FIRST-AID MEASURES

IN CASE OF EYE CONTACT: Flush with copious amounts of water for 15 minutes, separating eyelids with fingers. If irritation persists seek medical aid.
IN CASE OF SKIN CONTACT: Wash with soap & water for 15 minutes. If irritation persists seek medical aid.
IF SWALLOWED: Call a physician. Wash out mouth with water. Do not induce vomiting without medical advice.
IF INHALED: Remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Call a physician.
SYMPTOMS AND EFFECTS: Not expected to present a significant hazard under anticipated conditions of normal use.

SECTION 5: FIREFIGHTING MEASURES

SPECIFIC HAZARDS ARISING FROM THE CHEMICAL: Not applicable
FLAMMABLE PROPERTIES: May be combustible at high temperatures.
HAZARDOUS COMBUSTION PRODUCTS: Under fire conditions, hazardous fumes will be present.
SUITABLE & UNSUITABLE EXTINGUISHING MEDIA: Small fire: dry chemical, CO₂ or water spray. Large fire: dry chemical, CO₂, alcohol resistant foam or water spray. Do not get water inside containers.
PROTECTIVE EQUIPMENT AND PRECAUTIONS FOR FIREFIGHTERS: Wear self contained breathing apparatus and protective clothing to prevent contact with skin and eyes.

SECTION 3: COMPOSITION INFORMATION ON INGREDIENTS

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SECTION 6: ACCIDENTAL RELEASE MEASURES

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CLEANUP PROCEDURE: Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Wear respirator, chemical safety goggles, rubber boots and heavy rubber gloves. Stop leak if you can do it without risk. Prevent entry into waterways, sewers, basements or confined areas. Shut off all sources of ignition. Evacuate the area. If necessary, simply water fog to disperse the vapor. Absorb the material with compatible vermiculite or other absorbing material. Place in suitable container and retain for disposal. Ventilate and clean the affected area. Do not flush into sewerage system or to drains.
REFERENCE TO OTHER SECTIONS: See Section 7 for information on safe handling. See Section 8 for information on personal protection equipment. See Section 11 for disposal information.

SPECIFIC ENGINEERING CONTROLS: Adequate mechanical ventilation. Fumehood, eye wash station, and safety shower.

SECTION 7: HANDLING AND STORAGE

PRECAUTIONS FOR SAFE HANDLING: Do not inhale. Avoid contact with eyes, skin and clothing. Avoid prolonged or repeated exposure. Wash thoroughly after handling. Store away from incompatible materials, in a well-ventilated area. Eliminate all sources of ignition. Store in accordance with local regulations. Do not store in unlabelled containers. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Use appropriate containment to avoid environmental contamination.
CONDITIONS FOR SAFE STORAGE: Store away from incompatible materials, in a well-ventilated area. Eliminate all sources of ignition. Store in accordance with local regulations. Do not store in unlabelled containers. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Use appropriate containment to avoid environmental contamination.
STORAGE CONDITIONS: Store in original container, tightly sealed, protected from direct sunlight and moisture.
SPECIFIC END USE(S): See Section 1

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

PHYSICAL STATE: Liquid
DESCRIPTION: Colorless liquid with a characteristic odor.
SOLUBILITY: Soluble in water.
ODOR: Characteristic odor
FLAMMABILITY: May be combustible at high temperature

PROPERTY	VALUE	PROPERTY	VALUE
AUTO-IGNITION TEMPERATURE	Not available	BUILDING POINT	Not available
EVAPORATION RATE	Not available	EXPLOSIVE LIMIT	Not available
log P (OCTAOL/WATER)	Not available	LOWER FLAMMABLE/EXPLOSIVE LIMIT(S)	Not available
ODOR THRESHOLD	Not available	OXIDIZING PROPERTY	Not available
RELATIVE DENSITY (WATER = 1)	Not available	SPECIFIC GRAVITY (20°C)	0.99 - 1.09
VAPOR DENSITY (AIR = 1)	Not available	VAPOR PRESSURE	Not available
		UPPER FLAMMABLE/EXPLOSIVE LIMIT(S)	Not available
		VISCOSITY	Not available

The physical data presented above are typical values and should not be construed as a specification.

SECTION 8: EXPOSURE CONTROLS/ PERSONAL PROTECTION

Chemical Name: MIXTURE CAS #: Not applicable

Country	Limit value-8 hours		Limit value-Short Term		IDLH	REL.	Advisory	Notes
	ppm	mg/m ³	ppm	mg/m ³				
China	NL	NL	NL	NL	NL	NL	N/A	N/A
ECOSH	NL	NL	NL	NL	NL	NL	N/A	N/A
WHO	NL	NL	NL	NL	NL	NL	N/A	N/A
MSDS	NL	NL	NL	NL	NL	NL	N/A	N/A
MSDS	NL	NL	NL	NL	NL	NL	N/A	N/A
MSDS	NL	NL	NL	NL	NL	NL	N/A	N/A
MSDS	NL	NL	NL	NL	NL	NL	N/A	N/A
MSDS	NL	NL	NL	NL	NL	NL	N/A	N/A
MSDS	NL	NL	NL	NL	NL	NL	N/A	N/A

NL = Not listed, N/A = Not Available
 PEL are 8-hour TWA = Limit value - Eight hours
 Ceiling or Short-Term TWA = STEL = Limit value - Short term
EXPOSURE GUIDELINES: Consult local authorities for provincial or state exposure limits. Particulate not otherwise regulated, respirable fraction: 5 mg/m³
PERSONAL PROTECTIVE EQUIPMENT: Eyes: Wear appropriate protective eyewear or chemical safety goggles as described by WHMIS or OSHA's eye and face protection regulations in 29 CFR 1910.133 or European Standard EN158. Skin: Wear appropriate gloves to prevent skin exposure. Clothing: Wear appropriate protective clothing to minimize contact with skin. Respirators: Follow WHMIS or OSHA respirator regulations found in 29 CFR 1910.134 or European Standard EN 149. Use a NIOSH/MSHA or European Standard EN 149 approved respirator if exposure limits are exceeded or irritation or other symptoms are experienced. Thermal Hazards: For products representing a thermal hazard, appropriate Personal Protective Equipment should be used.

SECTION 10: STABILITY AND REACTIVITY

REACTIVITY: Not established
CHEMICAL STABILITY: Stable under recommended storage conditions.
INCOMPATIBLE MATERIALS: Strong oxidants, strong acids and strong bases.
HAZARDOUS DECOMPOSITION PRODUCTS: Toxic fumes of carbon monoxide, carbon dioxide, nitrogen oxides and other gases may occur.
HAZARDOUS POLYMERIZATION: Will not occur.
POSSIBILITY OF HAZARDOUS REACTION: Not established.
CONDITIONS TO AVOID: Moisture, sunlight and extreme temperatures.

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SECTION 11: TOXICOLOGICAL INFORMATION

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ACUTE TOXICITY	Oral: Rat: LD50 (mg/kg): Not available Dermal: Rabbit: LD50 (mg/kg): Not available Inhalation: Rat: LC50 (mg/L): Not available
SKIN CORROSION/IRRITATION	Due to lack of data the classification is not possible.
SERIOUS EYE DAMAGE/EYE IRRITATION	Due to lack of data the classification is not possible.
RESPIRATORY SENSITIZATION	Due to lack of data the classification is not possible.
SKIN SENSITIZATION	Due to lack of data the classification is not possible.
GERM CELL MUTAGENICITY	Due to lack of data the classification is not possible.
CARCINOGENICITY	OEHA Based on the compositional information available from the supplier, no component of this product is listed. NTP Based on the compositional information available from the supplier, no component of this product is listed. IARC Based on the compositional information available from the supplier, no component of this product is listed. California Proposition 65 Based on the compositional information available from the supplier, no component of this product is listed.
ADDITIONAL CARCINOGENICITY INFORMATION	Due to lack of data the classification is not possible.
REPRODUCTIVE TOXICITY	Due to lack of data the classification is not possible.
SPECIFIC TARGET ORGAN TOXICITY - SINGLE EXPOSURE	Due to lack of data the classification is not possible.
SPECIFIC TARGET ORGAN TOXICITY - REPEATED EXPOSURE	Due to lack of data the classification is not possible.
ASPIRATION HAZARDS	Due to lack of data the classification is not possible.
SIGNS AND SYMPTOMS OF EXPOSURE	Not expected to present a significant hazard under anticipated conditions of normal use. May cause an allergic reaction.
POTENTIAL HEALTH EFFECTS	Inhalation May be harmful if inhaled. Causes respiratory irritation. Ingestion May be harmful if swallowed. Skin May be harmful if absorbed through skin. Causes skin irritation. Eye Causes eye irritation.

SECTION 12: ECOLOGICAL INFORMATION

TOXICITY	EC50: 48 Hr: Crustacea: (mg/L): Not available LC50: 96 Hr: Fish: (mg/L): Not available EC50: 72 Hr: 96 Hr: Algae (or other aquatic plants): (mg/L): Not available
PERSISTENCE AND DEGRADABILITY	Not available
BIOACCUMULATIVE POTENTIAL	Not available
MOBILITY IN SOIL	Soluble in water
OTHER ADVERSE EFFECTS	Not available This product is not intended to be released into the environment.

SECTION 13: DISPOSAL CONSIDERATIONS

Dispose of in accordance with federal, local laws and regulations. Avoid release into the environment.

SECTION 14: TRANSPORT INFORMATION

UN PROPER SHIPPING NAME	Not dangerous good
UN NUMBER	Not applicable
CLASS	Not applicable
PACKING GROUP	Not applicable
AUTOTANK	
HAZCHEM	Not applicable
EU	
TRANSPORT IN BULK ACCORDING TO ANNEX I OF MARPOL 1978 AND THE BC CODE	Not Listed
ENVIRONMENTAL HAZARDS	Not available
SPECIAL SHIPPING INFORMATION	Not applicable

SECTION 15: REGULATORY INFORMATION

UNITED STATES REGULATIONS

Chemical Name & CAS	CERCLA 40 CFR Part 302.4	MSHA (Title 10) 49 CFR Part 171.26	EPA 40 CFR Part 355 Appendix A, Appendix B	Flammable	Right-to-Know New Jersey	Manufacture	California Prop 65
PROPYLENE GLYCOL (27-25-5)	NL	NL	NL	NL	X	NL	NL

NL = Not Listed; X = Listed

AUSTRALIAN REGULATIONS

Chemical Name & CAS	Poisons and Therapeutic Goods Regulation	Therapeutic Goods Act	Code of Practice - Wet Ding Prescriptions
PROPYLENE GLYCOL (27-25-5)	NL	NL	NL

NL = Not Listed

EU REGULATIONS

Chemical Name & CAS	REACH Annex 3 SVH	REACH Annex 2 SVH	EC 1000/399	EC 800/394	EC 1187/2009	EC 1400/202	EC 2012/18
PROPYLENE GLYCOL (27-25-5)	NL	NL	NL	NL	NL	NL	NL



NL = Not Listed; X = Listed
Any EU regulation not listed above is not applicable to this product.


NOTES
Proprietary Flavor Ingredient - p322:
Listed on the United States TSCA (Toxic Substances Control Act) inventory
Listed on the United States - New Jersey - Right to Know Hazardous Substance
Proprietary Flavor Ingredient - p174:
Listed on the United States TSCA (Toxic Substances Control Act) inventory


SECTION 16: OTHER INFORMATION


REFERENCES	Available upon request
ABBREVIATIONS AND ACRONYMS	ACGIH - American Conference of Governmental Industrial Hygienists; AIHA WEEL - American Industrial Hygiene Association Workplace Environment Exposure Levels; CAESAR - Computer Assisted Evaluation of Industrial chemical Substances According to Regulations; CAS - Chemical Abstract Service; CERCLA - Comprehensive Environmental Response, Compensation, and Liability Act; EC50 - Effective Concentration, 50%; EPA - Environmental Protection Agency; GHS - Global Harmonized System; HMIS - Hazardous Materials Information System; HSE - Health and Safety Executive; HSIS - Hazardous Substances Information System; IARC - International Agency for Research on Cancer; IDLH - Immediately Dangerous to Life or Health; IRFMN - Ready Biodegradability Model; ISS - Istituto Superiore Sanità; LC50 - Lethal Concentration, 50%; LD50 - Lethal Dose, 50%; MSHA - Mine Safety and Health Administration; NIOSH - National Institute for Occupational Safety and Health; NTP - National Toxicology Program; OSHA PEL - Occupational Safety & Health Administration Permissible Exposure Limits; QSAR - Quantitative Structure-activity relationship; REL - Recommended Exposure Limit; SARA - Superfund Amendments and Reauthorization Act; STEL - Short Term Exposure Limit; TLV - Threshold Limit Value; TWA - Time Weighted Average; WHMIS - Workplace Hazardous Materials Information System
LAST REVISION	11/2020
SUPERSEDES	03/2019
DISCLAIMER	For a list of changes to the SDS since the last version, please communicate with MEDISCA at www.medisca.com This document was created in accordance with OSHA, Safe Work Australia and WHMIS regulations. The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. The information in this document is based on the present state of our knowledge and is applicable to the product with regard to appropriate safety precautions. It does not represent any guarantee of the properties of the product. MEDISCA® shall not be held liable for any damage resulting from handling or from contact with the above product. Recipients of the product must take responsibility for observing existing laws and regulations.
SUPPLEMENTARY INFORMATION	For all country specific requirements not outlined on this Safety Data Sheet, please request Supplementary Page to this Safety Data Sheet.


Orange Flavor Symrise (ORS)

SAFETY DATA SHEET according to Regulation (EC) No. 1907/2006		symrise 	
118153 ORANGE FLAVOUR			
Version 21	Revision Date 14.12.2017	Print Date 24.05.2018	
SECTION 1: IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING			
1.1 Product identifier			
Commercial Product Name	:	ORANGE FLAVOUR	
Material number	:	118153	
1.2 Relevant identified uses of the substance or mixture and uses advised against			
Use of the Substance/Mixture	:	Flavor mix	
1.3 Details of the supplier of the safety data sheet			
Company	:	Symrise Asia Pacific Pte. Ltd. Pandan Loop Singapore 128412 Singapore	
Telephone	:	+656567794551	
Telefax	:	+656567795843	
E-mail address	:	sds@symrise.com	
For further information, please contact: Symrise AG - Tel.: +49 / (0)5531 / 90-0			
1.4 Emergency telephone number			
Emergency CONTACT (24-Hour-Number) GBK/Infotrac ID 101844: +49(6132)9829021			
SECTION 2: HAZARDS IDENTIFICATION			
2.1 Classification of the substance or mixture			
Classification (REGULATION (EC) No 1272/2008)			
Flammable liquids, Category 3		H226	
Skin irritation, Category 2		H315	
Serious eye damage, Category 1		H318	
Skin sensitisation, Category 1		H317	
Aspiration hazard, Category 1		H304	
Acute aquatic toxicity, Category 1		H400	
Chronic aquatic toxicity, Category 1		H410	
2.2 Label elements			
Labelling (REGULATION (EC) No 1272/2008)			
Hazard pictograms	:		


SAFETY DATA SHEET according to Regulation (EC) No. 1907/2006		symrise 	
118153 ORANGE FLAVOUR			
Version 21	Revision Date 14.12.2017	Print Date 24.05.2018	
Signal word	: Danger		
Hazard statements	: H226 Flammable liquid and vapour. H304 May be fatal if swallowed and enters airways. H315 Causes skin irritation. H317 May cause an allergic skin reaction. H318 Causes serious eye damage. H410 Very toxic to aquatic life with long lasting effects.		
Precautionary statements	: Prevention: P210 Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. P280 Wear protective gloves/protective clothing/eye protection/face protection. Response: P301 + P310 IF SWALLOWED: Immediately call a POISON CENTER/doctor. P303 + P361 + P353 IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower. P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTER/doctor. P331 Do NOT induce vomiting.		
Contains	: CYCLOHEXENE, 1-METHYL-4-(1-METHYLETHENYL)-, (R)-, LINALOOL.		
2.3 Other hazards No data available			
SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS			
3.1 Substances No data available			
3.2 Mixtures			
Hazardous components			
Chemical name	CAS-No. EC-No. Registration number	Classification (REGULATION (EC) No 1272/2008)	Concentration (%)
(R)-p-Mentha-1,8-diene	5989-27-5 227-813-5	Asp. Tox.: 1; H304 Aquatic Chronic: 1; H410 Aquatic Acute: 1; H400 Skin Sens.: 1B; H317 Skin Irrit.: 2; H315 Flam. Liq.: 3; H226	>= 25 - < 50

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118153 ORANGE FLAVOUR			
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Propan-1-ol	71-23-8 200-746-9 01-2119486761-29	Flam. Liq.: 2; H225 Eye Dam.: 1; H318 STOT SE: 3; H336	>= 10 - < 20
Decanal	112-31-2 203-957-4 01-2119967771-26	Eye Irrit.: 2; H319 Aquatic Chronic: 3; H412	>= 1 - < 5
Linalool	78-70-6 201-134-4	Skin Irrit.: 2; H315 Eye Irrit.: 2; H319 Skin Sens.: 1B; H317	>= 1 - < 5
Citral	5392-40-5 226-394-6	Eye Irrit.: 2; H319 Skin Irrit.: 2; H315 Skin Sens.: 1B; H317	>= 0,1 - < 1
Octanal	124-13-0 204-683-8	Eye Irrit.: 2; H319 Skin Irrit.: 2; H315 Flam. Liq.: 3; H226 Aquatic Chronic: 2; H411	>= 0,1 - < 1
Dodecanal	112-54-9 203-983-6	Skin Irrit.: 2; H315 Eye Irrit.: 2; H319 Skin Sens.: 1B; H317	>= 0,1 - < 1
Citronellal	106-23-0 203-376-6	Skin Irrit.: 2; H315 Eye Irrit.: 2; H319 Skin Sens.: 1; H317	>= 0,1 - < 1
For the full text of the H-Statements mentioned in this Section, see Section 16.			
SECTION 4: FIRST AID MEASURES			
4.1 Description of first aid measures			
General advice	: Move out of dangerous area. Never give anything by mouth to an unconscious person.		
Inhalation	: Move to fresh air.		
Skin contact	: Take off all contaminated clothing immediately. If symptoms persist, call a physician. Wash off immediately with soap and plenty of water.		
Eye contact	: Protect unharmed eye. In the case of contact with eyes, rinse immediately with plenty of water and seek medical advice.		
Ingestion	: Prevent vomiting if possible. If a person vomits when lying on his back, place him in the recovery position. Never give anything by mouth to an unconscious person. If accidentally swallowed obtain immediate medical attention.		
4.2 Most important symptoms and effects, both acute and delayed No data available			
4.3 Indication of any immediate medical attention and special treatment needed No data available			

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SECTION 5: FIREFIGHTING MEASURES			
5.1 Extinguishing media			
Suitable extinguishing media	: Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.		
Extinguishing media which shall not be used for safety reasons	: High volume water jet		
5.2 Special hazards arising from the substance or mixture			
Specific hazards during firefighting	: Flash back possible over considerable distance. Do not use a solid water stream as it may scatter and spread fire. Do not allow run-off from fire fighting to enter drains or water courses.		
5.3 Advice for firefighters			
Special protective equipment for firefighters	: In the event of fire, wear self-contained breathing apparatus.		
Further information	: In the event of fire and/or explosion do not breathe fumes. Use water spray to cool unopened containers. Fire residues and contaminated fire extinguishing water must be disposed of in accordance with local regulations. Collect contaminated fire extinguishing water separately. This must not be discharged into drains.		
SECTION 6: ACCIDENTAL RELEASE MEASURES			
6.1 Personal precautions, protective equipment and emergency procedures			
Personal precautions	: Ensure adequate ventilation. Use personal protective equipment. Remove all sources of ignition.		
6.2 Environmental precautions			
Environmental precautions	: Should not be released into the environment. Avoid subsoil penetration. Prevent further leakage or spillage if safe to do so. If the product contaminates rivers and lakes or drains inform respective authorities.		
6.3 Methods and materials for containment and cleaning up			
Methods for cleaning up	: Dam up. Wipe up with absorbent material (e.g. cloth, fleece).		
Additional advice	: Local authorities should be advised if significant spillages cannot be contained. Suppress (knock down) gases/vapours/mists with a water spray jet.		
6.4 Reference to other sections For personal protection see section 8.			

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SECTION 7: HANDLING AND STORAGE			
7.1 Precautions for safe handling			
Advice on safe handling	: Dispose of rinse water in accordance with local and national regulations. For personal protection see section 8.		
Advice on protection against fire and explosion	: Take necessary action to avoid static electricity discharge (which might cause ignition of organic vapours). Use explosion-proof equipment. Avoid formation of aerosol. Do not spray on a naked flame or any incandescent material. When using do not smoke. Keep away from open flames, hot surfaces and sources of ignition.		
7.2 Conditions for safe storage, including any incompatibilities			
Requirements for storage areas and containers	: Store in original container. Keep container tightly closed in a dry and well-ventilated place. To maintain product quality, do not store in heat or direct sunlight. No smoking. Containers which are opened must be carefully resealed and kept upright to prevent leakage.		
Advice on common storage	: No special restrictions on storage with other products.		
Other data	: No decomposition if stored and applied as directed.		
7.3 Specific end use(s) Flavor mix			

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symrise 

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SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1 Control parameters

Components with workplace control parameters, Germany:

Components	CAS-No.	Control parameters	Update	Basis
(R)-p-Mentha-1,8-diene	5989-27-5	AGW 3 ppm	04.2013	TRGS 900

Components with workplace control parameters, United Kingdom:

Components	CAS-No.	Control parameters	Update	Basis
Propan-1-ol	71-23-8	TWA 200 ppm STEL 250 ppm	12.2011 12.2011	EH40 WEL EH40 WEL

Components with workplace control parameters, Spain:

Components	CAS-No.	Control parameters	Update	Basis
Propan-1-ol	71-23-8	VLA-ED 200 ppm VLA-EC 400 ppm	2012 2012	VLA (ES) VLA (ES)
Citral	5392-40-5	VLA-ED 5 ppm	2013	VLA (ES)

Components with workplace control parameters, France:

Components	CAS-No.	Control parameters	Update	Basis
Propan-1-ol	71-23-8	VME 200 ppm	07.2012	INRS (FR)

Components with workplace control parameters, Poland:

Components	CAS-No.	Control parameters	Update	Basis
Propan-1-ol	71-23-8	NDS 200 mg/m ³ NDSCh 600 mg/m ³	12.2011 12.2011	POL MAC POL MAC
Citral	5392-40-5	NDSCh 54 mg/m ³ NDS 27 mg/m ³	12.2011 12.2011	POL MAC POL MAC

8.2 Exposure controls

Engineering measures
none

Personal protective equipment


Respiratory protection : No personal respiratory protective equipment normally required.

Hand protection : Barrier creams may help to protect the exposed areas of skin, they should however not be applied once exposure has occurred. Wear chemicals-resistant gloves, e.g. safety gloves of chloroprene Level 2 or of butyl rubber Level 6.

Eye protection : Safety glasses

Skin and body protection : Lightweight protective clothing
Remove and wash contaminated clothing before re-use.

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Hygiene measures : Wash hands before breaks and immediately after handling the product.

Protective measures : Avoid contact with skin.
When using, do not eat, drink or smoke.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties

Appearance

Form : liquid

Colour : light yellow to orange-brown

Odour : characteristic

Odour Threshold : No data available

Safety data

Flash point : 31 °C

Water solubility : immiscible

Relative density : 0,9707 - 0,9807 at
20 °C relation to density of water at 4°C

Bulk density :

Relative vapour density : not determined

Vapour pressure : 16 kPa at 50 °C
calculated

Melting point/freezing point : not determined

Boiling point : not determined

Partition coefficient: n-octanol/water : log Pow:
Not applicable

pH : not determined

Evaporation rate : Lower than the evaporation rate of butyl acetate = 1

Flammability (solid, gas) : Not applicable

Auto-ignition temperature : The substance or mixture is not classified as self heating.

Decomposition temperature : No data available


Oxidizing properties : The substance or mixture is not classified as oxidizing.

Explosive properties : Due to its structural properties, the product is not classified as explosive

Lower explosion limit : Vapours may form explosive mixtures with air.

Upper explosion limit : Vapours may form explosive mixtures with air.

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A final assessment of potential explosion hazards can only be made on a case-by-case basis when precise information is available on product handling, production setup and the circumstances surrounding the use of the product.

9.2 Other data
None.

SECTION 10: STABILITY AND REACTIVITY

10.1 Reactivity : No data available

10.2 Chemical stability : No data available

10.3 Possibility of hazardous reactions : No dangerous reaction known under conditions of normal use.

10.4 Conditions to avoid : No data available

10.5 Incompatible materials to avoid : No data available

10.6 Hazardous decomposition products : No data available

SECTION 11: TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects

Acute oral toxicity : No data available

Acute inhalation toxicity : No data available

Acute dermal toxicity : No data available

Repeated dose toxicity : No data available

Acute toxicity (other routes of administration) : No data available

Skin irritation : No data available

Eye irritation : No data available

Sensitisation : No data available

Mutagenicity : No data available

Carcinogenicity : No data available


Reproductive toxicity : No data available

Teratogenicity : No data available

Specific target organ toxicity - single exposure : No data available

Specific target organ toxicity - repeated exposure : No data available

SAFETY DATA SHEET
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symrise 

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Aspiration toxicity : No data available

SECTION 12: ECOLOGICAL INFORMATION

12.1 Toxicity
No data available

12.2 Persistence and degradability
No data available

12.3 Bioaccumulative potential
No data available

12.4 Mobility in soil
No data available

12.5 Results of PBT and vPvB assessment
This substance/mixture contains no components considered to be either persistent, bioaccumulative and toxic (PBT), or very persistent and very bioaccumulative (vPvB) at levels of 0.1% or higher.

12.6 Other adverse effects
Very toxic to aquatic life with long lasting effects.

SECTION 13: DISPOSAL CONSIDERATIONS

13.1 Waste treatment methods

Product : Where possible recycling is preferred to disposal or incineration, If recycling is not practicable, dispose of in compliance with local regulations.

Contaminated packaging : Empty remaining contents.
Dispose of as unused product.

SECTION 14: TRANSPORT INFORMATION

14.1 UN number

ADR : 1197

RID : 1197

IMDG : 1197

IATA-DGR : 1197

14.2 Proper shipping name

ADR : EXTRACTS, FLAVOURING, LIQUID

RID : EXTRACTS, FLAVOURING, LIQUID


IMDG : EXTRACTS, FLAVOURING, LIQUID (LIMONENE,DECANAL) MP


IATA-DGR : Extracts, flavouring, liquid

14.3 Transport hazard class

ADR : 3

RID : 3

SAFETY DATA SHEET		symrise 	
according to Regulation (EC) No. 1907/2006			
118153 ORANGE FLAVOUR			
Version 21	Revision Date 14.12.2017	Print Date 24.05.2018	
IMDG	:	:	3
IATA-DGR	:	:	3
14.4 Packing group			
ADR:			
Packing group	:	:	III
Classification Code	:	:	F1
Hazard Identification Number	:	:	30
Labels	:	:	3
Tunnel restriction code	:	:	(D/E)
RID:			
Packing group	:	:	III
Classification Code	:	:	F1
Hazard Identification Number	:	:	30
Labels	:	:	3
IMDG:			
Packing group	:	:	III
Labels	:	:	3
EmS - EmS	:	:	F-E, S-D
IATA-DGR:			
Packing instruction (cargo aircraft)	:	:	366
Qty/Pkg (Cargo)	:	:	220,00 L
Packing instruction (passenger aircraft)	:	:	355
Qty/Pkg (Passenger)	:	:	60,00 L
Packing group	:	:	III
Labels	:	:	3
14.5 Environmental hazards			
ADR:			
Environmentally hazardous	:	:	yes
RID:			
Environmentally hazardous	:	:	yes
IMDG:			
Marine pollutant	:	:	yes
14.6 Special precautions for user			
No data available			
14.7 Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code			
Not applicable			
SECTION 15: REGULATORY INFORMATION			
15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture			
National legislation			
Risk classification according to BetrSichV (Germany)	:	:	Flash point 21 °C to 55 °C, at 15 °C not miscible in water
Water contaminating class (Germany)	:	:	WGK 3 (highly water endangering) Calculation acc. Annex 4 to VwVwS

SAFETY DATA SHEET		symrise 	
according to Regulation (EC) No. 1907/2006			
118153 ORANGE FLAVOUR			
Version 21	Revision Date 14.12.2017	Print Date 24.05.2018	
15.2 Chemical safety assessment			
No data available			
SECTION 16: OTHER INFORMATION			
Full text of H-Statements referred to under sections 2 and 3.1			
H225	:	:	Highly flammable liquid and vapour.
H226	:	:	Flammable liquid and vapour.
H304	:	:	May be fatal if swallowed and enters airways.
H315	:	:	Causes skin irritation.
H317	:	:	May cause an allergic skin reaction.
H318	:	:	Causes serious eye damage.
H319	:	:	Causes serious eye irritation.
H336	:	:	May cause drowsiness or dizziness.
H400	:	:	Very toxic to aquatic life.
H410	:	:	Very toxic to aquatic life with long lasting effects.
H411	:	:	Toxic to aquatic life with long lasting effects.
H412	:	:	Harmful to aquatic life with long lasting effects.
Further information			
The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.			
Any data changes with reference to previous versions are marked by a vertical line in front of the concerned paragraph.			

Lychee Flavor (VM) (F-LCV)

TECHNICAL DATA SHEET
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V. MANE FILS (THAILAND) CO., LTD., 284 Moo 4, Ladkrabang Industrial Estate, Chalokkrung Road, Lamphiwet, Ladkrabang - 10520 Bangkok - THAILAND

VM/LCV/E9708696/A1

GENERAL DESCRIPTION

Physical description : LIQUID / CLEAR
From COLORLESS to YELLOW

Organoleptic description : SULPHURIC

Suggested using : /

Production process : LIQUID BLEND

LEGISLATION

Food allergens (Reg. (UE) 1169/2011):
No allergens to declare.

FOOD ALLERGEN (MoPH) (No. 367) B.E. 2557(2014) & (No. 383) B.E. 2560(2017) (Re Labeling of Prepackaged Foods):
No allergens to declare.

THAILAND FLAVOUR REGULATION (MoPH No. 223 Re Flavoring Agents and MoPH on Food Additives):
RESTRICTED USE IN FOOD, NOT FOR RETAIL SALE. DO NOT INGEST AS SUCH

Legal status: NATURE IDENTICAL FLAVOUR

Composition: NATURAL FLAVOUR, NATURE IDENTICAL FLAVOUR

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V. MANE FILS (THAILAND) CO., LTD., 284 Moo 4, Ladkrabang Industrial Estate, Chalokkrung Road, Lamphiwet, Ladkrabang - 10520 Bangkok - THAILAND

VM/LCV/E9708696/A1

LEGISLATION

Causes:
PROPYLENE GLYCOL INS N°1520 : 98.3121 %

FOOD ADDITIVE/IL:
ACETIC ACID INS N° 200 : 270 ppm

The Central Islamic Council of Thailand:
In compliance with halal requirement and certifiable for V. Mane Fils (Thailand) Co., Ltd.

PHYSICO-CHEMICAL DATA

Specific gravity 20/20°C : 1.0130 / 1.0230
Flash point °C : 95 °C
Refractive index at 20°C : 1.4180 / 1.4480

NUTRITIONAL DATA

Calculated average value per 100g

Energy value : 334 kcal
Energy value : 1505 kJ

Propylene Glycol : 95.0 g

STORAGE AND HANDLING CONDITIONS

Min. Temperature (°C)	Max. Temperature (°C)	Shelf life
15 (59°F)	30 (86°F)	12 (months)

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V. MANE FILS (THAILAND) CO., LTD., 284 Moo 4, Ladkrabang Industrial Estate, Chalokkrung Road, Lamphiwet, Ladkrabang - 10520 Bangkok - THAILAND

VM/LCV/E9708696/A1

Protect from light : Yes.
Protect from air : Yes.
Protect from moisture : Yes.

We recommend this product be stored in its original sealed packaging. Avoid excessive temperatures and exposure to light. For information concerning the manipulation of the product, please refer, if necessary, to the Safety Data Sheet.

**The information given in this document corresponds to the knowledge we have at the date mentioned. We can not be held responsible in the event of improper usage of this product. It is up to the user to analyse the information given and to determine appropriate conditions for the use of this product.
This computer generated technical data sheet is valid without signature.**

TDS300 561289 - E9708696/A1 - EN_GB
Format N° 3 Version 1
Format date 28 APR 2022 Issue date 14 JUL 2021

Grap Flavor (VM) (GRM)

SAFETY DATA SHEET according to Regulation (EC) No. 1907/2006 219504 GRAPE FLAVOUR	
Version 4	Revision Date 31.10.2015 Print Date 03.05.2017
SECTION 1: IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING	
1.1 Product Identifier	
Commercial Product Name	: GRAPE FLAVOUR
Material number	: 219504
1.2 Relevant identified uses of the substance or mixture and uses advised against	
Use of the Substance/Mixture	: Flavor mix
1.3 Details of the supplier of the safety data sheet	
Company	: Symrise Asia Pacific Pte. Ltd. Pandan Loop Singapore 128412 Singapore
Telephone	: +656567794551
Telefax	: +656567795843
E-mail address	: sds@symrise.com
For further information, please contact: Symrise AG - Tel.: +49 / (0)5531 / 90-0	
1.4 Emergency telephone number	
Emergency CONTACT (24-Hour-Number)	: GBK/Infotrac ID 101844; +49(6132)9829021
SECTION 2: HAZARDS IDENTIFICATION	
2.1 Classification of the substance or mixture	
Classification (REGULATION (EC) No 1272/2008)	: Not a hazardous substance or mixture according to Regulation (EC) No. 1272/2008.
2.2 Label elements	
Labelling (REGULATION (EC) No 1272/2008)	: Not a hazardous substance or mixture according to Regulation (EC) No. 1272/2008.
2.3 Other hazards	
No data available	

SAFETY DATA SHEET according to Regulation (EC) No. 1907/2006 219504 GRAPE FLAVOUR			
Version 4	Revision Date 31.10.2015 Print Date 03.05.2017		
SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS			
3.1 Substances			
Chemical characterization	: Preparation		
3.2 Mixtures			
Hazardous components			
Chemical Name	CAS-No. EC-No. Registration number	Classification (REGULATION (EC) No 1272/2008)	Concentration [%]
2-Ethyl-3-hydroxy-4-pyrone	4940-11-8 225-582-5	Acute Tox.: 4 (Oral); H302	>= 1 - < 5
Methyl anthranilate	134-20-3 205-132-4	Eye Irrit.: 2; H319	>= 1 - < 5
For the full text of the H-Statements mentioned in this Section, see Section 16.			
SECTION 4: FIRST AID MEASURES			
4.1 Description of first aid measures			
General advice	: No hazards which require special first aid measures. Never give anything by mouth to an unconscious person.		
Inhalation	: Move to fresh air. In the case of inhalation of aerosol/mist consult a physician if necessary.		
Skin contact	: Wash with water and soap as a precaution.		
Eye contact	: Flush eyes with water as a precaution.		
Ingestion	: If a person vomits when lying on his back, place him in the recovery position. Never give anything by mouth to an unconscious person. Drink water as a precaution.		
4.2 Most important symptoms and effects, both acute and delayed			
No data available			
4.3 Indication of any immediate medical attention and special treatment needed			
No data available			
SECTION 5: FIREFIGHTING MEASURES			
5.1 Extinguishing media			
Suitable extinguishing media	: Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.		

SAFETY DATA SHEET according to Regulation (EC) No. 1907/2006 219504 GRAPE FLAVOUR	
Version 4	Revision Date 31.10.2015 Print Date 03.05.2017
Extinguishing media which shall not be used for safety reasons	: High volume water jet
5.2 Special hazards arising from the substance or mixture	
Specific hazards during firefighting	: Do not use a solid water stream as it may scatter and spread fire.
5.3 Advice for firefighters	
Special protective equipment for firefighters	: In the event of fire, wear self-contained breathing apparatus.
Further information	: In the event of fire and/or explosion do not breathe fumes. Use water spray to cool unopened containers.
SECTION 6: ACCIDENTAL RELEASE MEASURES	
6.1 Personal precautions, protective equipment and emergency procedures	
Personal precautions	: Ensure adequate ventilation. Keep people away from and upwind of spill/leak.
6.2 Environmental precautions	
Environmental precautions	: No special environmental precautions required.
6.3 Methods and materials for containment and cleaning up	
Methods for cleaning up	: Sweep up or vacuum up spillage and collect in suitable container for disposal. Wipe up with absorbent material (e.g. cloth, fleece).
Additional advice	: Suppress (knock down) gases/vapours/mists with a water spray jet.
6.4 Reference to other sections	
For personal protection see section 8.	
SECTION 7: HANDLING AND STORAGE	
7.1 Precautions for safe handling	
Advice on safe handling	: No special precautions required. For personal protection see section 8.
Advice on protection against fire and explosion	: When using do not smoke.
7.2 Conditions for safe storage, including any incompatibilities	
Requirements for storage areas and containers	: Store in original container. Keep in a dry, cool place. To maintain product quality, do not store in heat or direct sunlight.
Advice on common storage	: No special restrictions on storage with other products.

SAFETY DATA SHEET according to Regulation (EC) No. 1907/2006 219504 GRAPE FLAVOUR				
Version 4	Revision Date 31.10.2015 Print Date 03.05.2017			
7.3 Specific end use(s)				
Flavor mix				
SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION				
8.1 Control parameters				
Components with workplace control parameters, Germany:				
Components	CAS-No.	Control parameters	Update	Basis
Ethyl acetate	141-78-6	AGW 400 ppm	06 2008	TRGS 900
Components with workplace control parameters, United Kingdom:				
Components	CAS-No.	Control parameters	Update	Basis
Propane-1,2-diol	57-55-6	TWA 150 ppm TWA 10 mg/m ³	2005	EH40 WEL EH40 WEL
Ethyl acetate	141-78-6	TWA 200 ppm STEL 400 ppm	2005	EH40 WEL EH40 WEL
Components with workplace control parameters, France:				
Components	CAS-No.	Control parameters	Update	Basis
Ethyl acetate	141-78-6	VME 400 ppm	06 2006	INRS (FR)
Components with workplace control parameters, Poland:				
Components	CAS-No.	Control parameters	Update	Basis
Ethyl acetate	141-78-6	NDSch 600 mg/m ³ NDS 200 mg/m ³	11 2002 11 2002	POL MAC POL MAC
8.2 Exposure controls				
Engineering measures				
none				
Personal protective equipment				
Respiratory protection	: Not required, except in case of aerosol formation.			
Hand protection	: Wear chemicals-resistant gloves, e.g. safety gloves of chloroprene Level 2 or of butyl rubber Level 6.			
Eye protection	: Safety glasses			
Skin and body protection	: Skin should be washed after contact.			
Hygiene measures	: Wash hands before breaks and immediately after handling the product. General industrial hygiene practice.			
Protective measures	: Avoid contact with skin. When using do not eat, drink or smoke.			

SAFETY DATA SHEET	
according to Regulation (EC) No. 1907/2006	
219504 GRAPE FLAVOUR	
Version 4	Revision Date 31.10.2015 Print Date 03.05.2017
SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES	
9.1 Information on basic physical and chemical properties	
Appearance	
Form	: clear liquid
Colour	: colorless to light yellow
Odour	: characteristic
Odour Threshold	: No data available
Safety data	
Flash point	: 85 °C
Water solubility	: completely miscible
Relative density	: 1,0260 - 1,0460 at 20 °C relation to density of water at 4°C
Bulk density	:
Relative vapour density	: not determined
Vapour pressure	: < 1 kPa at 50 °C calculated
Melting point/freezing point	: not determined
Boiling point	: not determined
Partition coefficient: n-octanol/water	: log Pow: Not applicable
pH	: not determined
Evaporation rate	: Not applicable
Flammability (solid, gas)	: Not applicable
Auto-ignition temperature	: The substance or mixture is not classified as self heating.
Decomposition temperature	: No data available
Oxidizing properties	: The substance or mixture is not classified as oxidizing.
Explosive properties	: Due to its structural properties, the product is not classified as explosive
Lower explosion limit	: Vapours may form explosive mixtures with air.
Upper explosion limit	: Vapours may form explosive mixtures with air.
A final assessment of potential explosion hazards can only be made on a case-by-case basis when precise information is available on product handling, production setup and the circumstances surrounding the use of the product.	

SAFETY DATA SHEET	
according to Regulation (EC) No. 1907/2006	
219504 GRAPE FLAVOUR	
Version 4	Revision Date 31.10.2015 Print Date 03.05.2017
9.2 Other data	
None.	
SECTION 10: STABILITY AND REACTIVITY	
10.1 Reactivity	: No data available
10.2 Chemical stability	: No data available
10.3 Possibility of hazardous reactions	: No dangerous reaction known under conditions of normal use.
10.4 Conditions to avoid	: No data available
10.5 Incompatible materials to avoid	: No data available
10.6 Hazardous decomposition products	: No data available
SECTION 11: TOXICOLOGICAL INFORMATION	
11.1 Information on toxicological effects	
Acute oral toxicity	: Acute toxicity estimate : > 2.000 mg/kg, Calculation method
Acute inhalation toxicity	: No data available
Acute dermal toxicity	: No data available
Repeated dose toxicity	: No data available
Acute toxicity (other routes of administration)	: No data available
Skin irritation	: No data available
Eye irritation	: No data available
Sensitisation	: No data available
Mutagenicity	: No data available
Carcinogenicity	: No data available
Reproductive toxicity	: No data available
Teratogenicity	: No data available
Specific target organ toxicity - single exposure	: No data available
Specific target organ toxicity - repeated exposure	: No data available
Aspiration toxicity	: No data available
SECTION 12: ECOLOGICAL INFORMATION	
12.1 Toxicity	

SAFETY DATA SHEET	
according to Regulation (EC) No. 1907/2006	
219504 GRAPE FLAVOUR	
Version 4	Revision Date 31.10.2015 Print Date 03.05.2017
No data available	
12.2 Persistence and degradability	No data available
12.3 Bioaccumulative potential	No data available
12.4 Mobility in soil	No data available
12.5 Results of PBT and vPvB assessment	This substance/mixture contains no components considered to be either persistent, bioaccumulative and toxic (PBT), or very persistent and very bioaccumulative (vPvB) at levels of 0.1% or higher.
12.6 Other adverse effects	
SECTION 13: DISPOSAL CONSIDERATIONS	
13.1 Waste treatment methods	
Product	: Where possible recycling is preferred to disposal or incineration. If recycling is not practicable, dispose of in compliance with local regulations.
Contaminated packaging	: Empty remaining contents. Dispose of as unused product.
SECTION 14: TRANSPORT INFORMATION	
14.1 UN number	Not classified as dangerous in the meaning of transport regulations.
14.2 Proper shipping name	Not classified as dangerous in the meaning of transport regulations.
14.3 Transport hazard class	Not classified as dangerous in the meaning of transport regulations.
14.4 Packing group	Not classified as dangerous in the meaning of transport regulations.
14.5 Environmental hazards	Not classified as dangerous in the meaning of transport regulations.
14.6 Special precautions for user	Not classified as dangerous in the meaning of transport regulations.
14.7 Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code	Not classified as dangerous in the meaning of transport regulations.

SAFETY DATA SHEET	
according to Regulation (EC) No. 1907/2006	
219504 GRAPE FLAVOUR	
Version 4	Revision Date 31.10.2015 Print Date 03.05.2017
SECTION 15: REGULATORY INFORMATION	
15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture	
National legislation	
Risk classification according to BstStichV (Germany)	: Exempt
Water contaminating class (Germany)	: WGK 1 (slightly water endangering) Calculation acc. Annex 4 to VwVwS
15.2 Chemical Safety Assessment	
No data available	
SECTION 16: OTHER INFORMATION	
Full text of H-Statements referred to under sections 2 and 3.:	
H302	Harmful if swallowed.
H319	Causes serious eye irritation.
Further information	
The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.	
Any data changes with reference to previous versions are marked by a vertical line in front of the concerned paragraph.	

Grap Flavor Sensient (GRV)



Safety Data Sheet
GRAPE FLAVOR
Safety Data Sheet dated 12/26/2019 version 2

1. Chemical Product and company Identification
Product identifier
 Mixture identification:
 Trade name: GRAPE FLAVOR
 Trade code: 97AAB033
Relevant identified uses of the substance or mixture and uses advised against
 Recommended use: Not Available
 Uses advised against: Not Available
Details of the supplier of the safety data sheet
 Company:
 SENSIENT TECHNOLOGIES CORP. (CHINA) LTD.
 17 JUNDA ROAD, EAST ZONE, GETDO, GUANGZHOU, CHINA 510530
 Tel: +86-20-82226218
Emergency telephone number
 Tel: 020-82226218

2. Hazards identification
Emergency overview:
 Not Available
Classification of the substance or mixture
 Aquatic Acute 3 Harmful to aquatic life
Label elements
Hazard statements
 H402 Harmful to aquatic life
Precautionary statements
 P273 Avoid release to the environment.
 P501 Dispose of contents/container to ...
Hazards identification:
 Physical hazards: Not Available
 Health hazards: Not Available
 Environmental hazards: Not Available
Other hazards
 No PBT Ingredients are present
 Other Hazards: No other hazards

3. Composition/information on ingredients
Substances
 Not Available
Mixtures
 Mixture identification: GRAPE FLAVOR
List of components

Qty	Name	Ident. Num.	Classification	Registration Number
3-5 %	Methyl anthranilate	CAS:134-20-3 EC:205-132-4	Acute Tox. 5, H303; Eye Irrit. 2A, H319; Skin Irrit. 3, H316; Aquatic Acute 2, H401	
0.1-0.25 %	Cinnamic alcohol	CAS:104-54-1 EC:203-212-3	Acute Tox. 5, H303; Skin Sens. 1, H317	

Product code: 97AAB033
 Print date: 16 December 2020

Page n. 1 of 7

4. First aid measures
Description of first aid measures
 In case of skin contact:
 Wash with plenty of water and soap.
 In case of eyes contact:
 Wash immediately with water.
 In case of ingestion:
 Do not induce vomiting, get medical attention showing the SDS and label hazardous.
 In case of inhalation:
 Remove casualty to fresh air and keep warm and at rest.
Most important symptoms and effects, both acute and delayed
 Not Available
Advice for first aid responders
 Not Available
Indication of any immediate medical attention and special treatment needed
 Not Available

5. Firefighting measures
Extinguishing media
 Suitable extinguishing media:
 Water.
 Carbon dioxide (CO2).
 Extinguishing media which must not be used for safety reasons:
 None in particular.
Special hazards arising from the substance or mixture
 Do not inhale explosion or combustion gases.
 Burning produces heavy smoke.
Advice for firefighters and protective measures
 Use suitable breathing apparatus.
 Collect contaminated fire extinguishing water. Do not discharge into drains.
 Move undamaged containers from immediate hazard area but only if it can be done safely.

6. Accidental release measures
Personal precautions, protective equipment and emergency procedures
 Wear personal protection equipment.
 Remove persons to safety.
 See protective measures under point 7 and 8.
Environmental precautions
 Do not allow to enter into soil/subsoil. Do not allow to enter into surface water or drains.
 Retain contaminated washing water and dispose it.
 In case of gas escape or if entry into waterways, soil or drains, inform the responsible authorities.
 Suitable material for taking up: absorbing material, organic, sand
Methods and material for containment and cleaning up
 Suitable material for taking up: absorbing material, organic, sand
 Wash with plenty of water.
 See also sections 8 and 13
Precautionary measures to prevent the occurrence of secondary hazard
 Not Available

7. Handling and storage
Precautions for safe handling
 Avoid contact with skin and eyes, inhalation of vapours and mists.
 Don't use empty container before they have been cleaned.
 Before making transfer operations, assure that there aren't any incompatible material residuals in the containers.
 Contaminated clothing should be changed before entering eating areas.
 Do not eat or drink while working.
 See also section 8 for recommended protective equipment.
Conditions for safe storage, including any incompatibilities
 Incompatible materials:
 None in particular.
 Product code: 97AAB033

Strawberry flavor



SAFETY DATA SHEET
THAI FLAVOUR AND FRAGRANCE CO.,LTD

Product : STRAWBERRY TF 2000

Date : April 30, 2012

Page 1 (3)

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Trade name : STRAWBERRY TF 2000

Product Use : Flavour for consumer product

Manufacturer : THAI FLAVOUR & FRAGRANCE

Tel.nr. : (66)26717000

2. COMPOSITION / INFORMATION ON INGREDIENTS

Chem. identifi. : Flavouring composition

CAS number : Not applicable, product is a mixture.

EINECS/ELINCS number : Not applicable, product is a mixture.

This product is a complex mixture of flavour ingredients, which contains among others the following substance(s), presenting a health or environmental hazard within the meaning of Directive 67/548/EEC, or having an occupational exposure limit:

none to be reported.

3. HAZARD IDENTIFICATION

General : -Flavouring composition. When undiluted and not properly handled, can be irritating to the skin and eyes and upon inhalation.

-Combustible material.

Hazard symbol : none required.

Risk-phrases : none required.

Environment : When spilled, can contaminate soil, ground- and surface water.

4. FIRST AID MEASURES

Inhalation : Remove from exposure site to fresh air and keep at rest. Obtain medical advice.

Eye exposure : Flush immediately with water for at least 15 minutes. Contact physician if symptoms persist.

Skin exposure : Remove contaminated clothes. Wash thoroughly with water (and soap). Contact physician if symptoms persist.

Ingestion : Rinse mouth with water and obtain medical advice.

Others : Take Risk and Safety phrases (section 15) into account.

5. FIRE-FIGHTING MEASURES

Extinguishing media : Carbon dioxide, dry chemical, foam. Do not use a direct waterjet on burning material.



6. ACCIDENTAL RELEASE MEASURES

Personal precautions : Avoid inhalation and contact with skin and eyes. A self-contained breathing apparatus is recommended in case of a major spill.


TFF		SAFETY DATA SHEET	
		THAI FLAVOUR AND FRAGRANCE CO.,LTD	
Product	: STRAWBERRY TF 2080	Page	2 (3)
Date	: April 30, 2012		
Spillage	: Remove ignition sources. Provide adequate ventilation. Avoid excessive inhalation of vapours. Gross spillages should be contained by use of sand or inert powder and disposed of according to the local regulations.		
Environmental precautions	: Keep away from drains, surface and groundwater and soil.		
7. HANDLING AND STORAGE			
Handling	: Apply according to good manufacturing and industrial hygiene practices with proper ventilation. Do not drink, eat or smoke while handling. Respect good personal hygiene.		
Storage	: Store in a cool, dry and ventilated area away from heat sources and protected from light in tightly closed original container. Avoid plastic and uncoated metal container. Keep air contact to a minimum.		
Fire protection	: Keep away from ignition sources and naked flame.		
8. EXPOSURE CONTROLS/PERSONAL PROTECTION			
Respiratory protection	: Avoid excessive inhalation of concentrated vapour. Apply local ventilation where appropriate.		
Eye protection	: Use of goggles is recommended.		
Skin protection	: Avoid skin contact. Use chemically resistant gloves as needed.		
Ingredient(s) with EU occupational exposure limit: none to be reported.			
9. PHYSICAL AND CHEMICAL PROPERTIES			
Appearance	: CLEAR LIQUID		
Odour	: according to standard		
Colour	: COLORLESS		
pH	: not determined.		
Viscosity	: not applicable		
Crystallizing point	: not determined.		
Boiling point	: not determined.		
Melting point	: not determined.		
Flash point(closed cup)	: >61°C		
Auto ignition temperature	: not determined.		
Explosive limit vol% in air	: none expected.		
Oxidizing prop.	: none expected.		
Vapour pressure(kpa)	: not applicable		
Density(relative) d20/4	: not determined.		
solubility water	: PG		
solubility ethanol	: soluble		
Partition coeff log p. octanol	: not determined.		
Refractive index nd20	: not determined.		

TFF		SAFETY DATA SHEET	
		THAI FLAVOUR AND FRAGRANCE CO.,LTD	
Product	: STRAWBERRY IF 2080	Page	3 (4)
Date	: April 30, 2012		
10. STABILITY AND REACTIVITY			
Reactivity	: Present no significant reactivity hazard, by itself or in contact with water. Avoid contact with strong acids, alkali or oxidizing agents.		
Decomposition	: Carbon monoxide and unidentified organic compounds may be formed during combustion.		
11. TOXICOLOGICAL INFORMATION			
Based on the ingredients in this flavouring composition and their concentrations this product is according to the conventional method of EEC Directive 99/45/EC classified as: not regulated for specific health hazards. Contains :			
12. ECOLOGICAL INFORMATION			
Based on the ingredients in this flavouring composition and their concentrations this product is according to the conventional method of EEC Directive 99/45/EC classified as: not regulated for environmental hazards.			
13. DISPOSAL CONDITIONS			
Dispose of according to local regulations. Avoid disposing into drainage systems and into the environment.			
14. TRANSPORT INFORMATION			
	Class	Pack Group	Sub risk
Road(ADR/RID)	: not regulated		
Air(IATA)	: not regulated		
Sea(IMDG)	: not regulated		
	UN-no.	Marine Pollutant	
		<input type="checkbox"/>	
		<input type="checkbox"/>	
		<input type="checkbox"/>	
15. REGULATORY INFORMATION			
Classification Packing/Labeling	: Directive 99/45/EC		
Hazard symbol	: none required.		
Risk-phrases	: none required.		
S-phrases	: none required.		
Contains	:		
16. OTHER INFORMATION			
Remarks	: R22, Harmful if swallowed.		
Risk-phrases	: R22, Harmful if swallowed.		
The information in this safety data sheet is based on the properties of the material known to Thai Flavour & Fragrance at the time the data sheet was issued. The safety data sheet is intended to provide information for a health and safety assessment of the material and the circumstances under which it is packaged, stored or applied in the workplace. For such a safety assessment Thai Flavour & Fragrance holds no responsibility. This document is not intended for quality assurance purposes.			

Orange Flavor Concentrate (ORT)

SAFETY DATA SHEET according to Regulation (EC) No. 1907/2006		symrise 	
118153 ORANGE FLAVOUR			
Version 2.1	Revision Date 14.12.2017	Print Date 24.05.2018	
SECTION 1: IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING			
1.1 Product identifier			
Commercial Product Name	:	ORANGE FLAVOUR	
Material number	:	118153	
1.2 Relevant identified uses of the substance or mixture and uses advised against			
Use of the Substance/Mixture	:	Flavor mix	
1.3 Details of the supplier of the safety data sheet			
Company	:	Symrise Asia Pacific Pte. Ltd. Pandian Loop Singapore 128412 Singapore	
Telephone	:	+656567794551	
Telefax	:	+656567795843	
E-mail address	:	sds@symrise.com	
For further information, please contact: Symrise AG - Tel.: +49 / (0)5531 / 90-0			
1.4 Emergency telephone number			
Emergency CONTACT (24-Hour-Number) GBK/Infotrac ID 101844; +49(6132)9829021			
SECTION 2: HAZARDS IDENTIFICATION			
2.1 Classification of the substance or mixture			
Classification (REGULATION (EC) No 1272/2008)			
Flammable liquids, Category 3			H226
Skin irritation, Category 2			H315
Serious eye damage, Category 1			H318
Skin sensitisation, Category 1			H317
Aspiration hazard, Category 1			H304
Acute aquatic toxicity, Category 1			H400
Chronic aquatic toxicity, Category 1			H410
2.2 Label elements			
Labelling (REGULATION (EC) No 1272/2008)			
Hazard pictograms	:		

SAFETY DATA SHEET
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Signal word : Danger

Hazard statements : H226 Flammable liquid and vapour.
H304 May be fatal if swallowed and enters airways.
H315 Causes skin irritation.
H317 May cause an allergic skin reaction.
H318 Causes serious eye damage.
H410 Very toxic to aquatic life with long lasting effects.

Precautionary statements : **Prevention:**
P210 Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
P280 Wear protective gloves/protective clothing/eye protection/face protection.
Response:
P301 + P310 IF SWALLOWED: Immediately call a POISON CENTER/doctor.
P303 + P361 + P353 IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.
P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTER/doctor.
P331 Do NOT induce vomiting.

Contains : CYCLOHEXENE, 1-METHYL-4-(1-METHYLETHENYL)-, (R)-, LINALOOL.

2.3 Other hazards
No data available

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS


3.1 Substances
No data available

3.2 Mixtures

Hazardous components

Chemical name	CAS-No. EC-No. Registration number	Classification (REGULATION (EC) No 1272/2008)	Concentration [%]
(R)-p-Mentha-1,8-diene	5989-27-5 227-813-5	Asp. Tox.: 1; H304 Aquatic Chronic: 1; H410 Aquatic Acute: 1; H400 Skin Sens.: 1B; H317 Skin Irrit.: 2; H315 Flam. Liq.: 3; H226	>= 25 - < 50

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Propan-1-ol	71-23-8 200-746-9 01-2119486761-29	Flam. Liq.: 2; H225 Eye Dam.: 1; H318 STOT SE: 3; H336	>= 10 - < 20
Decanal	112-51-2 203-957-4 01-2119967771-26	Eye Irrit.: 2; H319 Aquatic Chronic: 3; H412	>= 1 - < 5
Linalool	78-70-6 201-134-4	Skin Irrit.: 2; H315 Eye Irrit.: 2; H319 Skin Sens.: 1B; H317	>= 1 - < 5
Citral	5392-40-5 226-394-6	Eye Irrit.: 2; H319 Skin Irrit.: 2; H315 Skin Sens.: 1B; H317	>= 0,1 - < 1
Octanal	124-13-0 204-683-8	Eye Irrit.: 2; H319 Skin Irrit.: 2; H315 Flam. Liq.: 3; H226 Aquatic Chronic: 2; H411	>= 0,1 - < 1
Dodecanal	112-54-9 203-983-6	Skin Irrit.: 2; H315 Eye Irrit.: 2; H319 Skin Sens.: 1B; H317	>= 0,1 - < 1
Citronellal	106-23-0 203-376-6	Skin Irrit.: 2; H315 Eye Irrit.: 2; H319 Skin Sens.: 1; H317	>= 0,1 - < 1

For the full text of the H-Statements mentioned in this Section, see Section 16.

SECTION 4: FIRST AID MEASURES

4.1 Description of first aid measures

General advice : Move out of dangerous area.
Never give anything by mouth to an unconscious person.

Inhalation : Move to fresh air.

Skin contact : Take off all contaminated clothing immediately.
If symptoms persist, call a physician.
Wash off immediately with soap and plenty of water.


Eye contact : Protect unharmed eye.
In the case of contact with eyes, rinse immediately with plenty of water and seek medical advice.

Ingestion : Prevent vomiting if possible.
If a person vomits when lying on his back, place him in the recovery position.
Never give anything by mouth to an unconscious person.
If accidentally swallowed obtain immediate medical attention.

4.2 Most important symptoms and effects, both acute and delayed
No data available

4.3 Indication of any immediate medical attention and special treatment needed
No data available

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SECTION 5: FIREFIGHTING MEASURES

5.1 Extinguishing media

Suitable extinguishing media : Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.

Extinguishing media which shall not be used for safety reasons : High volume water jet

5.2 Special hazards arising from the substance or mixture

Specific hazards during firefighting : Flash back possible over considerable distance.
Do not use a solid water stream as it may scatter and spread fire.
Do not allow run-off from fire fighting to enter drains or water courses.

5.3 Advice for firefighters

Special protective equipment for firefighters : In the event of fire, wear self-contained breathing apparatus.

Further information : In the event of fire and/or explosion do not breathe fumes.
Use water spray to cool unopened containers.
Fire residues and contaminated fire extinguishing water must be disposed of in accordance with local regulations.
Collect contaminated fire extinguishing water separately. This must not be discharged into drains.

SECTION 6: ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures

Personal precautions : Ensure adequate ventilation.
Use personal protective equipment.
Remove all sources of ignition.

6.2 Environmental precautions

Environmental precautions : Should not be released into the environment.
Avoid subsoil penetration.
Prevent further leakage or spillage if safe to do so.
If the product contaminates rivers and lakes or drains inform respective authorities.


6.3 Methods and materials for containment and cleaning up

Methods for cleaning up : Darn up.
Wipe up with absorbent material (e.g. cloth, fleece).

Additional advice : Local authorities should be advised if significant spillages cannot be contained.
Suppress (knock down) gases/vapours/mists with a water spray jet.

6.4 Reference to other sections
For personal protection see section 8.

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SECTION 7: HANDLING AND STORAGE

7.1 Precautions for safe handling

Advice on safe handling : Dispose of rinse water in accordance with local and national regulations.
For personal protection see section 8.

Advice on protection against fire and explosion : Take necessary action to avoid static electricity discharge (which might cause ignition of organic vapours).
Use explosion-proof equipment.
Avoid formation of aerosol.
Do not spray on a naked flame or any incandescent material.
When using do not smoke.
Keep away from open flames, hot surfaces and sources of ignition.

7.2 Conditions for safe storage, including any incompatibilities

Requirements for storage areas and containers : Store in original container.
Keep container tightly closed in a dry and well-ventilated place.
To maintain product quality, do not store in heat or direct sunlight.
No smoking.
Containers which are opened must be carefully resealed and kept upright to prevent leakage.


Advice on common storage : No special restrictions on storage with other products.

Other data : No decomposition if stored and applied as directed.

7.3 Specific end use(s)

Flavor mix

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SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1 Control parameters

Components with workplace control parameters, Germany:

Components	CAS-No.	Control parameters	Update	Base
(R)-p-Mentha-1,8-diene	5089-27-3	AGW 5 ppm	04.2013	TRGS 900

Components with workplace control parameters, United Kingdom:

Components	CAS-No.	Control parameters	Update	Base
Propan-1-ol	71-23-8	TWA 200 ppm STEL 250 ppm	12.2011	EH40 WEL EH40 WEL

Components with workplace control parameters, Spain:

Components	CAS-No.	Control parameters	Update	Base
Propan-1-ol	71-23-8	VLA-FD 200 ppm VLA-FC 400 ppm	2012	VLA (ES) VLA (ES)
Litral	5392-40-5	VLA-ED 5 ppm	2013	VLA (ES)

Components with workplace control parameters, France:

Components	CAS-No.	Control parameters	Update	Base
Propan-1-ol	71-23-8	VME 200 ppm	07.2012	INRS (FR)

Components with workplace control parameters, Poland:

Components	CAS-No.	Control parameters	Update	Base
Propan-1-ol	71-23-8	ND3 200 mg/m ³ ND3C 600 mg/m ³	12.2011	PNL HAZ POL MAC
Litral	5392-40-5	ND3C 14 mg/m ³ ND3 27 mg/m ³	12.2011	PNL MAC POL MAC

8.2 Exposure controls

Engineering measures
None

Personal protective equipment

Respiratory protection : No personal respiratory protective equipment normally required.

Hand protection : Barrier creams may help to protect the exposed areas of skin, they should however not be applied once exposure has occurred. Wear chemical-resistant gloves, e.g. safety gloves of chloroprene Level 3 or of butyl rubber Level 6.

Eye protection : Safety glasses

Skin and body protection : Lightweight protective clothing
Remove and wash contaminated clothing before re-use.

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Hygiene measures : Wash hands before breaks and immediately after handling the product.

Protective measures : Avoid contact with skin.
When using, do not eat, drink or smoke.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties

Appearance

Form : liquid

Colour : light yellow to orange-brown

Odour : characteristic

Odour Threshold : No data available

Safety data

Flash point : 31 °C

Water solubility : immiscible

Relative density : 0,9707 - 0,9807 at 20 °C, relation to density of water at 4°C

Bulk density :

Relative vapour density : not determined

Vapour pressure : 16 hPa at 50 °C calculated

Melting point/freezing point : not determined

Boiling point : not determined

Partition coefficient: n-octanol/water : log Pow: Not applicable

pH : not determined

Evaporation rate : Lower than the evaporation rate of butyl acetate = 1

Flammability (solid, gas) : Not applicable

Auto-ignition temperature : The substance or mixture is not classified as self heating.

Decomposition temperature : No data available


Oxidizing properties : The substance or mixture is not classified as oxidizing.

Explosive properties : Due to its structural properties, the product is not classified as explosive

Lower explosion limit : Vapours may form explosive mixtures with air.

Upper explosion limit : Vapours may form explosive mixtures with air.

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A final assessment of potential explosion hazards can only be made on a case-by-case basis when precise information is available on product handling, production setup and the circumstances surrounding the use of the product.

9.2 Other data
None.

SECTION 10: STABILITY AND REACTIVITY

10.1 Reactivity : No data available

10.2 Chemical stability : No data available

10.3 Possibility of hazardous reactions : No dangerous reaction known under conditions of normal use.

10.4 Conditions to avoid : No data available

10.5 Incompatible materials to avoid : No data available

10.6 Hazardous decomposition products : No data available

SECTION 11: TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects

Acute oral toxicity : No data available

Acute inhalation toxicity : No data available

Acute dermal toxicity : No data available

Repeated dose toxicity : No data available

Acute toxicity (other routes of administration) : No data available

Skin irritation : No data available

Eye irritation : No data available

Sensitisation : No data available

Mutagenicity : No data available

Carcinogenicity : No data available


Reproductive toxicity : No data available

Teratogenicity : No data available

Specific target organ toxicity - single exposure : No data available

Specific target organ toxicity - repeated exposure : No data available

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Aspiration toxicity : No data available

SECTION 12: ECOLOGICAL INFORMATION

12.1 Toxicity
No data available

12.2 Persistence and degradability
No data available

12.3 Bioaccumulative potential
No data available

12.4 Mobility in soil
No data available

12.5 Results of PBT and vPvB assessment
This substance/mixture contains no components considered to be either persistent, bioaccumulative and toxic (PBT), or very persistent and very bioaccumulative (vPvB) at levels of 0.1% or higher.

12.6 Other adverse effects
Very toxic to aquatic life with long lasting effects.

SECTION 13: DISPOSAL CONSIDERATIONS

13.1 Waste treatment methods

Product : Where possible recycling is preferred to disposal or incineration. If recycling is not practicable, dispose of in compliance with local regulations.

Contaminated packaging : Empty remaining contents.
Dispose of as unused product.

SECTION 14: TRANSPORT INFORMATION

14.1 UN number

ADR : 1197

RID : 1197

IMDG : 1197

IATA-DGR : 1197

14.2 Proper shipping name

ADR : EXTRACTS, FLAVOURING, LIQUID

RID : EXTRACTS, FLAVOURING, LIQUID


IMDG : EXTRACTS, FLAVOURING, LIQUID (LIMONENE,DECANAL) MP


IATA-DGR : Extracts, flavouring, liquid

14.3 Transport hazard class

ADR : 3

RID : 3

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IMDG	:	3	
IATA-DGR	:	3	
14.4 Packing group			
ADR:			
Packaging group	:	III	
Classification Code	:	F1	
Hazard Identification Number	:	30	
Labels	:	3	
Tunnel restriction code	:	(D/E)	
RID:			
Packaging group	:	III	
Classification Code	:	F1	
Hazard Identification Number	:	30	
Labels	:	3	
IMDG:			
Packaging group	:	III	
Labels	:	3	
EmS - EmS	:	F-E, S-D	
IATA-DGR:			
Packing instruction (cargo aircraft)	:	366	
Qty/Pkg (Cargo)	:	220,00 L	
Packing instruction (passenger aircraft)	:	355	
Qty/Pkg (Passenger)	:	60,00 L	
Packaging group	:	III	
Labels	:	3	
14.5 Environmental hazards			
ADR:			
Environmentally hazardous	:	yes	
RID:			
Environmentally hazardous	:	yes	
IMDG:			
Marine pollutant	:	yes	
14.6 Special precautions for user			
No data available			
14.7 Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code			
Not applicable			
SECTION 15: REGULATORY INFORMATION			
15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture			
National legislation			
Risk classification according to BetrSichV (Germany)	:	Flash point 21 °C to 55 °C, at 15 °C not miscible in water	
Water contaminating class (Germany)	:	WGK 3 (highly water endangering) Calculation acc. Annex 4 to VwVwS	

SAFETY DATA SHEET		symrise 	
according to Regulation (EC) No. 1907/2006			
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15.2 Chemical safety assessment			
No data available			
SECTION 16: OTHER INFORMATION			
Full text of H-Statements referred to under sections 2 and 3.1			
H225	Highly flammable liquid and vapour.		
H226	Flammable liquid and vapour.		
H304	May be fatal if swallowed and enters airways.		
H315	Causes skin irritation.		
H317	May cause an allergic skin reaction.		
H318	Causes serious eye damage.		
H319	Causes serious eye irritation.		
H336	May cause drowsiness or dizziness.		
H400	Very toxic to aquatic life.		
H410	Very toxic to aquatic life with long lasting effects.		
H411	Toxic to aquatic life with long lasting effects.		
H412	Harmful to aquatic life with long lasting effects.		
Further information			
The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.			
Any data changes with reference to previous versions are marked by a vertical line in front of the concerned paragraph.			

Pineapple Flavor

万德 (广州) 国际香料有限公司
M-Tech Aroma International Ltd.

MATERIAL SAFETY DATA SHEET

PAGE 1 OF 3

THIS FLAVOR MATERIALS WERE COMPILED FROM THE LIST OF MATERIALS THAT FLAVOR AND EXTRACT MANUFACTURERS ASSOCIATION (FEMA), FOOD AND DRUG ADMINISTRATION (FDA) HAS INVESTIGATED FOR THEIR SAFETY GUIDELINES IN FLAVOR USE.

PRODUCT IDENTIFICATION

PRODUCT NAME : PINEAPPLE FLAVOR
 PRODUCT NUMBER : MF-1117H
 LOT NUMBER : -
 CLASSIFICATION : ARTIFICIAL FLAVOR

PHYSICAL DATA

REFRACTIVE INDEX AT 25 DEG C : 1.4200-1.4400
 SPECIFIC GRAVITY AT 20 DEG C : 1.0000-1.0200
 APPEARANCE : NON-VISCIOUS SLIGHTLY YELLOW COLOR LIQUID
 ODOUR : CONFORMS TO STANDARD
 APPLICATION : SOFT DRINK
 RECOMMENDED DOSAGE : 0.1%
 STORAGE CONDITION : KEEP IN WELL-FILLED AIR-TIGHT CONTAINER AND AWAY FROM DIRECT HEAT / LIGHT.

SIGNATURE : *Phoke*

ISSUED BY : PHOEBE LIU
 ORIGIN : CHINA
 DATE : DECEMBER 08, 2021

SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE:

- 1) AVOID CONTACT WITH EYES.
- 2) KEEP AWAY FROM HEAT AND FLAME.
- 3) KEEP CONTAINER CLOSED.
- 4) USE THE ADEQUATE VENTILATION.
- 5) WASH THOROUGHLY AFTER HANDLING.
- 6) ANY USE OF THIS PRODUCT IN ELEVATED-TEMPERATURE PROCESSES SHOULD BE THOROUGHLY EVALUATED TO ESTABLISH AND MAINTAIN SAFE OPERATING CONDITIONS.

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HAZARDS IDENTIFICATION

GENERAL : NOT PROPERLY HANDLED THEY MAY BE IRRITATING TO SKIN AND EYES.
 HAZARD SYMBOL : NOT REGULATED AS DANGEROUS
 ENVIRONMENT : KEEP AWAY FROM DRAINS, SURFACE AND GROUND WATER, AND RIB, TO AVOID POSSIBLE CONTAMINATION.

FIRST AID MEASURES

EYE CONTACT
 FLUSH WITH WATER FOR AT LEAST 15 MINUTE. IF IRRITATION DEVELOPES, GET MEDICAL ATTENTION.

SKIN CONTACT
 REMOVE CONTAMINATED CLOTHES. WASH AFFECTED AREAS WITH PLENTY OF SOAP AND WATER. IF IRRITATION DEVELOPES, GET MEDICAL ATTENTION.

INHALATION
 SEEK FRESH AIR IMMEDIATELY. IF BREATHING IS DIFFICULT, GET MEDICAL ATTENTION.

INGESTION
 DRINK LOTS OF WATER TO DILUTE SUBSTANCE. GET MEDICAL ATTENTION IMMEDIATELY.

FIRE FIGHTING MEASURES

MEANS OF EXTINGUISHING
 CARBON DIOXIDE, DRY CHEMICAL FOAM. IF WATER MUST BE USED, USE AS A SPRAY ONLY.

UNUSUAL FIRE / EXPLOSION HAZARD
 FLAMMABLE LIQUID. AVOID HEAT, SPARKS AND OPEN FLAMES.

INSTABILITY
 CARBON DIOXIDE, CARBON MONOXIDE, ACID FUMES.

ACCIDENTAL RELEASE MEASURES

PERSONAL PROTECTION
 REFER TO SECTION FOR PERSONAL PROTECTION EQUIPMENT INFORMATION.

ENVIRONMENTAL PRECAUTIONS
 DO NOT DISCHARGE INTO LAKES, STREAMS, PONDS OR PUBLIC WATERS.

CLEANUP PROCEDURES
 SMALL SPILLS SHOULD BE ADSORBED BY DIRT, SAND OR OTHER SUITABLE ADSORBENT. LARGE SPILLS MAY BE PUMPED INTO CLOSED CONTAINERS FOR RECOVERY OR DISPOSAL.

HANDLING
 WEAR SAFETY GLASSES OR GOGGLES, RUBBER GLOVES AND APRON WHEN HANDLING.

EXPOSURE CONTROLS / PERSONAL PROTECTION EQUIPMENT

EXPOSURE CONTROLS
VENTILATION
 NOT NORMALLY REQUIRED. LOCAL MECHANICAL EXHAUST MAY BE NEEDED IN CONFINED AND WARM AREAS.

SAFETY DATA SHEETS
 AN EYE WASH AND SAFETY SHOWER SHOULD BE READILY AVAILABLE.

UNUSUAL HAZARD INFORMATION
 CLEAN CONTAMINATED EQUIPMENT WITH SOAP AND WATER. DO NOT DISCHARGE WASH WATER INTO LAKES, STREAMS, PONDS OR PUBLIC WATERS.

中国 广州市 白云区 北太路 1633号 广州经济技术开发区 科兴路 19号 206室 邮编: 510540
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M-Tech Aroma International Ltd.

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PERSONAL PROTECTION EQUIPMENT

EYE PROTECTION
 WEAR SAFETY GLASSES OR GOGGLES.

HAND PROTECTION
 WEAR STANDARD INDUSTRIAL TYPE RUBBER GLOVES.

SKIN PROTECTION
 A RUBBER APRON IS RECOMMENDED WHEN HANDLING LARGE QUANTITIES OF THIS MATERIAL.

RESPIRATORY PROTECTION
 A RESPIRATOR IS NOT NORMALLY REQUIRED. IF THE VAPOR CONCENTRATION IS HIGH, USE A NIOSH APPROVED HIGH ORGANIC VAPOR RESPIRATOR.

STABILITY AND REACTIVITY

CONDITIONS TO AVOID
 PROLONGED OR EXCESSIVE HEAT AND/OR EXPOSURE TO AIR MAY CAUSE DECOMPOSITION OR OXIDATION OF THE MATERIAL.

MATERIALS TO AVOID / HAZARDOUS DECOMPOSITION PRODUCTS
 AVOID CONTACT WITH STRONG ACIDS, STRONG BASES, AND MATERIALS THAT REACT WITH UNSATURATED HYDROCARBONS.

DISPOSAL CONSIDERATIONS

DISPOSAL METHODS
 OBSERVE ALL FEDERAL, STATE AND LOCAL REGULATIONS WHEN DISPOSING OF THIS MATERIAL.

SAFE HANDLING OF WASTES
 REFER TO SECTION FOR INFORMATION ON PERSONAL PROTECTION EQUIPMENT AND EXPOSURE CONTROLS WHEN HANDLING THIS MATERIAL FOR DISPOSAL.

COMBUSTIBILITY PROVISIONS
 DISPOSE OF THIS MATERIAL AT A GOVERNMENT APPROVED LANDFILL, INCINERATOR, OR RECOVERY FACILITY.

TRANSPORT INFORMATION

AIR SHIPPING (ATA) : NON-HAZARDOUS
 OCEAN SHIPPING (IMDG) : NON-HAZARDOUS

REGULATORY INFORMATION

CALLS ALL REGULATIONS IN YOUR COUNTRY OR REGION.

ELINCS : THIS PRODUCT DOES NOT COMPLY WITH ELINCS.

TSCA : YES

RISK PHRASES : R36 - IRRITATING TO SKIN.
 R40 - MAY CAUSE SENSITIZATION BY SKIN CONTACT.

SAFETY PHRASES : S24 - AVOID CONTACT WITH THE SKIN.
 S37 - WEAR SUITABLE GLOVES.
 S61 - AVOID RELEASE TO THE ENVIRONMENT.

REFER TO SPECIAL INSTRUCTIONS / SAFETY DATA SHEETS.
 M-Tech AROMA INTERNATIONAL LTD. IS NOT ABLE TO CHECK UP THE REGULATORY INFORMATION RELATED TO THE SUBSTANCES IN YOUR COUNTRY OR REGION, THEREFORE, WE REQUEST THIS MATTER SHOULD BE FILED BY YOUR RESPONSIBILITY.

OTHER INFORMATION

THE INFORMATION PROVIDED IN THIS MATERIAL SAFETY DATA SHEET IS CORRECT TO THE BEST OF OUR KNOWLEDGE. THE INFORMATION GIVEN IS DESIGNED ONLY AS A GUIDANCE FOR SAFE HANDLING, USE, PROCESSING, STORAGE, TRANSPORTATION, DISPOSAL AND RELEASE AND IS NOT TO BE CONSIDERED A WARRANTY OR QUALITY SPECIFICATION.

END OF MATERIAL SAFETY DATA SHEET

中国 广州市 白云区 北太路 1633号 广州经济技术开发区 科兴路 19号 206室 邮编: 510540
 ROOM 206, NO.19, KEKING ROAD, GUANGZHOU CIVIL SCIEN-TECH PARK, NO.1633, BEITAI ROAD, BAIYUN DISTRICT, GUANGZHOU CITY, GUANGDONG PROVINCE, CHINA
 TEL: +86 20 3731 2020 FAX: +86 20 3731 4337
 E-MAIL: sales@city-flavor.com

万德 (广州) 国际香料有限公司
M-Tech Aroma International Ltd.

PAGE 1 OF 3

THIS FLAVOR MATERIALS WERE COMPILED FROM THE LIST OF MATERIALS THAT FLAVOR AND EXTRACT MANUFACTURERS ASSOCIATION (FEMA), FOOD AND DRUG ADMINISTRATION (FDA) HAS INVESTIGATED FOR THEIR SAFETY GUIDELINES IN FLAVOR USE.

PRODUCT IDENTIFICATION

PRODUCT NAME : ORANGE CONCENTRATE
 PRODUCT NUMBER : MF-1111H
 LOT NUMBER : -
 CLASSIFICATION : NATURAL IDENTICAL FLAVOR

PHYSICAL DATA

REFRACTIVE INDEX AT 25 DEG C : 1.4230-1.4830
 SPECIFIC GRAVITY AT 20 DEG C : 0.8940-0.9340
 APPEARANCE : NON-VISCIOUS YELLOW COLOR LIQUID
 ODOUR : CONFORMS TO STANDARD
 APPLICATION : -
 RECOMMENDED DOSAGE : 0.1%
 STORAGE CONDITION : KEEP IN WELL-FILLED AIR-TIGHT CONTAINER AND AWAY FROM DIRECT HEAT / LIGHT.

SIGNATURE : *Phoke*


ISSUED BY : PHOEBE LIU
 ORIGIN : CHINA
 DATE : DECEMBER 08, 2021

SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE:

- 1) AVOID CONTACT WITH EYES.
- 2) KEEP AWAY FROM HEAT AND FLAME.
- 3) KEEP CONTAINER CLOSED.
- 4) USE THE ADEQUATE VENTILATION.
- 5) WASH THOROUGHLY AFTER HANDLING.
- 6) ANY USE OF THIS PRODUCT IN ELEVATED-TEMPERATURE PROCESSES SHOULD BE THOROUGHLY EVALUATED TO ESTABLISH AND MAINTAIN SAFE OPERATING CONDITIONS.

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PAGE 2 OF 3

HAZARDS IDENTIFICATION

GENERAL : NOT PROPERLY HANDLED THIS MAY BE IRRITATING TO SKIN AND EYES.
HAZARD SYMBOL : NOT REGULATED AS DANGEROUS
ENVIRONMENT : KEEP AWAY FROM DRAINS, SURFACE AND GROUND WATER, AND SOIL TO AVOID POSSIBLE CONTAMINATION.

FIRST AID MEASURES

EYE CONTACT
FLUSH WITH WATER FOR AT LEAST 15 MINUTES. IF IRRITATION DEVELOPES, GET MEDICAL ATTENTION.

SKIN CONTACT
REMOVE CONTAMINATED CLOTHING. WASH AFFECTED AREAS WITH PLENTY OF SOAP AND WATER. IF IRRITATION DEVELOPES, GET MEDICAL ATTENTION.

INHALATION
SEEK FRESH AIR IMMEDIATELY. IF BREATHING IS DIFFICULT, GET MEDICAL ATTENTION.

INGESTION
DRINK LOTS OF WATER TO DILUTE SUBSTANCE. GET MEDICAL ATTENTION IMMEDIATELY.

FIRE FIGHTING MEASURES

MEANS OF EXTINCTION
CARBON DIOXIDE, DRY CHEMICAL, FOAM. IF WATER MUST BE USED, USE AS A SPRAY ONLY.

UNUSUAL FIRE / EXPLOSION HAZARDS
FLAMMABLE LIQUID. AVOID HEAT, SPARKS AND OPEN FLAMES.

INHALATION
CARBON DIOXIDE, CARBON MONOXIDE, ACRID FUMES.

ACCIDENTAL RELEASE MEASURES

PERSONAL PRECAUTIONS
REFER TO SECTION FOR PERSONAL PROTECTION EQUIPMENT INFORMATION.

ENVIRONMENTAL PRECAUTIONS
DO NOT DISCHARGE INTO LAKES, STREAMS, PONDS OR PUBLIC WATERS.

CLEANUP PROCEDURES
SMALL SPILLS SHOULD BE ADSORBED BY DIRT, SAND OR OTHER SUITABLE ABSORBENT. LARGE SPILLS MAY BY PUMPED INTO CLOSED CONTAINERS FOR RECOVERY OR DISPOSAL.

HANDLING
WEAR SAFETY GLASSES OR GOGGLES, RUBBER GLOVES AND APRON WHEN HANDLING.

EXPOSURE CONTROLS / PERSONAL PROTECTION EQUIPMENT

EXPOSURE CONTROLS

VENTILATION
NOT NORMALLY REQUIRED. LOCAL MECHANICAL EXHAUST MAY BE NEEDED IN CONFINED AND WARM AREAS.

SAFETY STATIONS
AN EYEWASH AND SAFETY SHOWER SHOULD BE READILY AVAILABLE.

CONTAMINATED EQUIPMENT
CLEAN CONTAMINATED EQUIPMENT WITH SOAP AND WATER. DO NOT DISCHARGE WASH WATER INTO LAKES, STREAMS, PONDS OR PUBLIC WATERS.

中国 广州市 白云区 北太路 1633号 广州民营科技园 科兴路 19号 205房 邮编: 510640
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PAGE 3 OF 3

PERSONAL PROTECTION EQUIPMENT

EYE PROTECTION
WEAR SAFETY GLASSES OR GOGGLES.

HAND PROTECTION
WEAR STANDARD INDUSTRIAL TYPE RUBBER GLOVES.

SKIN PROTECTION
A RUBBER APRON IS RECOMMENDED WHEN HANDLING LARGE QUANTITIES OF THIS MATERIAL.

RESPIRATORY PROTECTION
A RESPIRATOR IS NOT NORMALLY REQUIRED. IF THE VAPOR CONCENTRATION IS HIGH, USE A NIOSH APPROVED HORGANIC VAPOR RESPIRATOR.

STABILITY AND REACTIVITY

CONDITIONS TO AVOID
PROLONGED OR EXCESSIVE HEAT AND/OR EXPOSURE TO AIR MAY CAUSE DECOMPOSITION OR OXIDATION OF THE MATERIAL.

MATERIALS TO AVOID / HAZARDOUS DECOMPOSITION PRODUCTS
AVOID CONTACT WITH STRONG ACIDS, STRONG BASES, AND MATERIALS THAT REACT WITH UNSATURATED HYDROCARBONS.

DISPOSAL CONSIDERATIONS

DISPOSAL METHODS
OBSERVE ALL FEDERAL, STATE AND LOCAL REGULATIONS WHEN DISPOSING OF THIS MATERIAL.

SAFE HANDLING OF WASTES
REFER TO SECTION FOR INFORMATION ON PERSONAL PROTECTION EQUIPMENT AND EXPOSURE CONTROLS WHEN HANDLING THIS MATERIAL FOR DISPOSAL.

COMMUNITY PROVISIONS
DISPOSE OF THIS MATERIAL AT A GOVERNMENT APPROVED LANDFILL, INCINERATOR, OR RECOVERY FACILITY.

TRANSPORT INFORMATION

AIR SHIPPING (IATA) : NON-HAZARDOUS
OCEAN SHIPPING (IMDG) : NON-HAZARDOUS

REGULATORY INFORMATION

FOLLOW ALL REGULATIONS IN YOUR COUNTRY OR REGION.

ELINCS : THIS PRODUCT DOES NOT COMPLY WITH ELINCS
TSCA : YES
RISK PHRASES : R38 - IRRITATING TO SKIN,
R43 - MAY CAUSE SENSITIZATION BY SKIN CONTACT.
SAFETY PHRASES : S24 - AVOID CONTACT WITH THE SKIN,
S37 - WEAR SUITABLE GLOVES,
S61 - AVOID RELEASE TO THE ENVIRONMENT.
REFER TO SPECIAL INSTRUCTIONS / SAFETY DATA SHEETS.

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Aspartame Powder (P-APT)

Safety Data Sheet
Nantong Changhai Food Additive Co., Ltd.
No. 15, Daqing Road, Qinglong Chemical Industry Yard
Haimes City, Jiangsu, China 226121

Section 1 – Identification

Product Name: Aspartame
Synonyms: Asp-Phe Methyl Ester, Asp-Phe-OMe, N-(L-alpha-Aspartyl)-L-phenylalanine methyl ester
Company: Nantong Changhai Food Additive Company
No. 15, Daqing Road, Qinglong Chemical Industry Yard, Haimes City, Jiangsu, China 226121
Technical/ Emergency Contact: 0086(513)82909666
Fax: 0086(513)82747448
Intended Uses: Sweetener, Food Additive

Section 2 – Hazards Identification

HMS Rating:
HEALTH: 0
FLAMMABILITY: 0
REACTIVITY: 0
NFPA Rating:
HEALTH: 0
FLAMMABILITY: 0
REACTIVITY: 0

Warning: Finely dispersed particles are sensitive to dust explosion
Medical condition aggravated by exposure: phenylketonuria (PKU)

Section 3 – Composition/Information on Ingredient

FORMULA: C₁₄H₁₆N₂O₅
MOLECULAR WEIGHT: 294.3
CAS #: 22839-47-0
EC-No.: 245-261-3
Chemical Name: N-(L-alpha-Aspartyl)-L-phenylalanine methyl ester
% by Weight: 100

Section 4 – First Aid Measures

If used under ordinary circumstances no special treatment is necessary. Wash thoroughly after handling
Oral Exposure: Not toxic if swallowed in small amounts based on toxicology studies.
Inhalation Exposure: Move to fresh air, if breathing becomes difficult call a physician.

Document: SDS Issue Date: January 01, 2018 1-4

Safety Data Sheet
Nantong Changhai Food Additive Co., Ltd.
No. 15, Daqing Road, Qinglong Chemical Industry Yard
Haimes City, Jiangsu, China 226121

Dermal Exposure: No special treatment required. Flush with copious amount of water if needed.
Eye Exposure: Flush eyes with copious amounts of water for at least 15 minutes. Call a physician.

Section 5 – Fire Fighting Measures

Flash Point: N/A
Auto Ignition Temperature: N/A
Flammability: N/A
Stable under normal conditions. Special consideration should be taken to ensure the potential for dust concentration in the flammable range is minimized.
Extinguishing Media: Suitable: Water spray, Carbon Dioxide, dry chemical powder, or appropriate foam.
Firefighting: Protective Equipment: Wear self contained breathing apparatus and protective clothing to prevent contact with skin and eyes.

Section 6 – Accidental Release Measures

Procedure for Personal Precaution: Wear appropriate protective equipment
Method for Cleaning Up: Sweep up, place in bag and hold for waste disposal. Avoid raising dust. Ventilate area and wash spill area after material pickup is complete.

Section 7 – Handling and Storage

Handling: Avoid creating dusty conditions, inhalation, eye, skin and clothing contact. Worker exposure can be minimized if good industrial hygiene practices are utilized.
Storage: Keep container tightly closed. Store in a cool, dry area.

Section 8 – Exposure Controls/Personal Protection

Engineering Controls: It is recommended that mechanical exhaust is utilized to minimize hazards contributed to dust explosions.
Personal Protective Equipment: Utilize appropriate PPE for handling of powders. Eye goggles, gloves and dust masks will create a more comfortable work environment.
General Hygiene Measures: Wash thoroughly after handling.

Recommended Airborne Exposure Limits for applicable dusts:

OSHA PEL	ACGIH TLV:
15mg/m ³ (Total Dust) 8-hour TWA	10 mg/m ³ (inhalable) 8 – TWA
5 mg/m ³ (respirable) 8-hour TWA	3mg/m ³ (respirable) 8-hour TWA

Safety Data Sheet
Nantong Changhai Food Additive Co., Ltd.
No. 15, Daqing Road, Qinglong Chemical Industry Yard
Haimes City, Jiangsu, China 226121

Section 9 – Physical and Chemical Properties

Appearance: White crystalline powder or granule	Partition Coefficient:n-octanol/water: N/A
Odor: Practically odorless	Evaporation Rate: N/A
Purity (on dry basis): 98-102%	Vapor Pressure: N/A
Moisture: NMT 4.5%	Relative Density: 0.2-0.6 g/ml (Solid)
Residue on Ignition: NMT 0.2%	Solubility: 1%
Melting Point Range: 248-250 °C	Flammability: N/A
pH: 4.5- 6.0 (10% Solution)	Auto-ignition Temperature: N/A
Initial Boiling Point: N/A	Decomposition Temperature: 248-250 °C
Flash Point: N/A	Viscosity: N/A

	Granular	Powder
Minimal Explosion concentration for dust:	0.110 g/l	0.055 g/l
Maximal Explosion Pressure	9.8 Bars	9.8 Bars
Kst:	206 bar-m/sec	206 bar- m/sec

Section 10 – Stability and Reactivity

Stability: Stable for 5 years when stored under proper conditions. Materials to Avoid: Strong oxidizing agents
Hazardous Decomposition Products: Carbon monoxide, carbon dioxide, and nitrogen oxides formed under fire conditions.
Hazardous Polymerization: None

Section 11 – Toxicological Information

Routes of Entry: Absorbed through skin. Dermal contact, Eye contact, Inhalation, Ingestion.
Toxicity to animals: Acute oral toxicity (LD50): 10000 mg/kg (mouse)
Chronic effects on Humans: Documented studies has shown the safety of aspartame to man. Oral doses of 75 mg/kg/day to human subjects did not produce any clinical signs. The Acceptable Daily Intake (ADI) approved by the U.S. FDA is 50 mg/kg/day.

Section 12 – Ecological Information

Ecotoxicity: Not available
BOD5 and COD: Not available
Further information on ecology: Not available
Biodegradable studies in published literature suggests aspartame would meet OECD guidelines for classifications as "readily biodegradable"

Safety Data Sheet
Nantong Changhai Food Additive Co., Ltd.
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Section 13 – Disposal Considerations

Contact a licensed professional waste disposal service to dispose of this material. Dissolve or mix the material with a combustible solvent and burn in a chemical incinerator equipped with an afterburner and scrubber. Dispose in accordance with federal, state and local regulations.

Section 14 – Transportation Information

Aspartame is considered to be non-hazardous for ground, sea and air transport.

Section 15 – Regulatory Information


United States Regulatory Information:
SARA Listed:
Hazard Categories under Title III Rules (40 CFR 370): Not applicable
Section 302 Extremely Hazardous Substances: Not applicable
Section 313 Toxic Chemical(s): Not applicable
Europe:
Please check the consequences of national regulations on produce according to direct 67/548/EC.
There are no substances present within the products supplied to you considered to be of Very High Concern (SVHC), or included on the "Candidate List" as defined by REACH. Polythene liner utilized as the Contact/Primary Packaging material is classified suitable for Food Grade use.


TSCA Inventory Item: Yes
OSHA: No known OSHA Hazards

Section 16- Other Information

References: Not available
Other Special Considerations: Not available
Created: 1/03/2007
Updated: 1/01/2018
The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. Nutang Chemical Inc. extends no warranties and makes no representation as to the accuracy or completeness of the information contained herein. Users should make a determination of the suitability of the information for their particular purpose.

Acesul Fame (P-ACEF)

SAFETY DATA SHEET		
Product name	D 483	AGHS/EN
MSDS number	81006B	Revision Date Jan.18.2016***
Revision Number	3***.01	Issuing date Feb.24.2016***
1. Identification of the substance/preparation and the company/undertaking		
Product name D 483		
Manufacturer or supplier's details Celanese Sales Germany GmbH Am Unisys-Park 1 65843 Sulzbach (Taunus) Germany Celanese Production Germany GmbH & Co. KG Am Unisys-Park 1 65843 Sulzbach (Taunus) Germany		
Product Information HazCom@celanese.com***		
Emergency telephone number +(65) 62656917 (Operations Room direct dial) or fax request to +(65) 62664696 (Facsimile to Operations Room) or email to posh.er@pacoffshore.com.sg		
In China Emergency Number: 86-532-83880090 (NRCC)		
Identified uses Food additive		
2. Hazards identification		
Statements of Hazard Not a dangerous substance according to GHS		
3. Composition/Information on ingredients		
Components	CAS-No	Percent %
Acesulfame K	55589-82-3	100
4. First aid measures		
Skin Wash off immediately with soap and plenty of water while removing all contaminated clothes and shoes.		

SAFETY DATA SHEET 

Product name: D 483 AGHS/EN
 MSDS number: 81009B Revision Date: Jan. 18, 2016***
 Revision Number: 3***.01 Issuing date: Feb. 24, 2016***

Eyes
 Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Get medical attention.

Inhalation
 Move to fresh air. Get medical attention immediately if symptoms occur.

Ingestion
 Do NOT induce vomiting. Get medical attention if symptoms occur.

5. Fire-fighting measures

HFPA: Health: 0 Flammability: 0 Instability: 0

Suitable extinguishing media
 Foam, Dry chemical, Water, Carbon dioxide (CO2)

Extinguishing media which must not be used for safety reasons
 Do not use a solid water stream as it may scatter and spread fire***

Special exposure hazards arising from the substance or preparation itself, its combustion products, or released gases
 Under conditions giving incomplete combustion, hazardous gases produced may consist of Carbon monoxide, Carbon dioxide (CO2), Nitrogen oxides (NOx), Sulfur oxides (SOx).

POTENTIAL DUST EXPLOSION HAZARD

Special protective equipment for fire-fighters
 Wear self-contained breathing apparatus and protective suit.

Environmental precautions
 Dike and collect water used to fight fire.

6. Accidental release measures


Personal precautions
 Use adequate ventilation. Keep away from heat and sources of ignition.

Environmental precautions
 Do not discharge into the drains/surface waters/groundwater.

Methods for cleaning up
 Contain spillage, pick up with an electrically protected vacuum cleaner or by wet-brushing and transfer to a container for disposal according to local regulations (see section 13). Use mechanical handling equipment.

7. Handling and storage

Advise on safe handling
 Avoid contact with skin, eyes and clothing. Do not breathe vapour/dust. Provide sufficient air exchange and/or exhaust in work rooms.

SAFETY DATA SHEET 

Product name: D 483 AGHS/EN
 MSDS number: 81009B Revision Date: Jan. 18, 2016***
 Revision Number: 3***.01 Issuing date: Feb. 24, 2016***

Incompatible products
 oxidizing agents

Protection - fire and explosion:
 Take measures to prevent the build up of electrostatic charge. Avoid dust formation. Keep away from heat and sources of ignition. Potential dust explosion hazard.

Dust Explosion Group
 ST1

Material storage
 Keep in a dry, cool place. Keep away from direct sunlight.

Incompatible products
 oxidizing agents

Technical measures/Storage conditions
 Keep tightly closed in a dry and cool place.

8. Exposure controls / personal protection

ACGIH Exposure Limits
 No exposure limits established.

Exposure controls

Personal protective equipment

General advice Avoid contact with skin and eyes. Do not breathe dust.

Hygiene measures When using, do not eat, drink or smoke. Handle in accordance with good industrial hygiene and safety practice. Wash hands before breaks and at the end of workday.***

Respiratory protection No personal respiratory protective equipment normally required.


Eye protection safety glasses.

Skin protection protective suit

Hand protection protective gloves
 Suitable material nitrile rubber
 Type Trool® (Company MCL) or comparable article, or refer to glove manufacturer's recommendation according to EN 374: level 6
 Evaluation Material thickness approx. 1.5 mm
 Break through time 480 min

9. Physical and chemical properties

Appearance
 Form: crystalline, powder

SAFETY DATA SHEET 

Product name: D 483 AGHS/EN
 MSDS number: 81009B Revision Date: Jan. 18, 2016***
 Revision Number: 3***.01 Issuing date: Feb. 24, 2016***

9. Physical and chemical properties

Color: white
 Odor: odorless

Molecular Weight: Not Determined
 Flash point: Not applicable***
 Autoignition Temperature: > 210 °C
 Ignition temperature: No data available
 Decomposition: not determined***
 Temperature: not determined
 Lower explosion limit: not determined
 Upper explosion limit: not determined
 Density: Not Determined
 Bulk density: 1100-1300 kg/m³ @20 °C
 pH: 6.5-7.5 @ 20°C
 Vapor pressure: Not determined***
 Evaporation Rate: not determined
 Water solubility: 270 g/l @ 20°C***

10. Stability and reactivity

Chemical stability
 Stable

Conditions to avoid
 No dangerous reaction known under conditions of normal use.

Incompatible Materials
 oxidizing agents

11. Toxicological information

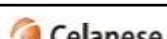
Potential health effects

Routes of exposure Skin, eyes, inhalation.***

Immediate effects

Skin May cause skin irritation.
Eyes May cause eye irritation.***
Inhalation No adverse health effects have been observed.

Acesulfame K
 Acute oral toxicity LD50: 5438 mg/kg
 Acute dermal toxicity LD50: > 2000 mg/kg

SAFETY DATA SHEET 

Product name: D 483 AGHS/EN
 MSDS number: 81009B Revision Date: Jan. 18, 2016***
 Revision Number: 3***.01 Issuing date: Feb. 24, 2016***

Acesulfame K

Skin corrosive/irritation No skin irritation
 Species: rabbit
 Method: OECD 404

Skin Sensitization negative
 Species: mouse
 Method: OECD 439

Serious eye damage/eye irritation No eye irritation
 Species: rabbit eye
 Method: similar to OECD 405

Carcinogenic effects No evidence of carcinogenicity
 Species: mice
 Ames Test: negative - with and without metabolic activation - Method: OECD 471 Cytogenetic Assay in Chinese hamster cells: negative - with and without metabolic activation - Method: OECD 473

in vitro Mutagenicity Mammalian Erythrocyte Micronucleus Test in mice: negative - Method: OECD 474 Mammalian Bone Marrow Chromosome Aberration Test in mice: negative - Method: OECD 475

in vivo Mutagenicity No toxicity to reproduction
 Species: rat
 Method: oral gavage

Reproductive toxicity No evidence of reproductive and developmental toxicity
 Species: rat
 Method: Oral

Developmental effects No adverse effects
 Species: rats
 Method: similar to OECD 408

12. Ecological Information

Acesulfame K

Acute Fish toxicity LC50: 1800 - 2500 g/l (96h)
 Species: Brachidario rerio (zebra fish)
 Method: OECD 203


Acute daphnia toxicity EC50: > 1000 g/l (24h)
 Species: Daphnia magna
 Method: OECD 202


Toxicity to aquatic plants EC50: > 100 mg/l (72h)
 Species: Seneciothus subspicatus
 Method: OECD 201

Toxicity to bacteria EOC: > 2500 mg/l
 Species: Anaerobic bacteria
 Method: Fermentation tube test


Biodegradability Not readily biodegradable
 Species: activated sludge
 Method: OECD 302 B (Zahn-Wellens Test)

Other potential hazards The substance does not meet the criteria for PBT / vPvB according to REACH, Annex XIII***

SAFETY DATA SHEET				
Product name	D 483	Revision Date	Jan.18.2016***	AGHS/EN
MSDS number	81006B	Issuing date	Feb.24.2016***	
Revision Number	3***.01			
12. Ecological Information				
13. Disposal considerations				
Product information Disposal required in compliance with all waste management related state and local regulations. The choice of the appropriate method of disposal depends on the product composition by the time of disposal as well as the local statutes and possibilities for disposal				
Uncleaned empty packaging Contaminated packaging should be emptied as far as possible and after appropriate cleansing may be taken for reuse				
14. Transport information				
US Department of Transportation Not regulated				
ADR/RID	Not regulated			
ADN	ADN: Container and Tanker Not regulated			
ICAO/IATA	Not regulated			
IMDG	Not regulated			
15. Regulatory information				
INTERNATIONAL REGULATIONS				
This substance is not classified as dangerous according to Chinese legislation				
This substance is not classified as dangerous according to Japanese legislation				
International Inventories Listed on the chemical inventories of the following countries or qualifies for an exemption: Australia (AICS) Canada (DSL) China (IECSC) Europe (EINECS) Mexico (INSQ) New Zealand (NZIoC)				
16. Other information				

SAFETY DATA SHEET				
Product name	D 483	Revision Date	Jan.18.2016***	AGHS/EN
MSDS number	81006B	Issuing date	Feb.24.2016***	
Revision Number	3***.01			
16. Other information				
HMSI: Health: 0	Flammability: 0	Physical Hazard: 0		
Prepared By Product Stewardship Department Celanese				
For further information, see: For more information, other material safety data sheets or technical data sheets please consult the Celanese homepage (www.celanese.com).				
Other Information: Observe national and local legal requirements.				
Changes against the previous version are marked by ***				
Sources of key data used to compile the datasheet Information contained in this safety data sheet is based on Celanese owned data and public sources deemed valid or acceptable. The absence of data elements required by ANSI or 1907/2006/EC indicates that no data meeting these requirements is available.***				
Further information This information is based on our present state of knowledge. It shall describe our products regarding safety requirements and shall not be construed as a guarantee or statement of condition and/or quality				

CARRAGEENAN POWDER

	ZHEJIANG TOP HYDROCOLLOIDS CO., LTD. 2299 Xingqong Road, Economic Development Zone, Pinghu 314 200, Zhejiang Province, P.R. China Tel:+86 573 85985533 Fax:+86 573 85985522	
MATERIAL SAFETY DATA SHEET		
1: CHEMICAL PRODUCT AND COMPANY IDENTIFICATION		
PRODUCT NAME: REFINED KAPPA CARRAGEENAN		
CAS#: 9000-07-1		
CI#: Not available		
SYNONYM:		
Chemical Name: Not available		
Chemical Formula: Not available		
CONTACT INFORMATION:		
ZHEJIANG TOP HYDROCOLLOIDS CO., LTD. 2299 Xingqong Road, Economic Development Zone, Pinghu 314200, Zhejiang Province, P.R. China		
FOR MORE INFORMATION CALL: (Monday-Friday, 8:00am-5:00pm) +86 21 3329 2056		
IN CASE OF EMERGENCY CALL: (24 Hours/Day, 7Days/Week) +86 150 0566 8787		
ORDER ONLINE: E-mail: alex.chan@sh-blg.com		
2: COMPOSITION AND INFORMATION ON INGREDIENTS		
INGREDIENT NAME	CAS#	% BY WEIGHT
CARRAGEENAN	9000-07-1	100%
TOXICOLOGICAL DATA ON INGREDIENTS: Not applicable.		
3: HAZARDS IDENTIFICATION		
POTENTIAL ACUTE HEALTH EFFECTS: Hazardous in case of inhalation. Slightly hazardous in case of skin contact (irritant), of eye contact (irritant), of ingestion.		
POTENTIAL CHRONIC HEALTH EFFECTS: Hazardous in case of inhalation. Slightly hazardous in case of skin contact (irritant), of eye contact (irritant).		
CARCINOGENIC EFFECTS: Not available.		
MUTAGENIC EFFECTS: Not available.		
TERATOGENIC EFFECTS: Not available.		
DEVELOPMENTAL TOXICITY: Not available.		
4: FIRST AID MEASURES		


<p>EYE CONTACT: No known effect on eye contact, rinse with water for a few minutes.</p> <p>SKIN CONTACT: After contact with skin, wash immediately with plenty of water. Gently and thoroughly wash the contaminated skin with running water and non-abrasive soap. Be particularly careful to clean folds, crevices, creases and groin. Cover the irritated skin with an emollient. If irritation persists, seek medical attention. Wash contaminated clothing before reusing.</p> <p>SERIOUS SKIN CONTACT: Not available.</p> <p>INHALATION: Allow the victim to rest in a well-ventilated area. Seek immediate medical attention.</p> <p>SERIOUS INHALATION: Not available.</p> <p>INGESTION: Do not induce vomiting. Loosen tight clothing such as a collar, tie, belt or waistband. If the victim is not breathing, perform mouth-to-mouth resuscitation. Seek immediate medical attention.</p> <p>SERIOUS INGESTION: Not available.</p>
<p>5: FIRE AND EXPLOSION DATA</p> <p>FLAMMABILITY OF THE PRODUCT: May be combustible at high temperature.</p> <p>AUTO-IGNITION TEMPERATURE: Not available.</p> <p>FLASH POINTS: Not available.</p> <p>FLAMMABLE LIMITS: Not available.</p> <p>PRODUCTS OF COMBUSTION: Not available.</p> <p>FIRE HAZARDS IN PRESENCE OF VARIOUS SUBSTANCES: Not available.</p> <p>EXPLOSION HAZARDS IN PRESENCE OF VARIOUS SUBSTANCES: Risks of explosion of the product in presence of mechanical impacts: Not available. Risks of explosion of the product in presence of static discharge: Not available.</p> <p>FIRE FIGHTING MEDIA AND INSTRUCTIONS: SMALL FIRE: Use dry chemical powder. LARGE FIRE: Use water spray, fog or foam. Do not use water jet.</p> <p>SPECIAL REMARKS ON FIRE HAZARDS: Not available.</p> <p>SPECIAL REMARKS ON EXPLOSION HAZARDS: Not available.</p>
<p>6: ACCIDENTAL RELEASE MEASURES</p> <p>SMALL SPILL: Use appropriate tools to put the spilled solid in a convenient waste disposal container. Finish cleaning by spreading water on the contaminated surface and dispose of according to local and regional authority requirements.</p> <p>LARGE SPILL: Use a shovel to put the material into a convenient waste disposal container. Finish cleaning by spreading water on the contaminated surface and allow to evaporate through the sanitary system.</p>
<p>7: HANDLING AND STORAGE</p> <p>PRECAUTIONS: Keep away from heat. Keep away from sources of ignition. Empty containers pose a fire risk, evaporate the residue under a fume hood. Ground all equipment containing material. Do not breathe dust. Wear suitable protective clothing in case of insufficient ventilation, wear suitable respiratory equipment if you feel unwell, seek medical attention and show the label when possible.</p> <p>STORAGE: Keep container dry. Keep in a cool place. Ground all equipment containing material. Keep container tightly closed. Keep in a cool, well-ventilated place. Combustible materials should be stored away from extreme heat and away from strong oxidizing agents.</p>

<p>8: EXPOSURE CONTROLS/PERSONAL PROTECTION</p> <p>ENGINEERING CONTROLS: Use process enclosures, local exhaust ventilation, or other engineering controls to keep airborne levels below recommended exposure limits. If user operations generate dust, fume or mist, use ventilation to keep exposure to airborne contaminants below the exposure limit.</p> <p>PERSONAL PROTECTION: Safety glasses. Lab coat. Dust respirator. Be sure to use an approved / certified respirator of equivalent. Gloves.</p> <p>PERSONAL PROTECTION IN CASE OF A LARGE SPILL: Splash goggles. Full suit. Dust respirator. Boots. Gloves. A self-contained breathing apparatus should be used to avoid inhalation of the product. Suggested protective clothing might not be sufficient; consult a specialist before handling this product.</p> <p>EXPOSURE LIMITS: Not available.</p>
<p>9: PHYSICAL AND CHEMICAL PROPERTIES</p> <p>PHYSICAL STATE AND APPEARANCE: Solid.</p> <p>ODOR: Not available.</p> <p>TASTE: Not available.</p> <p>MOLECULAR WEIGHT: Not available.</p> <p>COLOR: Not available.</p> <p>PH (1% solution/water): Not available.</p> <p>BOILING POINT: Not available.</p> <p>MELTING POINT: Not available.</p> <p>CRITICAL TEMPERATURE: Not available.</p> <p>SPECIFIC GRAVITY: Not available.</p> <p>VAPOR DENSITY: Not available.</p> <p>VAPOR PRESSURE: Not available.</p> <p>VOLATILITY: Not available.</p> <p>ODOR THRESHOLD: Not available.</p> <p>WATER/OIL DIST. COEFF.: Not available.</p> <p>IONICITY (IN WATER): Not available.</p> <p>DISPERSION PROPERTIES: Not available.</p> <p>SOLUBILITY: Not available.</p>
<p>10: STABILITY AND REACTIVITY DATA</p> <p>STABILITY: The product is stable.</p> <p>INSTABILITY TEMPERATURE: Not available.</p> <p>CONDITIONS OF INSTABILITY: Not available.</p> <p>INCOMPATIBILITY WITH VARIOUS SUBSTANCES: Not available.</p> <p>CORROSIVITY: Non-corrosive in presence of glass.</p> <p>SPECIAL REMARKS ON REACTIVITY: Not available.</p> <p>SPECIAL REMARKS ON CORROSIVITY: Not available.</p> <p>POLYMERIZATION: NO.</p>
<p>11: TOXICOLOGICAL INFORMATION</p> <p>ROUTES OF ENTRY: Inhalation.</p> <p>TOXICITY TO ANIMALS:</p>

<p>LD50: Not available.</p> <p>LC50: Not available.</p> <p>CHRONIC EFFECTS ON HUMANS: Not available.</p> <p>OTHER TOXIC EFFECTS ON HUMANS: Hazardous in case of inhalation. Slightly hazardous in case of skin contact (irritant), of ingestion.</p> <p>SPECIAL REMARKS ON TOXICITY TO ANIMALS: Not available.</p> <p>SPECIAL REMARKS ON CHRONIC EFFECTS ON HUMANS: Not available.</p> <p>SPECIAL REMARKS ON OTHER TOXIC EFFECTS ON HUMANS: Not available.</p>
<p>12: ECOLOGICAL INFORMATION</p> <p>ECOTOXICITY: Not available.</p> <p>BOD5 AND COD: Not available.</p> <p>PRODUCTS OF BIODEGRADATION: Possibly hazardous short term degradation products are not likely. However, long term degradation products may arise.</p> <p>TOXICITY OF THE PRODUCTS OF BIODEGRADATION: The products of degradation are more toxic.</p> <p>SPECIAL REMARKS ON THE PRODUCTS OF BIODEGRADATION: Not available.</p>
<p>13: DISPOSAL CONSIDERATIONS</p> <p>IS THE UNUSED PRODUCT A HAZARDOUS WASTE SUBSTANCE LIST OF COUNTRY HAZARDOUS WASTE IF DISCARDED? No.</p> <p>OTHER DISPOSAL CONSIDERATIONS: Disposal must be made in accordance with all applicable local regulations.</p>
<p>14: TRANSPORT INFORMATION</p> <p>U.S. DOT: Not listed in Title 49 of the U.S. Code of Federal Regulations as a hazardous material.</p> <p>UN (IMO/IMDG): Not applicable.</p> <p>MARPO DESIGNATION: None.</p> <p>SPECIAL PROVISIONS FOR TRANSPORT: Not applicable.</p>
<p>15: OTHER REGULATORY INFORMATION</p> <p>FEDERAL AND STATE REGULATIONS: Pennsylvania RTK: Carriagean Massachusetts RTK: Carriagean TSCA 8(b) inventory: Carriagean</p> <p>OTHER REGULATIONS: Not available.</p> <p>OTHER CLASSIFICATIONS: WHMIS(Canada): Not controlled under WHMIS(Canada). DSL(EU): The product is not classified according to the EU regulations. HMIS(U.S.A.): Health hazard: 1 Fire Hazard: 1 Reactivity: 0</p>

<p>Personal Protection: E</p> <p>NATIONAL FIRE PROTECTION ASSOCIATION(U.S.A.):</p> <p>Health: 1</p> <p>Flammability: 1</p> <p>Reactivity: 0</p> <p>Protective Equipment: Gloves. Lab Coat. Dust respirator. Be sure to use an approved/certified respirator or equivalent Safety glasses.</p>
<p>16: OTHER INFORMATION</p> <p>REFERENCES: Not available.</p> <p>OTHER SPECIAL CONSIDERATIONS: Not available.</p> <p>Created: Jan. 2005</p> <p>Last Updated: Jan. 2016</p> <p><i>The information above is believed to be accurate and represents the best information currently available to us. However, we make no warranty of merchantability or any other warranty, express or implied, with respect to such information, and we assume no liability resulting from its use. Users should make their own investigations to determine the suitability of the information for their particular purposes. In no event shall Shanghai Brilliant Gum Co., Ltd. be liable for any claims, losses, or damages of any third party or for lost profits or any special, indirect, incidental, consequential or exemplary damages, howsoever arising, even if Shanghai Brilliant Gum Co., Ltd. has been advised of the possibility of such damages.</i></p>

Konjac Gum

	浙江上方生物科技有限公司 Zhejiang Top Hydrocolloids Co., Ltd. 2299 Xingong Road, Economic Development Zone, Pinghu 314200, Zhejiang Province, P.R.China Tel: +86 573 85985533 Fax: +86 573 85985522	
MATERIAL SAFETY DATA SHEET		
1: CHEMICAL PRODUCT AND COMPANY IDENTIFICATION		
PRODUCT NAME: KONJAC GUM CAS#: 37220-17-0 CI#: Not available SYNONYM: GLUCOMANNAN Chemical Name: Not available Chemical Formula: Not available		
CONTACT INFORMATION: ZHEJIANG TOP HYDROCOLLOIDS CO., LTD. 2299 Xingong Road, Economic Development Zone, Pinghu 314200, Zhejiang Province, P. R. China FOR MORE INFORMATION CALL: (Monday-Friday, 8:00am-5:00pm) +86 2133292056 IN CASE OF EMERGENCY CALL: (24 Hours/Day, 7Days/Week) +86 15005668787 ORDER ONLINE: E-mail: alex.chan@sh-blg.com		
2: COMPOSITION AND INFORMATION ON INGREDIENTS		
INGREDIENT NAME	CAS#	% BY WEIGHT
GLUCOMANNAN	37220-17-0	100%
TOXICOLOGICAL DATA ON INGREDIENTS: Not applicable.		
3: HAZARDS IDENTIFICATION		
POTENTIAL ACUTE HEALTH EFFECTS: Hazardous in case of Inhalation. Slightly hazardous in case of skin contact (Irritant), of eye contact (Irritant), of ingestion, of inhalation.		
POTENTIAL CHRONIC HEALTH EFFECTS: Hazardous in case of inhalation. Slightly hazardous in case of skin contact (Irritant), of eye contact (Irritant). CARCINOGENIC EFFECTS: Not available. MUTAGENIC EFFECTS: Not available. TERATOGENIC EFFECTS: Not available. DEVELOPMENTAL TOXICITY: Not available. Repeated or prolonged exposure is not known to aggravate medical condition.		


<p>4:FIRST AID MEASURES</p> <p>EYE CONTACT: Check for and remove any contact lenses. In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Get medical attention if irritation occurs.</p> <p>SKIN CONTACT: Wash with soap and water. Cover the irritated skin with an emollient. Get medical attention if irritation develops.</p> <p>SERIOUS SKIN CONTACT: Not available.</p> <p>INHALATION: If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention.</p> <p>SERIOUS INHALATION: Not available.</p> <p>INGESTION: Do not induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. If large quantities of this material are swallowed, call a physician immediately. Loosen tight clothing such as a collar, tie, belt or waistband.</p> <p>SERIOUS INGESTION: Not available.</p>
<p>5:FIRE AND EXPLOSION DATA</p> <p>FLAMMABILITY OF THE PRODUCT: May be combustible at high temperature.</p> <p>AUTO-IGNITION TEMPERATURE: Not available.</p> <p>FLASH POINTS: Not available.</p> <p>FLAMMABLE LIMITS: Not available.</p> <p>PRODUCTS OF COMBUSTION: Not available.</p> <p>FIRE HAZARDS IN PRESENCE OF VARIOUS SUBSTANCES: Slightly flammable to flammable in presence of heat. Non-flammable in presence of shocks.</p> <p>EXPLOSION HAZARDS IN PRESENCE OF VARIOUS SUBSTANCES: Risks of explosion of the product in presence of mechanical impact: Not available. Slightly explosive in presence of open flames and sparks.</p> <p>FIRE FIGHTING MEDIA AND INSTRUCTIONS: SMALL FIRE: Use dry chemical powder. LARGE FIRE: Use water spray, fog or foam. Do not use water jet.</p> <p>SPECIAL REMARKS ON FIRE HAZARDS: Not available.</p> <p>SPECIAL REMARKS ON EXPLOSION HAZARDS: Fine (organic) dusts dispersed in air in sufficient concentrations, and in the presence of an ignition source is a potential dust explosion hazard.</p>
<p>6:ACCIDENTAL RELEASE MEASURES</p> <p>SMALL SPILL: Use appropriate tools to put the spilled solid in a convenient waste disposal container. Finish cleaning by spreading water on the contaminated surface and dispose of according to local and regional authority requirements.</p> <p>LARGE SPILL: Use a shovel to put the material into a convenient waste disposal container. Finish cleaning by spreading water on the contaminated surface and allow evacuate through the sanitary system.</p>
<p>7:HANDLING AND STORAGE</p> <p>PRECAUTIONS: Keep away from heat. Keep away from sources of ignition. Empty containers pose a fire risk, evaporate the residue under a fume hood. Ground all equipment containing material. Do not breathe dust. Wear suitable protective clothing in case of insufficient ventilation, wear suitable respiratory equipment if you feel unwell, seek medical attention and show the label when possible.</p>

<p>8:EXPOSURE CONTROLS/PERSONAL PROTECTION</p> <p>ENGINEERING CONTROLS: Use process enclosures, local exhaust ventilation, or other engineering controls to keep airborne levels below recommended exposure limits. If user operations generate dust, fume or mist, use ventilation to keep exposure to airborne contaminants below the exposure limit.</p> <p>PERSONAL PROTECTION: Safety glasses. Lab coat. Dust respirator. Be sure to use an approved / certified respirator of equivalent. Gloves.</p> <p>PERSONAL PROTECTION IN CASE OF A LARGE SPILL: Splash goggles. Full suit. Dust respirator. Boots. Gloves. A self contained breathing apparatus should be used to avoid inhalation of the product. Suggested protective clothing might not be sufficient; consult a specialist before handling this product.</p> <p>EXPOSURE LIMITS: Not available.</p>
<p>9:PHYSICAL AND CHEMICAL PROPERTIES</p> <p>PHYSICAL STATE AND APPEARANCE: Solid (Powdered solid).</p> <p>ODOR: Not available.</p> <p>TASTE: Not available.</p> <p>MOLECULAR WEIGHT: Not available.</p> <p>COLOR: Tan or Off-white with dark specks.</p> <p>PH (2% solution/water): Not available.</p> <p>BOILING POINT: Not available.</p> <p>MELTING POINT: Not available.</p> <p>CRITICAL TEMPERATURE: Not available.</p> <p>SPECIFIC GRAVITY: Not available.</p> <p>VAPOR DENSITY: Not available.</p> <p>VAPOR PRESSURE: Not available.</p> <p>VOLATILITY: Not available.</p> <p>ODOR THRESHOLD: Not available.</p> <p>WATER/OIL DIST. COEFF.: Not available.</p> <p>SOLUBILITY (IN WATER): Not available.</p> <p>DISPERSION PROPERTIES: Not available.</p> <p>SOLUBILITY: Not available.</p>
<p>10:STABILITY AND REACTIVITY DATA</p> <p>STABILITY: The product is stable.</p> <p>INSTABILITY TEMPERATURE: Not available.</p> <p>CONDITIONS OF INSTABILITY: Excess heat, dust generation.</p> <p>INCOMPATIBILITY WITH VARIOUS SUBSTANCES: Not available.</p> <p>CORROSIVITY: Not available.</p> <p>SPECIAL REMARKS ON REACTIVITY: Not available.</p> <p>SPECIAL REMARKS ON CORROSIVITY: Not available.</p>

<p>POLYMERIZATION: Will not occur.</p>
<p>11:TOXICOLOGICAL INFORMATION</p> <p>ROUTES OF ENTRY: Inhalation, Ingestion</p> <p>TOXICITY TO ANIMALS: LD50: Not available. LC50: Not available.</p> <p>CHRONIC EFFECTS ON HUMANS: Not available.</p> <p>OTHER TOXIC EFFECTS ON HUMANS: Slightly hazardous in case of skin contact (irritant), of ingestion, of inhalation.</p> <p>SPECIAL REMARKS ON TOXICITY TO ANIMALS: Not available.</p> <p>SPECIAL REMARKS ON CHRONIC EFFECTS ON HUMANS: Not available.</p> <p>SPECIAL REMARKS ON OTHER TOXIC EFFECTS ON HUMANS: Acute Potential Health Effects: Skin: It is unlikely to cause skin irritation or injury. Eyes: Dust can cause mechanical eye irritation. Inhalation: This material may produce dust. Breathing small amounts of this material is not likely to be harmful. Ingestion: Swallowing this material is not likely to be harmful. The toxicological properties of this substance have not been fully investigated.</p>
<p>12:ECOLOGICAL INFORMATION</p> <p>ECOTOXICITY: Not available.</p> <p>BODS AND COD: Not available.</p> <p>PRODUCTS OF BIODEGRADATION: Possibly hazardous short term degradation products are not likely. However, long term degradation products may arise.</p> <p>TOXICITY OF THE PRODUCTS OF BIODEGRADATION: Not available.</p> <p>SPECIAL REMARKS ON THE PRODUCTS OF BIODEGRADATION: Not available.</p>
<p>13:DISPOSAL CONSIDERATIONS</p> <p>Waste Disposal: Waste must be disposed of in accordance with local environmental control regulations.</p>
<p>14:TRANSPORT INFORMATION</p> <p>DOT Classification: Not a DOT controlled material (United States).</p> <p>Identification: Not applicable.</p> <p>Special Provision for Transport: Not applicable.</p>
<p>15:OTHER REGULATORY INFORMATION</p> <p>FEDERAL AND STATE REGULATIONS: No products were found.</p> <p>OTHER REGULATIONS: EINECS: This product is on the European Inventory of Existing Commercial Chemical substances.</p> <p>OTHER CLASSIFICATIONS: WHMIS(Canada): Not controlled under WHMIS(Canada).</p>

<p>DSCL(EEC): The product is not classified according to the EU regulations. Not applicable.</p> <p>HMIS(U.S.A.): Health hazard: 1 Fire Hazard: 1 Reactivity: 0 Personal Protection: E NATIONAL FIRE PROTECTION ASSOCIATION(U.S.A.): Health: 1 Flammability: 1 Reactivity: 0 Specific hazard: Protective Equipment: Gloves. Lab Coat. Dust respirator. Be sure to use an approved/certified respirator or equivalent Safety glasses.</p>
<p>16:OTHER INFORMATION</p> <p>REFERENCES: Not available.</p> <p>OTHER SPECIAL CONSIDERATIONS: Not available.</p> <p>Created: Jan. 01, 2019 Last Updated: Jan. 01, 2020</p> <p><i>The information above is believed to be accurate and represents the best information currently available to us. However, we make no warranty of merchantability or any other warranty, express or implied, with respect to such information, and we assume no liability resulting from its use. Users should make their own investigations to determine the suitability of the information for their particular purposes. In no event shall ZHEJIANG TOP HYDROCOLLOIDS CO., LTD be liable for any claims, losses, or damages of any third party or for lost profits or any special, indirect, incidental, consequential or exemplary damages, howsoever arising, even if ZHEJIANG TOP HYDROCOLLOIDS CO., LTD has been advised of the possibility of such damages.</i></p>

Tartrazine

TARTRAZINE CAS NO 1934-21-0	MATERIAL SAFETY DATA SHEET SDS/MSDS
SECTION 1: Identification of the substance/mixture and of the company/undertaking	
1.1 Product identifiers Product name : Tartrazine	
CAS-No. : 1934-21-0	
1.2 Relevant identified uses of the substance or mixture and uses advised against Identified uses : Laboratory chemicals, Industrial & for professional use only.	
1.3 Details of the supplier of the safety data sheet Company : Central Drug House (P) Ltd 7/28 Vardaan House New Delhi - 110002 INDIA Telephone : +91 11 49404040 Email : care@cofinechemical.com	
1.4 Emergency telephone number Emergency Phone # : +91 11 49404040 (9:00am - 6:00 pm) [Office hours]	
SECTION 2: Hazards identification	
2.1 Classification of the substance or mixture Classification according to Regulation (EC) No 1272/2008 Respiratory sensitisation (Category 1), H334 Skin sensitisation (Category 1), H317 For the full text of the H-Statements mentioned in this Section, see Section 16.	
2.2 Label elements Labelling according Regulation (EC) No 1272/2008 Pictogram  Signal word : Danger Hazard statement(s) H317 H334 May cause an allergic skin reaction. May cause allergy or asthma symptoms or breathing difficulties if inhaled. Precautionary statement(s) P261 P280 P342 + P311 Avoid breathing dust. Wear protective gloves. If experiencing respiratory symptoms: Call a POISON CENTER/doctor.	

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Supplemental Hazard Statements : none
2.3 Other hazards
This substance/mixture contains no components considered to be either persistent, bioaccumulative and toxic (PBT), or very persistent and very bioaccumulative (vPvB) at levels of 0.1% or higher.

SECTION 3: Composition information on ingredients

3.1 Substances		
Synonyms	Acid Yellow 23	
Formula	C ₁₀ H ₈ N ₂ Na ₂ O ₆ S ₂	
Molecular weight	534.37 g/mol	
CAS-No.	1934-21-0	
EC-No.	217-099-0	
Hazardous ingredients according to Regulation (EC) No 1272/2008		
Component	Classification	Concentration
Trisodium 5-hydroxy-1-(4-sulphophenyl)-4-(4-sulphophenylazo)pyrazole-3-carboxylate	Resp. Sens. 1; Skin Sens. 1; H334, H317	<= 100 %
CAS-No.	1934-21-0	
EC-No.	217-099-0	

For the full text of the H-Statements mentioned in this Section, see Section 16.

SECTION 4: First aid measures

- 4.1 Description of first aid measures
General advice
Consult a physician. Show this safety data sheet to the doctor in attendance.
If inhaled
If breathed in, move person into fresh air. If not breathing, give artificial respiration. Consult a physician.
In case of skin contact
Wash off with soap and plenty of water. Consult a physician.
In case of eye contact
Flush eyes with water as a precaution.
If swallowed
Never give anything by mouth to an unconscious person. Rinse mouth with water. Consult a physician.
- 4.2 Most important symptoms and effects, both acute and delayed
The most important known symptoms and effects are described in the labelling (see section 2.2) and/or in section 11.
- 4.3 Indication of any immediate medical attention and special treatment needed
No data available.

SECTION 5: Firefighting measures

- 5.1 Extinguishing media
Soluble extinguishing media
Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.
- 5.2 Special hazards arising from the substance or mixture
Carbon oxides, Nitrogen oxides (NOx), Sulphur oxides, Sodium oxides.
- 5.3 Advice for firefighters
Wear self-contained breathing apparatus for firefighting if necessary.
- 5.4 Further information
No data available.

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SECTION 6: Accidental release measures	
6.1 Personal precautions, protective equipment and emergency procedures Use personal protective equipment. Avoid dust formation. Avoid breathing vapours, mist or gas. Ensure adequate ventilation. Evacuate personnel to safe areas. Avoid breathing dust. For personal protection see section 8.	
6.2 Environmental precautions Do not let product enter drains.	
6.3 Methods and materials for containment and cleaning up Pick up and arrange disposal without creating dust. Sweep up and shovel. Keep in suitable, closed containers for disposal.	
6.4 Reference to other sections For disposal see section 13.	
SECTION 7: Handling and storage	
7.1 Precautions for safe handling Avoid contact with skin and eyes. Avoid formation of dust and aerosols. Provide appropriate exhaust ventilation at places where dust is formed. For precautions see section 2.2.	
7.2 Conditions for safe storage, including any incompatibilities Store in cool place. Keep container tightly closed in a dry and well-ventilated place. Keep in a dry place. Storage class (TRGS 510): Combustible Solids.	
7.3 Specific end uses Apart from the uses mentioned in section 1.2 no other specific uses are stipulated.	
SECTION 8: Exposure controls/personal protection	
8.1 Control parameters	
8.2 Exposure controls Appropriate engineering controls Handle in accordance with good industrial hygiene and safety practice. Wash hands before breaks and at the end of workday. Personal protective equipment Eye/face protection Face shield and safety glasses. Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU). Skin protection Handle with gloves. Gloves must be inspected prior to use. Use proper glove removal technique (without touching glove's outer surface) to avoid skin contact with this product. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Wash and dry hands. Body Protection Complete suit protecting against chemicals. The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace. Respiratory protection For nuisance exposures use type P65 (US) or type P1 (EU EN 143) particle r (US) or type ABEN-P2 (EU EN 143) respirator cartridges. Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU). Control of environmental exposure Do not let product enter drains.	

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SECTION 9: Physical and chemical properties	
9.1 Information on basic physical and chemical properties	
a) Appearance	Form: powder
b) Colour	No data available
c) Odour Threshold	No data available
d) pH	No data available
e) Melting point/freezing point	No data available
f) Initial boiling point and boiling range	No data available
g) Flash point	No data available
h) Evaporation rate	No data available
i) Flammability (solid, gas)	No data available
j) Upper/lower flammability or explosive limits	No data available
k) Vapour pressure	No data available
l) Vapour density	No data available
m) Relative density	No data available
n) Water solubility	No data available
o) Partition coefficient: n-octanol/water	No data available
p) Auto-ignition temperature	No data available
q) Decomposition temperature	No data available
r) Viscosity	No data available
s) Explosive properties	No data available
t) Oxidizing properties	No data available
9.2 Other safety information No data available.	
SECTION 10: Stability and reactivity	
10.1 Reactivity No data available.	
10.2 Chemical stability Stable under recommended storage conditions.	
10.3 Possibility of hazardous reaction No data available.	
10.4 Conditions to avoid Avoid moisture.	
10.5 Incompatible materials Strong oxidizing agents.	
10.6 Hazardous decomposition products Hazardous decomposition products formed under fire conditions: - Carbon oxides, Nitrogen oxides (NOx), Sulphur oxides, Sodium oxides. Other decomposition products - No data available. In the event of fire: see section 5.	

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SECTION 11: Toxicological information

11.1 Information on toxicological effects

Acute toxicity

LD50 Oral - Mouse - 12,750 mg/kg (Trisodium 5-hydroxy-1-(4-sulphophenyl)-4-(4-sulphophenylazo)pyrazole-3-carboxylate)

Skin corrosion/irritation

No data available (Trisodium 5-hydroxy-1-(4-sulphophenyl)-4-(4-sulphophenylazo)pyrazole-3-carboxylate)

Serious eye damage/eye irritation

No data available (Trisodium 5-hydroxy-1-(4-sulphophenyl)-4-(4-sulphophenylazo)pyrazole-3-carboxylate)

Respiratory or skin sensitisation

Germ cell mutagenicity

No data available (Trisodium 5-hydroxy-1-(4-sulphophenyl)-4-(4-sulphophenylazo)pyrazole-3-carboxylate)

Carcinogenicity

IARC: No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.

Reproductive toxicity

No data available (Trisodium 5-hydroxy-1-(4-sulphophenyl)-4-(4-sulphophenylazo)pyrazole-3-carboxylate)

Specific target organ toxicity - single exposure

No data available (Trisodium 5-hydroxy-1-(4-sulphophenyl)-4-(4-sulphophenylazo)pyrazole-3-carboxylate)

Specific target organ toxicity - repeated exposure

No data available

Aspiration hazard

No data available (Trisodium 5-hydroxy-1-(4-sulphophenyl)-4-(4-sulphophenylazo)pyrazole-3-carboxylate)

Additional Information

RTECS: UQ6400000

To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated. (Trisodium 5-hydroxy-1-(4-sulphophenyl)-4-(4-sulphophenylazo)pyrazole-3-carboxylate)

SECTION 12: Ecological information

12.1 Toxicity

Toxicity to daphnia and other aquatic invertebrates EC50 - Daphnia (water flea) - 5,706.55 mg/l - 48 h (Trisodium 5-hydroxy-1-(4-sulphophenyl)-4-(4-sulphophenylazo)pyrazole-3-carboxylate)

12.2 Persistence and degradability

No data available

12.3 Bioaccumulative potential

No data available

12.4 Mobility in soil

No data available (Trisodium 5-hydroxy-1-(4-sulphophenyl)-4-(4-sulphophenylazo)pyrazole-3-carboxylate)

12.5 Results of PBT and vPvB assessment

This substance/mixture contains no components considered to be either persistent, bioaccumulative and toxic (PBT), or very persistent and very bioaccumulative (vPvB) at levels of 0.1% or higher.

12.6 Other adverse effects

No data available

SECTION 13: Disposal considerations

13.1 Waste treatment methods

Product

Offer surplus and non-recyclable solutions to a licensed disposal company. Dissolve or mix the material with a combustible solvent and burn in a chem scrubber.

Contaminated packaging

Dispose of as unused product.

SECTION 14: Transport information

14.1 UN number

ADR/RID: - IMDG: - IATA: -

14.2 UN proper shipping name

ADR/RID: Not dangerous goods
IMDG: Not dangerous goods
IATA: Not dangerous goods

14.3 Transport hazard class(es)

ADR/RID: - IMDG: - IATA: -

14.4 Packaging group

ADR/RID: - IMDG: - IATA: -

14.5 Environmental hazards

ADR/RID: no IMDG Marine pollutant: no IATA: no

14.6 Special precautions for user

No data available

SECTION 15: Regulatory information

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture

This safety datasheet complies with the requirements of Regulation (EC) No. 1907/2006.

15.2 Chemical safety assessment

For this product a chemical safety assessment was not carried out

SECTION 16: Other information



Full text of H-Statements referred to under sections 2 and 3.

H317 May cause an allergic skin reaction.
H334 May cause allergy or asthma symptoms or breathing difficulties if inhaled.

Further information

The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. The information in this document is based on the present state of our knowledge and is applicable to the product with regard to appropriate safety precautions. It does not represent any guarantee of the properties of the product. Central Drug House (P) Ltd and its Affiliates shall not be held liable for any damage resulting from handling or from contact with the above product. See www.cdhfinechemical.com for additional terms and conditions of sale.

CARMOISINE

 	
ISSUE NO.: 01	REVISION NO.: 07
ISSUE DATE: 01/07/2001	EFFECTIVE DATE: 01.06.2017
STATUS: CONTROLLED	NEXT REVIEW ON: THREE YEARS

MATERIAL SAFETY DATA SHEET
(In Accordance with EC-Legislation 91/155/EEC)

Product Name : CARMOISINE

Company : ROHA DYECHEM PVT.LTD. Language: UK NL DE FR
42,MIDC,Roha Audyogik Vasahat,
ROHA - 402 116,INDIA.
Tele: No. +91-2194 - 263656,263122,263609
Fax No. +91-2194 - 263630

1.CHEMICAL PRODUCT IDENTIFICATION

Product Code (Supplier) : F03
C.I. N. : 14720
Synonymous Name : Acid Red 14, Food Red 3, Azorubin / E122
Chemical Name : Diodium 4-hydroxy-3-(4-sulfonato-1-naphthylazo) | naphthalene-1-sulfonate
Chemical Formula : C₂₀H₁₂N₂Na₂O₇S₂
Chemical Class : Monoazo

2.COMPOSITION / INFORMATION ON INGREDIENTS

Information on hazardous Ingredients
 Ingredients Name: Carmoisine % compound: 100 EINECS No.: 222-657-4 CAS No.: 3567-69-9 EC No.: E-122

(None of the ingredient of this material meet the definition of hazardous chemical 29 CFR1910.1200)

Prepared by	Approved by
Q.A. Chemist	Q.A. Manager

Page 1 of 8

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ISSUE NO.: 01	REVISION NO.: 07
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3.HAZARD IDENTIFICATION

(Non - Hazardous according to the criteria of EEC directive of 67/548/EEC or 88/379/EEC)
 3.1 Environmental Hazards : N/A
 3.2 Human Health Hazards : N/A
 3.3 GHS Classification : Not Classified

4. FIRST AID MEASURES

Effects and Symptoms

4.1 Ingestion : None
 4.2 Inhalation : slight suffocation
 4.3 Skin Contact : Temporary stain on the skin
 4.4 Eye Contact : None
 4.5 Ingestion : Drink plenty of water. Special medical attention may not be necessary.
 4.6 Inhalation : Remove to fresh air. This product is not classified as an irritant ,however being dry powder dust may cause irritation in some individuals. If irritation develops, seek medical attention.
 4.7 Skin Contact : No adverse effects. Wash skin with mild soap and water to remove nuisance of color. Some dyes may temporarily stain skin. If irritation develops, seek medical attention.
 4.8 Eye Contact : This product is not classified as an irritant. If exposed, wash the eyes with large amounts of water, occasionally lifting the lower and upper lids, continue for 15 minutes. If Irritation develops, seek medical attention.

Prepared by	Approved by
Q.A. Chemist	Q.A. Manager

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IDACOL
INDONESIA DYES AND CHEMICALS

ISSUE NO.: 01	REVISION NO.: 07
ISSUE DATE: 01/07/2001	EFFECTIVE DATE: 01.06.2017
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5. FIRE FIGHTING MEASURES

Extinguishing Media

5.1 Suitable : Carbon dioxide, chemical foam, or dry chemical Extinguisher.

5.2 Not Suitable : Water

5.3 Special Firefighting Procedures: Self contained breathing apparatus (scba) and Full Protective equipment recommended

5.4 Usual Fire/Explosion Hazards: Fire or excessive heat produce carbon di oxide, carbon mono oxide and un identified organic compounds may be formed.

5.5 Hazardous Thermal (de) composition Products: None

5.6 Protection of Firefighters : wear PPE as recommended, Does not support combustion.

6. ACCIDENTAL RELEASE MEASURES

6.1 Personal Preventions : No respiratory protection required, but dust masks are suggested.

6.2 Environmental Preventions : This product can generate dust. Ventilation or dust collection would be helpful, but not necessary.

6.3 Methods of Cleaning up
Small Spill : For dry powder spills, inert material such as sand may be added to control dusting prior to clean up. Industrial grade vacuum sweeper are also recommended. Poured spilled material into appropriate designated waste container for disposal.

Prepared by	Approved by
G.A. Chemist	G.A. Manager

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Large Spill : Contain spilled material immediately with inert substance such as sand or earth. use plastics or aluminium sheet to transfer diluted water material into appropriate waste container for disposal.

wet spill : If wet, surfaces exposed to a spill may become slippery or sticky. Spills should be thoroughly flushed with Soapy water until all apparent color is removed.

7. HANDLING AND STORAGE

7.1 Handling : Use protective hand gloves, dust mask while removing the colour for use, using clean dry spoon. Avoid formation of dust

7.2 Storage : Keep in closed container at ambient temp. & Humidity

7.3 Suitable packaging materials : Store in a tightly sealed container.

7.4 Not suitable packaging materials: None

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

a. TLV / STEL (USA) : No Data Available

b. MAK (Germany) : No Data Available

8.1 Respiratory System Protection : Not required, but dust masks are suggested.

8.2 Skin and Body Protection : No adverse effects. Wash skin with mild soap and water to remove residue of color. Some dyes may temporarily stain skin.

8.3 Hand Protection : Rubber gloves may be used. Wash hands before and at the end of work with water and soap.

8.4 Eye Protection : Protective Glasses may be used.

Prepared by	Approved by
G.A. Chemist	G.A. Manager

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9. PHYSICAL AND CHEMICAL PROPERTIES

1. Physical State : Solid, Fine powder

2. Colour : Red to Maroon

3. Odour : Odourless

4. Boiling Point : Not Applicable

5. Melting Point : Not Applicable

6. pH : 4 - 9

Subsidiary:

7. Water : 120 gms/Litre

8.0M & Substrate : Non-soluble, Not Applicable

9. Vapour Density (Air=1) : Not Applicable

10.5-1.1 Bulk Density : Not Applicable

10. Flash Point : Not Applicable

11. Autoignition Temperature : Not Applicable

12. Lower Explosion Limit : Not Applicable

13. Upper Explosion Limit : Not Applicable

14. Viscosity (mpa.sec.) : Not Applicable

10. STABILITY AND REACTIVITY

10.1. Conditions to avoid : None, Avoid contamination of moisture. Excess exposure to atmosphere, strong reducing agents, strong acids/alkalis

10.2. Materials to avoid : None, Avoid contamination of moisture. Excess exposure to atmosphere, strong reducing agents, strong acids/alkalis

10.3 Hazardous Decomposition Products: None, Avoid contamination of moisture. Excess exposure to atmosphere, strong reducing agents, strong acids/alkalis

Prepared by	Approved by
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11. TOXICOLOGICAL INFORMATION

Acute Toxicity

a. Mouse (Oral) (LD50) : 1000- 3000Mg/Kg Body weight

(Lp.) : 900 Mg/Kg Body weight

(Lv.) : 800 Mg/Kg Body weight

Rat (Oral) : 1000-10000 Mg/kg

(Lp.) : 1000 mg/kg

(Lv.) : 1000 mg/kg

b. Dermal (LD50) : Not irritating to skin

c. Inhalation (LC50) : Not expected to be an inhalation hazard.

11.1. Skin Irritation : Not expected

11.2. Eye Irritation : Not expected

11.3. Sensitisation : Not Applicable

11.4. Chronic Toxicity : No adverse effects expected.

11.5. Carcinogenicity : Not Applicable

Acceptable Daily Intake (ADI) :

Jecha : 0-4 mg/kg.

EEC : 0-4 mg/kg.

USA : Not permitted.

12. ECOLOGICAL INFORMATION

1. Comment : Being an soluble Dye in the proportion suggested however adverse ecological hazards. Not established.

2. Eco toxicity : Not Applicable

3. Ecological Information : No specific data or information available regarding environmental impact.



4. Degr Ad Ability : Readily biodegradable.

Prepared by	Approved by
G.A. Chemist	G.A. Manager

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13. DISPOSAL CONSIDERATIONS	
1. Methods of Disposal	: Can be disposed to an incineration plant in accordance with local regulations.
14. TRANSPORT INFORMATION	
1. UN Number	: N/A
2. Land-Road/Railway	: N/A
3. ADR/RID Class	: N/A
4. ADR/RID Item Number	: N/A
5. Inland Waterways	: N/A
6. ADNR Class	: N/A
7. Sea	: N/A
8. IMDG Class	: N/A
9. IMDG Page No.	: N/A
10. Air	: N/A
11. IATA-DGR Class	: N/A
12. National Transport Regulations	: N/A
13. Comments	:
15. REGULATORY INFORMATION	
1. EC Regulations	: Permitted food colour as per rules & regulations.
2. EC classification	: Classified as E122
3. Label Name	: Carmoisine
4. Hazard Symbols	: Not Applicable, It is a permitted food colour & non hazardous, it used as per regulations.
Prepared by	Approved by
O.A. Chemist	Q.A. Manager
Roha Dyechem Pvt. Ltd. J.J.T House, Plot No. A-44/45, Road No. 2, M.I.D.C., Andheri (E), Mumbai - 400 093, India T: +91 22 4077 3333 F: +91 22 2630 2531/32 E: roha.india@rohagroup.com www.roha.com	

 	
ISSUE NO.: 01	REVISION NO.: 07
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STATUS: CONTROLLED	NEXT REVIEW ON: THREE YEARS
5. Risk Phrases	: Not Applicable.
6. Safety Phrases	: S 22.
16. OTHER INFORMATION	
<p>THIS PRODUCT SHOULD BE STORED, HANDLED AND USED IN ACCORDANCE WITH GOOD INDUSTRIAL PRACTICES AND IN CONFORMITY WITH ANY LEGAL REGULATIONS. THE INFORMATION CONTAINED HEREIN IS BASED ON THE PRESENT STATE OF OUR KNOWLEDGE AND IS INTENDED TO DESCRIBE OUR PRODUCTS FROM THE POINT OF VIEW OF HEALTH AND SAFETY REQUIREMENTS. IT SHOULD NOT THEREFORE BE CONSTRUED AS GUARANTEEING SPECIFIC PROPERTIES.</p>	
<p>The statements made here are supposed to describe the product with regard to necessary safety precautions. They do not guarantee special characteristics and are made to the best of our current knowledge.</p>	
Prepared by	Approved by
O.A. Chemist	Q.A. Manager
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Probenz SG Sodium Benzoate (P-BZA)

SAFETY DATA SHEET

SECTION 1: Identification of the substance/mixture and of the company/undertaking

Product identifier
Product name: Probenz(TM) SP Powder Sodium Benzoate, Food Grade, Kosher
Product No.: EAN 965138, 32877-00, P3287706, P3287701, P3287703, P3287702, P3287704

Additional identification
Chemical name: sodium benzoate
CAS-No.: 532-32-1

Relevant identified uses of the substance or mixture and uses advised against
Identified uses: Preservative, antioxidant (food grade), cosmetic component
Uses advised against: None known.

Details of the supplier of the safety data sheet

Manufacturer / Supplier
Eastman Chemical Company
200 South Wilcox Drive
Kingsport, TN 37660-5280 US
+14232292000

Visit our website at www.EASTMAN.com or email emmsds@eastman.com

Emergency telephone number:

For emergency health, safety, and environmental information, call 1-423-229-4511 or 1-423-229-2000.

For emergency transportation information, in the United States: call CHEMTREC at 800-424-9300 or call 423-229-2000.

SECTION 2: Hazards identification

Hazard Classification:

Health Hazards
Serious Eye Damage/Eye Irritation Category 2A

OSHA Specified Hazards:

Combustible dust May form combustible dust concentrations in air.

Warning label items including precautionary statement:

Pictogram:



Signal Words: **WARNING!**

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Treatment: Treat symptomatically.

SECTION 5: Firefighting measures

General Fire Hazards: Material can accumulate static charges which may cause an electrical spark (ignition source). Use proper bonding and/or grounding procedures.

Extinguishing media

Suitable extinguishing media: Water spray, Dry chemical, Carbon Dioxide.

Unsuitable extinguishing media: None known.

Special hazards arising from the substance or mixture:

Powdered material may form explosive dust-air mixtures.

Advice for firefighters

Special fire fighting procedures: Minimize dust generation and accumulation.

Special protective equipment for fire-fighters:

Self-contained breathing apparatus and full protective clothing must be worn in case of fire.

SECTION 6: Accidental release measures

Personal precautions, protective equipment and emergency procedures: Wear appropriate personal protective equipment.

Environmental Precautions: Avoid release to the environment.

Methods and material for containment and cleaning up: Sweep up and place in a clearly labeled container for chemical waste. Large Spillages: Flush spill area with water spray. Prevent runoff from entering drains, sewers, or streams. Dike for later disposal.

Notification Procedures: In the event of a spill or accidental release, notify relevant authorities in accordance with all applicable regulations.

SECTION 7: Handling and storage:

Precautions for safe handling: Avoid contact with eyes. Wash thoroughly after handling.

Conditions for safe storage, including any incompatibilities: Keep container closed. This material may be used in food. Store separated from: Odorous substances. Toxic substances.

Specific end use(s): Antioxidant

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Hazard Statement(s): H310: Causes serious eye irritation.
May form combustible dust concentrations in air.

Precautionary Statement:

Prevention: P210: Keep away from heat/sparks/open flames/hot surfaces. No smoking.
P243: Take precautionary measures against static discharge.
P284: Wash hands thoroughly after handling.
P280: Wear protective gloves/protective clothing/eye protection/face protection.

Response: P305+P351+P338: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P337+P313: If eye irritation persists: Get medical advice/attention.

Disposal: P501: Dispose of contents/container to an appropriate treatment and disposal facility in accordance with applicable laws and regulations, and product characteristics at time of disposal.

Hazard(s) not otherwise classified (HNOC): None known.

SECTION 3: Composition/information on ingredients

Substances / Mixtures

General information:

Chemical name	Concentration	Additional Identification	Notes
sodium benzoate	>99%	CAS-No.: 532-32-1	#
water	<1%	CAS-No.: 7732-18-6	

All concentrations are percent by weight unless ingredient is a gas. Gas concentrations are in percent by volume.
This substance has workplace exposure limits.

SECTION 4: First aid measures

Description of first aid measures

Inhalation: Move to fresh air. Treat symptomatically. Get medical attention if symptoms persist.

Eye contact: Immediately flush with plenty of water for at least 15 minutes. If easy to do, remove contact lenses. Get medical attention.

Skin contact: Wash with soap and water. Get medical attention if symptoms occur.

Ingestion: Seek medical advice.

Most important symptoms and effects, both acute and delayed: May irritate and cause redness and pain.

Indication of any immediate medical attention and special treatment needed

Hazards: None known.

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SECTION 8: Exposure controls/personal protection

Control Parameters

Occupational Exposure Limits

Country specific exposure limits have not been established or are not applicable unless listed below.

Chemical name	Type	Exposure Limit Values	Source
sodium benzoate	ST-ESL	50 µg/m ³	U.S. Texas: Effects Screening Levels (Texas Commission on Environmental Quality) (03/2016)
	AN-ESL	5 µg/m ³	U.S. Texas: Effects Screening Levels (Texas Commission on Environmental Quality) (03/2016)

Exposure controls

Appropriate engineering controls: Good general ventilation (typically 10 air changes per hour) should be used. Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits. If exposure limits have not been established, maintain airborne levels to an acceptable level.

Individual protection measures, such as personal protective equipment.

General information: Eye bath, Washing facilities.

Eyeface protection: Wear safety glasses with side shields (or goggles).

Skin protection
Hand Protection: It is a good industrial hygiene practice to minimize skin contact.

Other: No data available.

Respiratory Protection: If engineering controls do not maintain airborne concentrations below recommended exposure limits (where applicable) or to an acceptable level (in countries where exposure limits have not been established), an approved respirator must be worn. In the United States of America, if respirators are used, a program should be instituted to assure compliance with OSHA Standard 83 FR 1162, January 8, 1998. Respirator type: Air-purifying respirator with an appropriate, government approved (where applicable), air-purifying filter, cartridge or canister. Contact health and safety professional or manufacturer for specific information.

Hygiene measures: Observe good industrial hygiene practices. Observe good industrial hygiene practices.

Environmental Controls: No data available.

SECTION 9: Physical and chemical properties

Information on basic physical and chemical properties

Appearance

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Physical state:	solid
Form:	Crystalline Powder
Color:	White
Odor:	Odorless
Odor Threshold:	Not determined.
pH:	calculated 8
Melting Point:	300 °C
Boiling Point:	decomposes
Flash Point:	not applicable
Evaporation Rate:	Not determined.
Flammability (solid, gas):	not applicable
Flammability Limit - Upper (LFL):	No data available.
Flammability Limit - Lower (LFL):	No data available.
Vapor pressure:	not applicable
Vapor density (air=1):	No data available.
Specific Gravity:	1.44 (25 °C)
Solubility(ies)	
Solubility in Water:	550 g/l
Solubility (other):	Complete.
Partition coefficient (n-octanol/water):	log Pow: -2.27
Autoignition Temperature:	not applicable
Decomposition Temperature:	Thermal stability not tested. Low stability hazard expected at normal operating temperatures.
Dynamic viscosity:	not applicable
Kinematic viscosity:	not applicable
Explosive properties:	Not classified.
Oxidizing properties:	Not classified.

SECTION 10: Stability and reactivity

Reactivity:	None known.
Chemical Stability:	Stable
Possibility of Hazardous Reactions:	None known.
Conditions to Avoid:	None at ambient temperatures.
Incompatible Materials:	Strong oxidizing agents.
Hazardous Decomposition Products:	Carbon Dioxide, Carbon Monoxide.

SECTION 11: Toxicological information

Information on likely routes of exposure

Inhalation: None known.

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Ingestion:	None known.
Skin contact:	None known.
Eye contact:	Causes eye irritation.

Information on toxicological effects

Oral

Product: No data available.

Specified substance(s): sodium benzoate
Oral LD-50 (Rat): > 2,000 mg/kg

Dermal

Product: No data available.

Specified substance(s): sodium benzoate
Dermal LD-50 (Rabbit): > 2,000 mg/kg

Inhalation

Product: No data available.

Specified substance(s): sodium benzoate
LC50 (Rat,) > 2069 ppm

Repeated dose toxicity

Product: No data available.

Specified substance(s): sodium benzoate
NOAEL (Rat, Oral Study): 1,000 mg/kg
NOAEC (Rat, Inhalation study): 250 mg/l Read-across from a similar material
NOAEL (Rat, Dermal Study): 2,500 mg/kg

Skin Corrosion/Irritation

Product: No data available.

Specified substance(s): sodium benzoate
(Rabbit, 14 h): Slight

Serious Eye Damage/Eye Irritation

Product: No data available.

Specified substance(s): sodium benzoate
(Rabbit, 14 h): moderate

Respiratory or Skin Sensitization

Product: No data available.

Specified substance(s): sodium benzoate
OECD 425: LLNA (Mouse): non-sensitizing

Carcinogenicity

Product: No data available.

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Specified substance(s): sodium benzoate	Rat, Ingestion Not suspected as a human carcinogen.
Toxicity to reproduction	
Product:	No data available.
Specified substance(s): sodium benzoate	(Rat), NOAEL: 500 mg/kg; Ingestion, Remarks: Read-across from a similar material
Developmental toxicity	
Product:	No data available.
Specified substance(s): sodium benzoate	Rat, NOAEL: 175 mg/kg; Ingestion
Germ Cell Mutagenicity	
In vitro	
Product:	No data available.
Specified substance(s): sodium benzoate	Salmonella typhimurium assay (Ames test) (Bacteria Reverse Mutation Assay): negative
In vivo	
Product:	No data available.
Specified substance(s): sodium benzoate	Chromosomal aberration (Mammalian Bone Marrow Chromosome Aberration Test) oral; gavage (Rat): negative
Specific Target Organ Toxicity - Single Exposure	
Product:	No data available.
Specified substance(s): sodium benzoate	Not classified.
Specific Target Organ Toxicity - Repeated Exposure	
Product:	No data available.
Specified substance(s): sodium benzoate	Not classified.
Aspiration Hazard	
Product:	No data available.
Other effects:	No data available.

SECTION 12: Ecological information

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Ecotoxicity:

Acute hazards to the aquatic environment:

Fish

Product: No data available.

Specified substance(s): sodium benzoate
LC-50 (Fathead Minnow, 96 h): 484 mg/l

Aquatic Invertebrates

Product: No data available.

Specified substance(s): sodium benzoate
LC-50 (Water Flea, 96 h): > 100 mg/l

Chronic hazards to the aquatic environment:

Fish

Product: No data available.

Specified substance(s): sodium benzoate
NOEC: (Zebra Fish, 6 d): 10 mg/l

Aquatic Invertebrates

Product: No data available.

Toxicity to Aquatic Plants

Product: No data available.

Specified substance(s): sodium benzoate
EC-50 (Algae (Pseudokirchnerella subcapitata), 72 h): > 30.5 mg/l

Persistence and Degradability

Biodegradation

Product: No data available.

Specified substance(s): sodium benzoate
75 % (30 d) Ready biodegradable

BOD/COD Ratio

Product: No data available.

Bioaccumulative Potential

Bioconcentration Factor (BCF)

Product: No data available.

Partition Coefficient n-octanol / water (log K_{ow})

Product: Log K_{ow}: -2.27

Mobility in Soil: No data available.

Other Adverse Effects: No data available.

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SECTION 13: Disposal considerations

Waste treatment methods

General information: No data available.

Disposal methods: Dispose of waste and residues in accordance with local authority requirements. Incinerate. Since emptied containers retain product residue, follow label warnings even after container is emptied.

SECTION 14: Transport information

Important Note: Shipping descriptions may vary based on mode of transport, quantities, package size, and/or origin and destination. Consult your company's Hazardous Materials/Dangerous Goods expert for information specific to your situation.

DOT
Class not regulated

IMDG - International Maritime Dangerous Goods Code
Class not regulated

IATA
Class not regulated

SECTION 15: Regulatory information

Safety, health and environmental regulations/legislation specific for the substance or mixture.:

This product has been classified in accordance with hazard criteria of the Controlled Products Regulations and the SDS contains all the information required by the Controlled Products Regulations.
WHMIS (Canada) Status: controlled
WHMIS (Canada) Hazard Classification: D/2/B

SARA 311-312 Hazard Classification(s):
immediate (acute) health hazard

US EPCRA (SARA Title III) Section 313 - Toxic Chemical List
NONE

OSHA: hazardous

TSCA (US Toxic Substances Control Act): All components of this product are listed on the TSCA inventory. Any impurities present in this product are exempt from listing.

DSL (Canadian Domestic Substances List) and CEPA (Canadian Environmental Protection Act): All components of this product are listed on the DSL. Any impurities present in this product are exempt from listing.

AICS / NICNAS (Australian Inventory of Chemical Substances and National Industrial Chemicals Notification and Assessment Scheme): All components of this product are listed on AICS or otherwise comply with NICNAS.

MITI (Japanese Handbook of Existing and New Chemical Substances): All components of this product are listed in the Handbook or have been approved in Japan by new substance notification.

ECL (Korean Toxic Substances Control Act): All components of this product are listed on the Korean inventory or otherwise comply with the Korean Toxic Substances Control Act.

Philippines Inventory (PICCS): All components of this product are listed on the Philippine inventory or otherwise comply with PICCS.

Inventory of Existing Chemical Substances in China: All components of this product are listed on the Inventory of Existing Chemical Substances in China (IECSC).

SECTION 16: Other information

HMIS® Hazard Ratings: Health - 2, Flammability - 1, Chemical Reactivity - 0

HMIS® rating involves data interpretations that may vary from company to company. They are intended only for rapid, general identification of the magnitude of the specific hazard. To deal adequately with the safe handling of this material, all the information contained in this MSDS must be considered.

Revision Information: Not relevant.

Key literature references and sources for data: No data available.

Training information: No data available.

Issue Date: 05/21/2015

SDS No.:

Disclaimer: This information is provided without warranty. The information is believed to be correct. This information should be used to make an independent determination of the methods to safeguard workers and the environment.