MATSUYA R&D (MYANMAR) COMPANY LIMITED

Environmental Management Plan

Manufacturing of Cuffs for Sphygmomanometers

27-Feb-24

MRD MATSUYA R&D (Myanmar) Co.,Ltd.
Plot No.A7-2, Mingaladon Industrial Park,
Corner of No.3 Highway Road & Khayebin Road,
Mingaladon Township, Yangon, Myanmar.

Commitment of Matsuya R&D (Myanmar) Company Limited

We refer to the captioned EMP report in compliance with EIA procedure (2015) and other related laws/rules.

We believe, to the best of our knowledge at the time of writing, that;

- The report is accurate and complete
- The report has been prepared in strict compliance with all applicable laws, rules, regulations and procedures in force.

Matsuya R&D (Myanmar) Company Limited will at all times comply fully with all commitment and obligations in the environmental management plans, and mitigation measures of the environmental impacts described in this EMP report.

We acknowledge and understand that

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Abbreviation

1. CEMP = Construction Environmental Management Plan
2. CMP = Contract Manufacturing Process
3. CSR = Corporate Social Responsibility
4. ECC = Environmental Compliance Certificate
5. ECD = Environmental Conservation Department
6. EIA = Environmental Impact Assessment
7. EMoP = Environmental Monitoring Plan
8. EMP = Environmental Management Plan
9. GIIP = Good International Industry Practices
10. HSE = Health, Safety and Environment
11. IEE = Initial Environmental Examination
12. IFC = International Finance Corporation
13. NEQG = National Environmental Quality (Emission) Guidelines
14. MIC = Myanmar Investment Commission
15. MOECAF = Ministry of Environmental Conservation and Forestry
16. MONREC = Ministry of Natural Resources and Environmental Conservation
17. OEMP = Operation Environmental Management Plan
18. OSHA = Occupational Safety and Health Administration
19. PPE = Personal Protective Equipment
20. WHO = World Health Organization
21. YCDC = Yangon City Development Committee
22. YRIC = Yangon Region Investment Committee
23. YESB = Yangon City Electricity Supply Board

အစီရင်ခံစာအကျဉ်းချုပ်

နိဒါန်း

အဆိုပြုလုပ်ငန်းသည် CMP စနစ်ဖြင့် သွေးဖိအားတိုင်းကိရိယာပါ လက်ပတ်အပြားထုတ်လုပ်ခြင်းလုပ်ငန်းအတွက် ရင်းနှီးမြှုပ်နှံသော ကုမ္ပဏီ ဖြစ်ပါသည်။ ရင်းနှီးမြှုပ်နှံမှုလိုင်စင်ကို ၂၀၁၅ ခုနှစ်၊ ဖေဖော်ဝါရီလ ၁၃ ရက်နေ့တွင် (မြန်မာနိုင်ငံရင်းနှီးမြှုပ်နှံမှုကော်မရှင်၏ ခွင့်ပြုမိန့်အမှတ် ၉၀၅/၂၀၁၅)ဖြင့် ရရှိပြီးဖြစ်ပါသည်။ လုပ်ငန်းလည်ပတ်ရန် အတွက် မြန်မာနိုင်ငံ သယံဇာတနှင့် သဘာဝပတ်ဝန်းကျင် ထိန်းသိမ်းရေးဝန်ကြီးဌာန (MONREC) ၏ အတည်ပြုချက် ရယူရန် လိုအပ်ကြောင်း ကော်မရှင်မှ မှာကြားခဲ့ပါသည်။ ရင်းနှီးမြှုပ်နှံမှုပမာဏမှာ အမေရိကန်ဒေါ်လာ ၁.၅၀ သန်း ဖြစ်ပါသည်။

အဆိုပြုထားသောစိမ်ကိန်း	CMP စနစ်ဖြင့် သွေးဖိအားတိုင်းကိရိယာပါ လက်ပတ်အပြားထုတ်လုပ်ခြင်းလုပ်ငန်း
ရင်းနှီးမြှုပ်နှံမှုပုံစံ	၁၀၀% နိုင်ငံခြားသားရင်းနှီးမြှုပ်နှံမှု
အစုရှယ်ယာပုံစံ	ပုံမှန်အစုရှယ်ယာ
မြေနေရာပုံစံ	စက်မှုဇုန်မြေ
စုစုပေါင်းမြေကွက်ဧရိယာ	၁.၉၇၅ ဧက (၇၉၉၃ စတုရန်းမီတာ)
အဆောက်အအုံပုံစံ	တစ်ထပ်ခွဲအဆောက်အအုံတစ်လုံး (၁၂၅၀ စတုရန်းမီတာ)
မြေငှားကာလ	၃၄ နှစ်
တည်ဆောက်ကာလ	၄ လ
အဆိုပြုရင်းနှီးမြှုပ်နှံမှုကာလ	ကနဦး ၁၀ နှစ်နှင့် ထပ်တိုးကာလ
စီမံကိန်းတည်နေရာ	မြေကွက်အမှတ် (A7-2)၊ မင်္ဂလာဒုံစက်မှုဇုန်၊ မင်္ဂလာဒုံမြို့နယ်၊ ရန်ကုန်တိုင်းဒေသကြီး။
ဆက်သွယ်ရန်ဖုန်းနံပါတ်	ဒေါ်သဲစု 09-782714377 mm.matsuyaygn@matsuyard.co.jp

ဥပဒေနှင့် မူဝါဒဆိုင်ရာ အချက်အလက်များ

စက်ရုံနှင့် ဆက်စပ်သက်ဆိုင်နေပြီး လိုက်နာရမည့် ဥပဒေနှင့် နည်းဥပဒေများ၊ MONREC မှ ထုတ်ပြန်ထားသည့် ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်းဆိုင်ရာ လုပ်ထုံးလုပ်နည်းများ၊ အမျိုးသားပတ်ဝန်းကျင်ဆိုင်ရာ အရည်အသွေး (ထုတ်လွှတ်မှု) လမ်းညွှန်ချက်များ၊ စက်ရုံနှင့်သက်ဆိုင်သည့် ဒေသတွင်း သို့မဟုတ် အပြည်ပြည်ဆိုင်ရာ သဘာဝပတ်ဝန်းကျင်နှင့် လူမှုပတ်ဝန်းကျင်ဆိုင်ရာ မူဝါဒများ၊ ဆက်စပ်နေသည့် နိုင်ငံတကာသဘောတူချက်များကို အကျဉ်းချုပ်ရေးသားဖော်ပြထားပါသည်။

1. Constitution of the Union of Myanmar (2008)
2. Environmental Conservation Law, 30 March 2012
3. Environmental Conservation Rules, 2014
4. Environmental Impact Assessment Procedure (December 2015)
5. National Environmental Quality (Emission) Guideline (NEQG) (December 2015)
6. National Environmental Policy of Myanmar (2019)
7. Myanmar Investment Law, 2016
8. Myanmar Investment Rule, 2017
9. Myanmar Insurance Law (1993)
10. Payment of Wages Law (2016)
11. Yangon City Development Committee Law (2018)
12. The Amended Law for Factories Act, 1951 (2016)
13. The Private Industrial Enterprise Law, 1990
14. The Export and Import Law (2012)
15. The Prevention of Hazard from Chemical and Related Substances Law, 2013
16. Underground Water Act (1930)
17. Myanmar Fire Brigade Law (2015)
18. The Electricity Law (2014)
19. The Social Security Law (2012)
20. The Settlement of Labor Dispute Law 2012 (Amendment 2019)
21. The Employment and Skill Development (2013)
22. The Worker's Compensation Act, 1923
23. The Payment of Wages Act, 1936
24. The Leave and Holidays Act, (1951, partially revised in 20140
25. The Minimum Wage Law (2013)
26. Public Health Law (1972)
27. Prevention and Control of Communicable Disease Law 1995 (Amendment in 2011)
28. Occupational Safety and Health Law (2019)
29. The Law on Standardization
30. လုပ်ငန်းခွင်သုံးပေါက်ကွဲစေတတ်သော ဝတ္ထုပစ္စည်းများဆိုင်ရာ ဥပဒေ (2018)

31. The Motor Vehicles Law (2015)

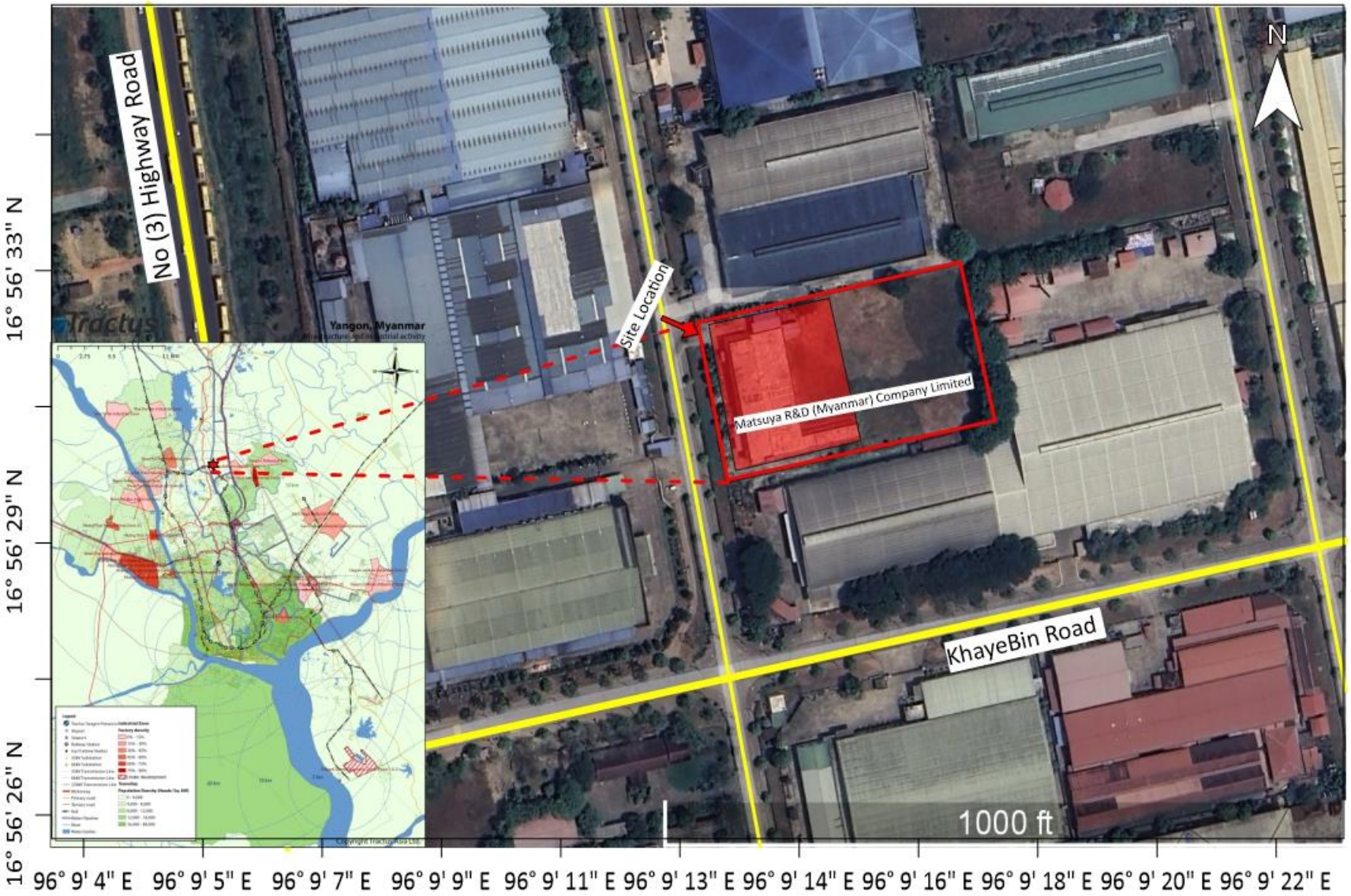
32. The Conservation of Water Resources and River Law (2006)

33. The Commercial Tax Law (1990) Amended 2014

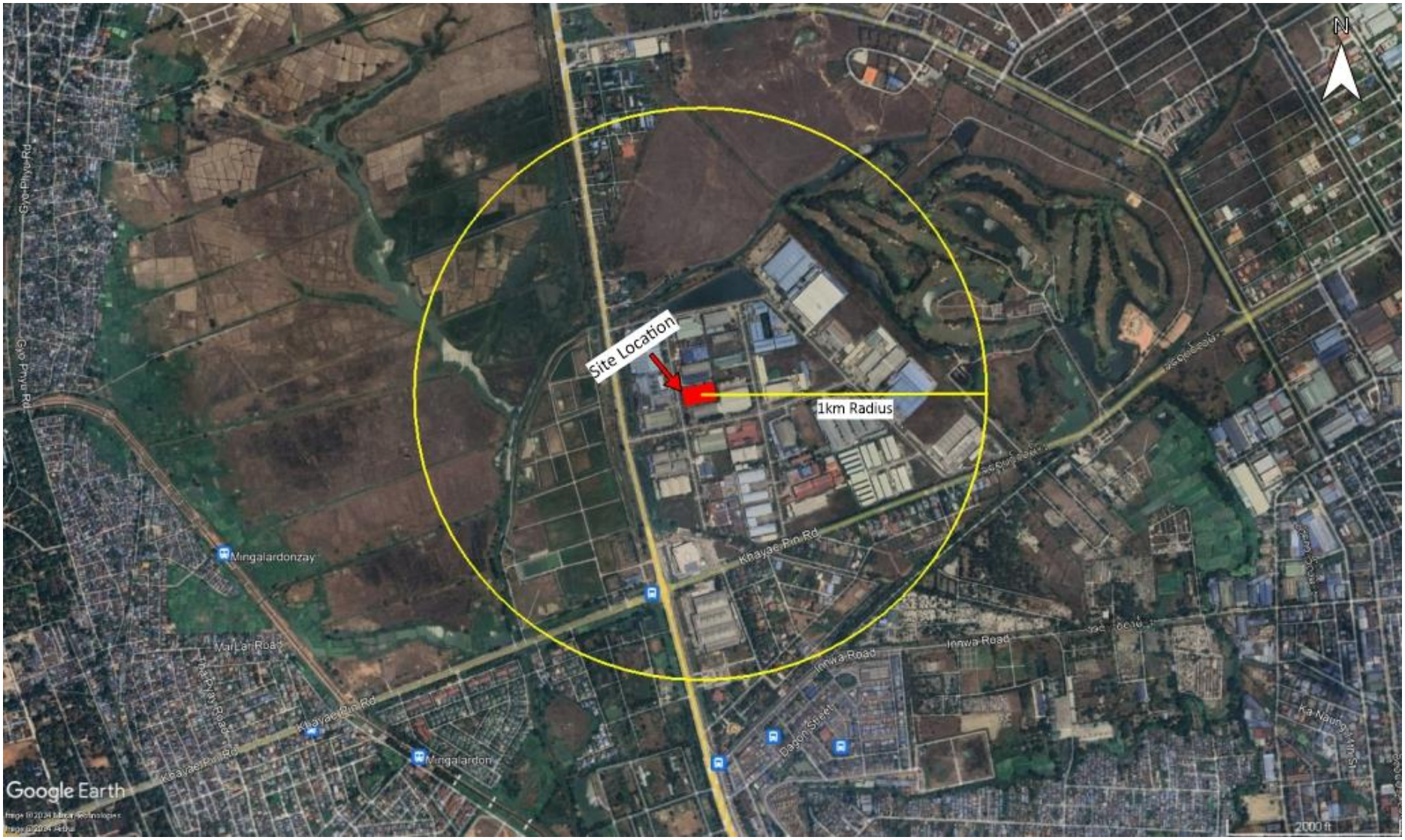
<u>စီမံကိန်းအကြောင်းအရာဖော်ပြချက်</u>

မြန်မာနိုင်ငံ ပတ်ဝန်းကျင်ထိန်းသိမ်းရေးဥပဒေ (၂၀၁၂)အရ ပတ်ဝန်းကျင်စီမံခန့်ခွဲမှုအစီအစဉ် (EMP) ပြုလုပ်ရန် လိုအပ်ကြောင်း ၂၀၁၅ ခုနှစ်၊ ဖေဖော်ဝါရီလ ၁၃ ရက်နေ့တွင် စာအမှတ်၊ DICA-3/FI-1117/2015 (256-C) ဖြင့် မြန်မာနိုင်ငံရင်းနှီးမြှုပ်နှံမှုကော်မရှင်မှ သဘောထားမှတ်ချက် ရရှိပြီးဖြစ်ပါသည်။ Matsuya R&D (Myanmar) Company Limited သည် မြေကွက်အမှတ် (A7-2)၊ မင်္ဂလာဒုံစက်မှုဇုန်၊ မင်္ဂလာဒုံမြို့နယ်၊ ရန်ကုန်တိုင်းဒေသကြီးတွင် တည်ရှိသည်။ အဆိုပြုစီမံကိန်းသည် မြောက်လတ္တီကျူ ၁၆° ၅၆' ၃၁.၅၉" နှင့် အရှေ့လောင်ကျီကျူ ၉၆° ၀၉' ၁၃.၈၂" ကြားတွင်ရှိပါသည်။ အဆိုပါစက်ရုံသည် CMP စနစ်ဖြင့် သွေးဖိအားတိုင်းကိရိယာပါ လက်ပတ်အပြားများကို ထုတ်လုပ်ပါသည်။ စီမံကိန်းဧရိယာသည် ၁.၉၇၅ ဧက ကျယ်ဝန်း၍ တစ်ထပ်ခွဲပင်မအဆောက်အအုံ တစ်လုံး ပါဝင်ပါသည်။ စီးပွားဖြစ်စတင်လည်ပတ်ခြင်းကို ၂၀၁၆ ခုနှစ်၊ မတ်လ (၉) ရက်နေ့တွင် စတင်ခဲ့ပါသည်။ စီမံကိန်းဧရိယာအတွင်းတွင် ထုတ်လုပ်ခြင်းဆိုင်ရာ အဆောက်အအုံတစ်လုံး၊ ထရန်စဖော်မာခန်း၊ မီးစက်ခန်း၊ မီးသတ်ခန်း၊ စားသောက်ခန်းနှင့် ကားရပ်နားရန် နေရာများပါဝင်ပါသည်။ အလုပ်သမားဦးရေ စုစုပေါင်း ၂၆၈ ဦး (နိုင်ငံခြားသား ၃ ဦး+ ပြည်တွင်းလုပ်သား ၂၆၅ ဦး) ရှိပါသည်။ နှစ်စဉ် ခန့်မှန်းခြေ ကုန်ထုတ်လုပ်မှုနှုန်းမှာ ပထမနှစ်မှ ဆယ်နှစ်အတွင်း အခုရေ ၁၀၀၀ ကျော်မှ ၇၀၀၀ ကျော်ထိ တိုးမြှင့်ထုတ်လုပ်မည်ဖြစ်ပါသည်။

စီမံကိန်းဆောင်ရွက်ရာတွင် MOREC ၏ သတ်မှတ်ထားသော ပတ်ဝန်းကျင်ဆိုင်ရာ ဥပဒေများအတိုင်း လိုက်နာဆောင်ရွက်လျက်ရှိပြီး လက်ရှိချမှတ်ထားသော ပြည်တွင်း၊ ပြည်ပ ပတ်ဝန်းကျင်နှင့် လူမှုဝန်းကျင်ဆိုင်ရာ ဥပဒေများကို လိုက်နာဆောင်ရွက်လျက်ရှိပါသည်။



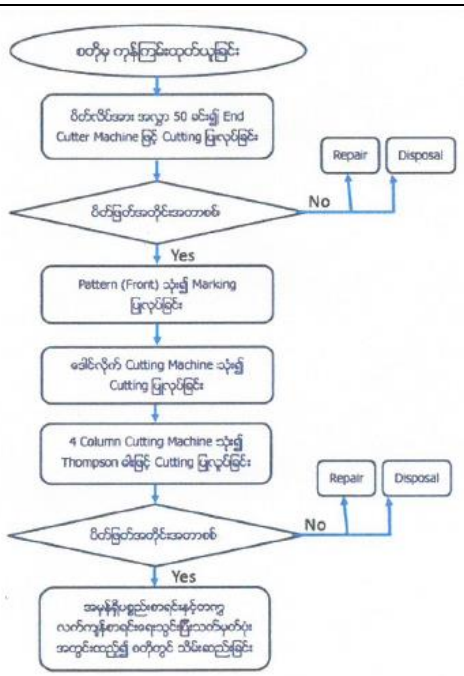
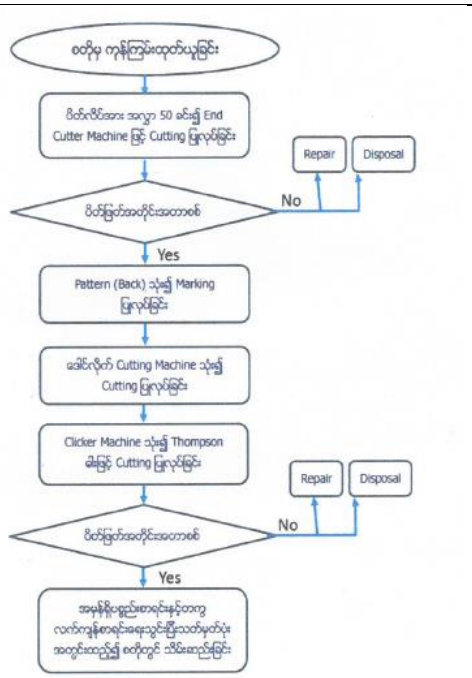
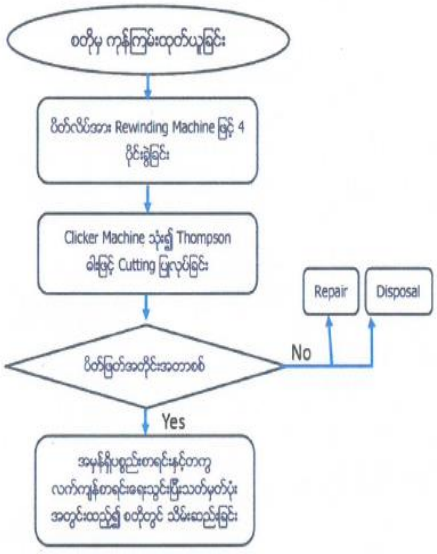
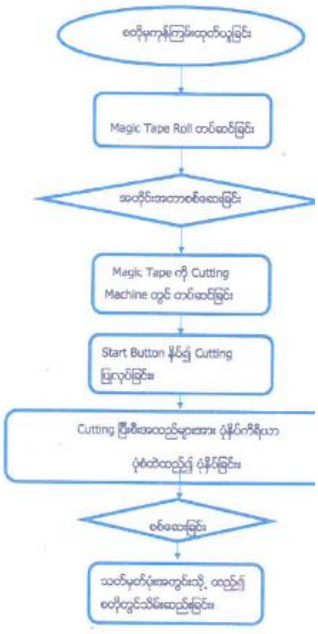
လုပ်ငန်း၏တည်နေရာပြမြေပုံ

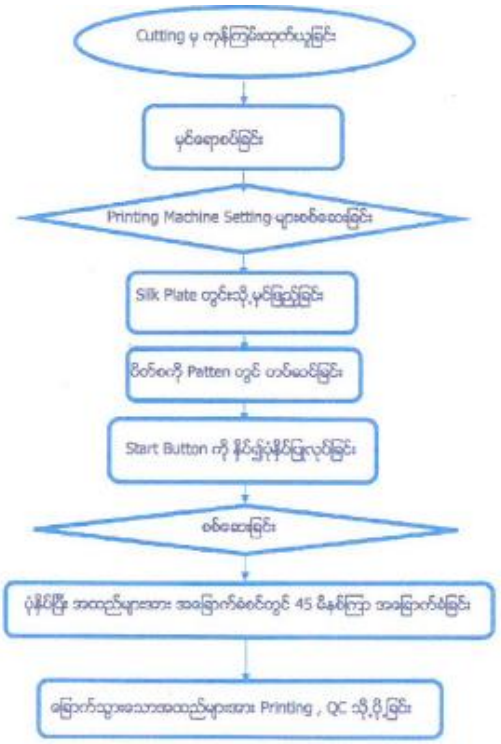


လုပ်ငန်း၏ 1km အနီး ပတ်ဝန်းကျင်ပြမြေပုံ

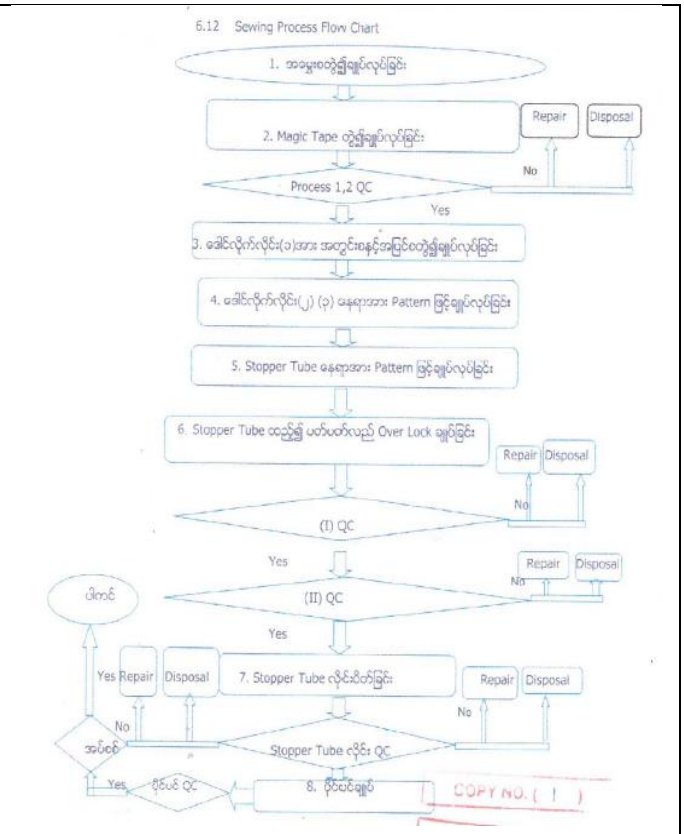
Matsuya R&D (Myanmar) Company Limited သည် CMP စနစ်ဖြင့် သွေးဖိအားတိုင်းကိရိယာပါ လက်ပတ်အပြားများကို သိုလှောင်ခြင်း၊ ဖြတ်တောက်ခြင်း၊ ပုံနှိပ်ခြင်း၊ တွဲဆက်ချုပ်လုပ်ခြင်း၊ အရည်အသွေး စစ်ဆေးခြင်း၊ ထုတ်ပိုးခြင်း အဆင့်များဖြင့် ထုတ်လုပ်လျက်ရှိပါသည်။

<u>ထုတ်လုပ်ပုံအဆင့်ဆင့်ကို အသေးစိတ်ရှင်းလင်းပြသထားသည့် Flow Chart များ</u>

<table>
<tr><td> 
</td><td> 
</td></tr>
<tr><td>ဖြတ်တောက်ခြင်း (အရှေ့ခြမ်း)</td><td>ဖြတ်တောက်ခြင်း (အနောက်ခြမ်း)</td></tr>
<tr><td> 
</td><td> 
</td></tr>
<tr><td>ဖြတ်တောက်ခြင်း (အမွေးစ)</td><td>ကပ်ခွာဖြတ်တောက်ခြင်းနှင့် ပုံနှိပ်ခြင်း</td></tr>
</table>



ပုံနှိပ်ခြင်းလုပ်ငန်း



အစိတ်အပိုင်းများကို တွဲဆက်ချုပ်လုပ်ခြင်း

ကုန်ကြမ်းသိုလှောင်ခြင်း

ဖြတ်တောက်ခြင်း

ပုံနှိပ်ခြင်း

တွဲဆက်ချုပ်လုပ်ခြင်း

အရည်အသွေးစစ်ဆေးခြင်း

ထုတ်ပိုးခြင်း

ထုတ်လုပ်ပုံအဆင့်ဆင့်ဓာတ်ပုံများ

လုပ်ငန်းဆောင်ရွက်ရာတွင် လိုအပ်သည့် စက်ပစ္စည်း (၃၇) မျိုးကို တရုတ်နိုင်ငံမှ တင်သွင်းအသုံးပြုသွားမည်ဖြစ်ပြီး Tafeta (Cut and Raw)၊ Vaicro၊ Napped Cloth (Cut and Raw)၊ Stopper၊ Bias၊ Sewing Thread၊ Ink နှင့် Thinner စသည့် ကုန်ကြမ်းပစ္စည်းများကို တရုတ်၊ ဂျပန်နှင့် ဗီယက်နမ်နိုင်ငံတို့မှ တင်သွင်းမည်ဖြစ်ပါသည်။ ခန့်မှန်းခြေ ကုန်ထုတ်လုပ်မှုနှုန်းမှာ ပထမနှစ်မှ ဆယ်နှစ်အတွင်း အခုရေ ၁၀၀၀ ကျော်မှ ၇၀၀၀ ကျော်ထိ တိုးမြှင့်ထုတ်လုပ်၍ ဗီယက်နမ်နိုင်ငံသို့ တင်ပို့ရောင်းချမည်ဖြစ်ပါသည်။

အနီးပတ်ဝန်းကျင်အခြေအနေဆိုင်ရာ ဖော်ပြချက်

လက်ရှိပတ်ဝန်းကျင်၏ ပတ်ဝန်းကျင်ဆိုင်ရာအချက်အလက်၊ ပတ်ဝန်းကျင်အရည်အသွေး တိုင်းတာခြင်းများနှင့် သက်ရောက်မှုများကို ၂၀၂၃ ခုနှစ်၊ ဒီဇင်ဘာလ ၂၂ ရက်နေ့တွင် ပြုလုပ်ခဲ့ပါသည်။ စစ်တမ်းကောက်ယူရာတွင် အပူချိန်၊ စိုထိုင်းစ၊ ဆူညံသံနှင့် အလင်းတို့ကို စက်ရုံတွင်းတွင် တိုင်းတာခဲ့ပြီး လူမှုစီးပွားအခြေအနေ၊ ရူပပတ်ဝန်းကျင်ဆိုင်ရာ အချက်အလက်များ၊ ဇီဝပတ်ဝန်းကျင်ဆိုင်ရာ အချက်အလက်များ၊ ရာသီဥတုဆိုင်ရာ အချက်အလက်များ အစရှိသည်များကို ရန်ကုန်တိုင်းဒေသကြီး၊ မင်္ဂလာဒုံမြို့နယ်မှ တရားဝင်ပြဋ္ဌာန်းထားသော မြို့နယ်ဆိုင်ရာ အချက်အလက်များမှ ကိုးကားဖော်ပြထားပါသည်။

အဆိုပြုလုပ်ငန်း၏စစ်တမ်းကောက်ယူမှု

အမျိုးအစား	ရလဒ်
ရာသီဥတုအခြေအနေ	
အပူချိန်	၂၇.၃˚C
စိုထိုင်းဆ	၆၀.၄ %
ဆူညံသံ	
ထုတ်လုပ်မှုပြင်ပဧရိယာ	၆၁.၂၃ dBA
ထုတ်လုပ်မှုဧရိယာအတွင်း(စက်ချုပ်ဧရိယာ)	၅၈.၀၄ dBA
လေထုအရည်အသွေး	
ပတ်ဝန်းကျင်ဆိုင်ရာ အရည်အသွေးများ	**ထုတ်လုပ်မှုဧရိယာပြင်ပ လေထုအရည်အသွေး**
PM_{10}	၁၆.၁ µg/m^3
$PM_{2.5}$	၁၀.၈ µg/m^3
SO_2	၁.၃၁ µg/m^3
NO_2	၁၉.၀၆ µg/m^3
CO	၀.၃၄ µg/m^3
CO_2	၁ ppm
O_3	၃.၂၆ µg/m^3
TSP	၂၀.၃၆ µg/m^3
VOC	၄၉.၃ µg/m^3

အလင်းရောင်တိုင်းတာမှု	
ကုန်ကြမ်းသိုလှောင်ထားရှိမှု ဧရိယာ	၁၁၉.၅ Lux
ဖြတ်တောက်ခြင်းဧရိယာ	၃၄၆ Lux
ပုံနှိပ်ခြင်းဧရိယာ	၉၁၆ Lux
ချုပ်လုပ်ခြင်း ဧရိယာ	၆၃၄ Lux
အရည်အသွေးစစ်ဆေးခြင်း ဧရိယာ	၁၁၇၀ Lux
ရေအရည်အသွေးတိုင်းတာမှု	
စွန့်ပစ်ရေ	သတ်မှတ်ချက်ထက် ကျော်လွန်ခြင်းမရှိပါ။

<u>ပတ်ဝန်းကျင်ထိခိုက်မှု ဆန်းစစ်ခြင်းနှင့် လျော့ချရေးနည်းလမ်းများ</u>

အဆိုပြု စီမံကိန်း၏ အဓိကဖြစ်ပေါ်စေနိုင်သော ပတ်ဝန်းကျင်ထိခိုက်မှုကို အခြေခံစစ်တမ်းများပေါ် မူတည်၍ ယေဘုယျ နည်းလမ်းများအတိုင်း လျှော့ချမှုများ ပြုလုပ်သွားပါမည်။ ပတ်ဝန်းကျင် ထိခိုက်မှုကို လေ့လာဆန်းစစ်ရာတွင် စီမံကိန်းကာလအတွင်း ထိခိုက်မှု တစ်ခုချင်းစီ၏ ပမာဏ၊ ကြာမြင့်ချိန်၊ ကျယ်ပြန့်မှုနှင့် ဖြစ်နိုင်ချေတို့အား ဖော်ပြထားပါသည်။

အကဲဖြတ်ခြင်း	**အတိုင်းအတာ**				
	၁	၂	၃	၄	၅
ပမာဏ	မလုံလောက်သော	အနည်းငယ်နှင့် လုပ်ငန်းခွင်ပြောင်းလဲမှုဖြစ်စေနိုင်သော	အသင့်အတင့်နှင့် အနည်းငယ် လုပ်ငန်းခွင်ပြောင်းလဲမှုဖြစ်စေနိုင်သော	မြင့်မားနှင့် သိသာစွာ လုပ်ငန်းခွင်ပြောင်းလဲမှုဖြစ်စေနိုင်သော	အလွန်မြင့်မားနှင့် အမြဲတမ်းလုပ်ငန်းခွင်ပြောင်းလဲမှုဖြစ်စေနိုင်သော
အချိန်	၀-၁ နှစ်	၂-၅ နှစ်	၆-၁၅ နှစ်	လုပ်ငန်းလည်ပတ်စဉ် ကာလတလျှောက်	လုပ်ငန်းပိတ်သိမ်းခြင်း ကာလအထိ
ကျယ်ပြန့်မှု	လုပ်ငန်းခွင်အတွင်း	ဒေသအတွင်း	မြို့နယ်အတွင်း	နိုင်ငံအတွင်း	နိုင်ငံတကာအတွင်း
ဖြစ်နိုင်ချေ	လုံး၀မဖြစ်နိုင်သော	မဖြစ်နိုင်သော	ဖြစ်နိုင်သော	ဖြစ်နိုင်ချေမြင့်သော	အတိအကျဖြစ်နိုင်သော

သတ်မှတ်ချက် = (ပမာဏ + အချိန် + ကျယ်ပြန့်မှု) ˣ ဖြစ်နိုင်ချေ

ပတ်ဝန်းကျင်ထိခိုက်မှုကို အောက်ပါအတိုင်း ခွဲခြားနိုင်သည်။

သတ်မှတ်ချက်	ထိခိုက်မှုအဆင့်
<၁၅	အလွန်နိမ့်
၁၅ - ၂၉	နိမ့်
၃၀ - ၄၄	အလယ်အလတ်
၄၅ - ၅၉	မြင့်
၆၀	အလွန်မြင့်

ပတ်ဝန်းကျင် လက္ခဏာ	လုပ်ငန်းလုပ်ဆောင်မှု	လျော့ချရေးနှင့် ထိန်းချုပ်မှု
လုပ်ငန်းလည်ပတ်စဉ်ကာလ		
လေထုအရည်အသွေး	• သယ်ယူပို့ဆောင်ရေးသုံးမော် တော်ယာဉ်တို့ကြောင့် ဖုန်မှုန့်နှင့် ဖန်လုံအိမ်ခါတ်ငွေ့ထွက်ခြင်း • လုပ်ငန်းခွင်အတွင်း ဖုန်မှုန့်ထွက် ခြင်း • အရေးပေါ်မီးစက်မှ စွန့်ထုတ် အခိုးအငွေ့ထွက်ခြင်း	• မီးစက်တွင် မီးခိုးခေါင်းတိုင် တပ်ဆင်ခြင်းဖြင့် အခိုးအငွေ့ကြောင့် ပတ်ဝန်းကျင်ထိခိုက်မှုကို လျော့ချ ခြင်း၊ · စက်ရုံအတွင်းနှင့် အနီးအနားတွင် သစ်ပင်ပန်းမံစိုက်ပျိုးခြင်းဖြင့် carbon ထွက်ရှိမှုကို လျော့ချပေး ခြင်း၊ · စက်ပစ္စည်းများကို ပုံမှန် ပြုပြင်ထိန်းသိမ်းပေးခြင်း။
ရေအရည်အသွေး	မီးဖိုချောင်မှ ထွက်ရှိခြင်း	စက်ရုံကြောင့်ဖြစ်ပွားနိုင်သည့် အကျိုးဆက်ကြောင့် ပတ်ဝန်းကျင်ကို သိသိသာသာ ထိခိုက်မှု မရှိနိုင်သဖြင့် လျော့ချရန်မလိုအပ်ပါ။
ဆူညံသံနှင့် တုန်ခါမှု	• မီးစက်၊ အထည်ချုပ်စက်နှင့် မော်တော်ယာဉ် အသုံးပြုမှုကြောင့် ပတ်ဝန်းကျင် ဆူညံမှု	• မီးစက်ခန်း၊ ကွန်ပရက်ဆာခန်းများ သီးသန့်ထားရှိစေခြင်း။ • အသံထုတ်လွှတ်မှုနည်းသော စက်ပစ္စည်းများ အသုံးပြုစေခြင်း။ • ဆူညံသံများသော စက်ရုံလုပ်ငန်းနေရာများတွင် တစ်ကိုယ်ရည်သုံး ကာကွယ်ရေးပစ္စည်းများ တပ်ဆင် အသုံးပြုစေခြင်း။
ကုန်းနေ အပင်နှင့် သတ္တဝါများ၊ ရေနေသတ္တဝါများ	CMP စနစ်ဖြင့် သွေးဖိအားတိုင်းကိရိယာပါ လက်ပတ်အပြား ထုတ်လုပ်ခြင်းလုပ်ငန်း	ထိခိုက်မှုလျော့ချရန်မလိုပါ။

မီးဘေးအန္တရာယ်	• လျှပ်စစ်ပစ္စည်းများ တပ်ဆင်ရာတွင် ပေါ့ဆခြင်း • လုပ်ငန်းလည်ပတ်သည့် စက်ချို့ယွင်းမှုကြောင့် မတော်တဆမှုများ ဖြစ်ပေါ်ခြင်း	• စက်ရုံ၏ မီးဘေးအန္တရာယ် ကာကွယ်ရန်အတွက် မီးသတ်ဗူး၊ မီးသတ်ပိုက်၊ မီးသတ်ခေါင်းများ ထားရှိခြင်း။ • မီးသတ်ဆိုင်ရာ စက်ပစ္စည်းကိရိယာများကို ပုံမှန် စစ်ဆေးခြင်း၊ အရေးပေါ်အခြေအနေအတွက် မီးသတ်ရေကန်အဆင်သင့်ထားရှိခြင်း။ • စက်ရုံအတွင်း အရေးပေါ်အချက်ပေးစနစ်များ ထားရှိခြင်း • အရေးပေါ်ထွက်ပေါက်များ တလျောက်တွင် ကုန်ပစ္စည်းများ ပိတ်ဆို့ခြင်းမရှိအောင် ရှင်းလင်း ထားရှိခြင်း။
လုပ်ငန်းခွင်ဘေးအန္တရာယ်	• စက်ပစ္စည်းများလည်ပတ်ခြင်းကြောင့် မတော်တဆထိခိုက်မှု များ ဖြစ်ပေါ်နိုင်ခြင်း။ • ပစ္စည်းတင်ချ ပြုလုပ်ခြင်း၊ ဖြတ်တောက်ခြင်း၊ ရောနှောခြင်း၊ ဖိနှိပ်ခြင်း၊ ထုတ်ပိုးခြင်း။	• အရေးပေါ်အခြေအနေများအတွက် စက်ပစ္စည်းကိုင်တွယ်မှု သင်တန်းပေးခြင်း၊ ကြက်ခြေနီ သင်တန်းပေးခြင်း၊ မီးသတ်သင်တန်းပေးခြင်း။ • လုပ်ငန်းခွင်တွင်း အလုပ်သမားများ အလင်းရောင်ကောင်းစွာ ရရှိစေရန်နှင့် အမြင်အာရုံမထိခိုက် စေရန် အလင်းရောင်များကို လုံလောက်စွာ ထားရှိခြင်း။ • အလုပ်သမားများအတွက် တစ်ကိုယ်ရေ ကာကွယ်ရေးသုံး ပစ္စည်းများဖြစ်သည့် နားကြပ်၊ လက်အိတ်၊ ဦးထုပ်၊ မျက်မှန်များ အသုံးပြုစေခြင်း။ • လျှပ်စစ်အန္တရာယ်မဖြစ်စေရန်နှင့် ပြုပြင်ထိန်းသိမ်းမှုများ ပြုလုပ်ရန်အတွက် ဝန်ထမ်းထားရှိ၍ ပုံမှန် စစ်ဆေးခြင်း။
ကျန်းမာရေး	• ရေမြောင်းအနံ့ဆိုးထွက်ခြင်း • အရေးပေါ်မီးစက်မောင်းခြင်းမှ ဆူညံသံများ ထွက်ခြင်း	• လုပ်သားများအတွက် ကျန်းမာရေး မထိခိုက်စေရန် ရေမြောင်းများကို စနစ်တကျထားရှိခြင်း။ • လုပ်သားများအတွက် ရုစ်နာရီအတွင်း လက်ခံနိုင် သည့် အမြင့်ဆုံး ဆူညံမှုနှုန်းမှာ 70 dB(A) ဖြစ်သည်။ အသံဆူညံမှု အမြင့်ဆုံးနေရာများတွင် နားကြပ်များ တပ်ဆင်စေခြင်း။
စွန့်ပစ်အစိုင်အခဲ	• ထုတ်လုပ်ရာတွင် ထွက်ရှိသည့် ဖြတ်စ/ညှပ်စများ • ထုတ်ပိုးရာတွင် ထွက်သည့် စွန့်ပစ်ပစ္စည်းများ	• စက်ရုံအတွင်း အမှိုက်ပုံးများထားရှိခြင်း။ • သတ်မှတ်ထားသောနေရာတွင် အမှိုက်စို၊ အမှိုက်ခြောက်များ ခွဲခြားစွန့်ပစ်ခြင်း။ • အမှိုက်များကို ရန်ကုန်စည်ပင်သာယာရေး ကော်မတီနှင့် ချိတ်ဆက်၍ စွန့်ပစ်ခြင်း။

	• မီးဖိုချောင်နှင့် လုပ်သားများမှ ထွက်သည့် စွန့်ပစ်ပစ္စည်းများ	
စွန့်ပစ်အရည်	• မိလ္လာကန်စနစ် • နေအိမ်၊ စားသောက်ဆောင် တို့မှ စွန့်ပစ်ရေ	• ဆီကန်၊ မိလ္လာကန်များကို ပုံမှန်စစ်ဆေးခြင်း၊ သန့်စင်ခြင်းများ ပြုလုပ်ခြင်းဖြင့် စွန့်ပစ်အရည်များ စိမ့်ဝင်မှုများကို လျော့ကျစေနိုင်ခြင်း။
အန္တရာယ်ရှိ စွန့်ပစ်ပစ္စည်းများ	• စက်များမှ ဆီယိုစိမ့်မှုများ၊ မော် တော်ယာဉ်များ ပြုပြင် ထိန်းသိမ်း မှုမှ ထွက်ရှိသည့် အမှိုက်များ	• အန္တရာယ်ရှိ စွန့်ပစ်ပစ္စည်းများ သိုလှောင်မှုအား ထိန်းသိမ်းခြင်း စစ်ဆေးခြင်း။ • အန္တရာယ်ရှိ စွန့်ပစ်ပစ္စည်းများကို ရန်ကုန်မြို့တော် စည်ပင်သာယာရေးကော်မတီ (သို့မဟုတ်) လိုင်စင် ရ အမှိုက်စွန့်ပစ်ရေးဆိုင်ရာ အဖွဲ့အစည်းများ (ဥပမာ DOWA or YCDC) နှင့် ချိတ်ဆက်၍ စွန့်ပစ်ခြင်း။
သဘာဝဘေး အန္တရာယ် (ငလျင်၊ ရေကြီးရေလျှံ၊ မြေပြို၊ မုန်တိုင်း)	• ရေကြီးခြင်းနှင့် မိုးသက်လေ ပြင်းကျခြင်း တို့ကဲ့သို့ သဘာဝ ဘေးများ၊ • လုပ်ငန်းသုံးစက်ပစ္စည်း ချို့ယွင်းမှုများကြောင့် ဖြစ်သော မတော်တဆ အန္တရာယ်များ	• အရေးပေါ် အကြောင်းရင်းနှင့် အခြေအနေများ အတွက် သက်ဆိုင်ရာ မှတ်တမ်းများနှင့် ကိရိယာ များကို ထိန်းသိမ်းခြင်း
လုပ်ငန်းပိတ်သိမ်းစဉ်ကာလ		
လေထုညစ်ညမ်းမှု	• အဆောက်အဦများ ဖြိုချမှုများ • ဖြိုချပစ္စည်းများ သယ်ယူမှုများ	• အမှုန်မပျံ့လွင့်အောင် တစ်နေ့ နှစ်ကြိမ် ရေဖြန်းခြင်း • ဖျက်သိမ်းဧရိယာများကို mesh trap များဖြင့် ဖုံးအုပ်ထားခြင်း • ဖျက်သိမ်းဧရိယာတွင် ခြံစည်းရိုးအထက် နှစ်မီတာခန့်အထိ shading net ကာထားခြင်း • ဖြိုချပစ္စည်းများကို Canvas အစ ကာ၍ သယ်ယူခြင်း
ရေထုညစ်ညမ်းမှု	• ဖြိုချပစ္စည်းများနှင့် မိလ္လာ ဖျက်ဆီးမှုများ	• နည်းစနစ်တကျ ဖြိုချခြင်း • ဖြိုချပစ္စည်းများကို သီးခြားနေရာတွင် စုစည်းခြင်းနှင့် ရေစီးမြောင်းများကို ပိတ်ဆို့ခြင်း မရှိစေရန် ဆောင်ရွက်ခြင်း
မြေဆီလွှာညစ်ညမ်းမှု	• စီမံကန်းဖျက်သိမ်းပြီးချိန်တွင် မြေဆီလွှာညစ်ညမ်းမှု မရှိနိုင်ပါ	• ဒီဇယ်ဆီယိုဖိတ်မှုမရှိစေရန် သတိပြုဆောင်ရွက်ခြင်း

ဆူညံသံ	• အဆောက်အဦးများ ဖြိုချမှုများ • ဖြိုချပစ္စည်းများ သယ်ယူမှုများ	• နေ့အချိန်တွင်သာ လုပ်ငန်းဆောင်ရွက်ခြင်း • စက်ပစ္စည်းများ၊ သယ်ပို့ယာဉ်များကို အသံဆူညံမှု လျော့နည်းစေခြင်း • လုပ်သားများ တစ်ကိုယ်ရေ ကာကွယ်ရေးသုံး ပစ္စည်းများ အသုံးပြုစေခြင်း။ (နားကြပ်၊ လက်အိပ်၊ ဖိနပ်၊ ဦးထုတ်၊ မျက်မှန်)
စွန့်ပစ်အစိုင်အခဲ၊ အရည်	• ဖျက်သိမ်းရာမှ ထွက်ရှိလာသော တည်ဆောက်ရေး ပစ္စည်းများ၊ အုတ်အကျိုးအပဲ့၊ အပိုင်းအစများ။	• အမှိုက်ပုံးများထားရှိခြင်း၊ စနစ်တကျစွန့်ပစ်ခြင်း။ • အမှိုက်များစနစ်တကျ ခွဲခြား၍ ရန်ကုန်မြို့တော် စည်ပင်သာယာရေး ကော်မတီနှင့် ချိတ်ဆက်ကာ စွန့်ပစ်ခြင်း
အန္တရာယ်ရှိ အမှိုက်	• စက်ဆီများ၊ ဒီဇယ်/ဆေးပုံး အခွံများ	• ပုံးများကို ပြန်လည် ဆေးကြောအသုံးပြုခြင်း (သို့) စနစ်တကျ စွန့်ပစ်ခြင်း။ • အန္တရာယ်ရှိ စွန့်ပစ်ပစ္စည်းများကို ရန်ကုန် မြို့တော် စည်ပင်သာယာရေး ကော်မတီသို့ အကြောင်းကြား၍ စွန့်ပစ်ခြင်း။
လုပ်ငန်းခွင်လုံခြုံမှု	စီမံကိန်းဖျက်သိမ်းစဉ်တွင် မတော်တဆ ထိခိုက်မှုများ ဖြစ်ပေါ်စေနိုင်ခြင်း။	• ဖြိုဖျက်ရေးလုပ်ငန်းများ ဆောင်ရွက်သည့် နေရာများကို စည်းတိုင်များ တား၍ အန္တရာယ်ဇုန်အဖြစ် ကာရံထားခြင်း၊ သတိပေးဆိုင်းဘုတ်များထားရှိခြင်း၊ အမှတ်အသား ပြုလုပ်ထားခြင်း၊ Lost time injury notice board များ ထားရှိခြင်း • လုပ်သားများ တစ်ကိုယ်ရေ ကာကွယ်ရေးသုံး ပစ္စည်းများ အသုံးပြုစေခြင်း။ (နားကြပ်၊ လက်အိပ်၊ ဖိနပ်၊ ဦးထုတ်၊ မျက်မှန်) • အန္တရာယ်ရှိ ပစ္စည်းများသယ်ယူရန် ကျွမ်းကျင်လုပ်သားများ ပါဝင်သည့် အဖွဲ့အစည်းကို ချိတ်ဆက်ခေါ်ယူဆောင်ရွက်စေခြင်း။

သိသာထင်ရှားသော သက်ရောက်မှုများကိုတွက်ချက်ရာတွင် ပတ်ဝန်းကျင်စီမံခန့်ခွဲမှုနှင့် ဆန်းစစ်ခြင်း အဖွဲ့အစည်း (IEMA) မှ ချမှတ်ထားသော နည်းလမ်းကို အသုံးပြု၍ ဆန်းစစ်ထားပါသည်။ စီမံကိန်းလုပ်ဆောင်ချက် များပေါ်မူတည်၍ ရလဒ်များ နည်းသည်၊ အလွန်နည်းသည်ကို ဖော်ပြထားပါသည်။ အချို့ရလဒ်များမှာ အသင့်အတင့် ရှိပါသည်။ လူမှုစီးပွားဆိုင်ရာ တိုးတက်မှုများအနေဖြင့် ကောင်းမွန်သောသက်ရောက်မှု ရှိသည်ကို တွေ့ရှိရပါသည်။

<u>ပတ်ဝန်းကျင် စီမံခန့်ခွဲမှု အစီအစဉ်</u>

အဆိုပြုလုပ်ငန်း၏ ပတ်ဝန်းကျင်စီမံခန့်ခွဲမှုအစီအစဉ်အတွက် Plan-Do-Check-Act (P D C A) စက်ဝိုင်းဖြင့် အစီစဉ်တကျ ပြုလုပ်သွားမည်ဖြစ်ပါသည်။ အစီအစဉ်တွင် စက်ရုံကြောင့် ဖြစ်ပေါ်စေနိုင်သော ပတ်ဝန်းကျင်နှင့် လူမှုဘဝအပေါ် ဆိုးကျိုးသက်ရောက်မှုများကို လျော့ချရေး၊ စီမံခန့်ခွဲရေးနှင့် စောင့်ကြပ်ကြည့်ရှုရေး အစရှိသည့် အစီအစဉ်များ ပါဝင်ပါသည်။ ၎င်း EMP အစီအစဉ်များကို အကောင်အထည်ဖော်ရန်အတွက် စက်ရုံတွင် ကျန်းမာရေး၊ ဘေးအန္တရာယ်ကင်းရှင်းရေးနှင့် ပတ်ဝန်းကျင်ဆိုင်ရာ အဖွဲ့အစည်းတစ်ခုထားရှိပြီး လျော့ချရေး၊ စီမံခန့်ခွဲရေးနှင့် စောင့်ကြပ်ကြည့်ရှုရေး အစီအစဉ်များကို အကောင်အထည်ဖော်သွားမည်ဖြစ်ပါသည်။ အဆိုပါစက်ရုံ၏ ပတ်ဝန်းကျင် စီမံခန့်ခွဲမှုအစီအစဉ်ကို ရေရှည်ဖွံ့ဖြိုးတိုးတက်ကောင်းမွန်သော ပတ်ဝန်းကျင်အဖြစ် အကောင်အထည်ဖော် ဆောင်ရွက်ရန် ပတ်ဝန်းကျင်ဆိုင်ရာ ဆိုးကျိုးသက်ရောက်မှုများကို လျော့နည်းစေရန် စီမံခန့်ခွဲမှုအစီအစဉ်များနှင့် စောင့်ကြပ် ကြည့်ရှုရမည့် အစီအစဉ်များကို အောက်ပါအတိုင်း ပတ်ဝန်းကျင်ဆိုင်ရာ အကြောင်းအရာတစ်ခုချင်းစီအလိုက် ခွဲခြားမှု ပြုလုပ်ထားပါသည်။

၁။ လေထုညစ်ညမ်းမှုနှင့် ဖုန်မှုန့်ဆိုင်ရာ စီမံခန့်ခွဲမှု အစီအစဉ်

- လေထုညစ်ညမ်းမှုနှင့် ကာဘွန်ထွက်ရှိမှုကို လျော့ချရန် သစ်ပင်များစိုက်ပျိုးခြင်း
- ဖုံထူထပ်သောနေရာများတွင် အလုပ်သမားများကို တစ်ကိုယ်ရေသုံး အကာအကွယ်ပစ္စည်းများ အသုံးပြုစေခြင်း
- အမှုန်ထွက်နိုင်သည့် ပစ္စည်းများကို သေချာအုပ်ထားခြင်း၊ ကုန်ပစ္စည်းများအတင်အချပြုလုပ်ရာတွင် အမှုန်မလွင့်အောင် လုပ်ငန်းစဉ်နှင့် သန့်ရှင်းမှုနည်းလမ်းများကို သေချာလိုက်နာဆောင်ရွက်ခြင်း၊ ထုတ်လုပ်ရေးလုပ်ငန်းနေရာများတွင် ထွက်သည့် အမှုန်အမွှားများကို ပုံမှန်လှည်းကျင်းသန့်ရှင်းခြင်း
- တစ်နှစ်လျှင် ခန့်မှန်းကုန်ကျစရိတ် ၁၆၀၀၀၀၀ ကျပ်

၂။ ဆူညံမှုထိန်းခြင်းဆိုင်ရာ စီမံခန့်ခွဲမှု အစီအစဉ်

- မီးစက်ခန်းများတွင် ဆူညံသံထိန်းချုပ်ကိရိယာများတပ်ဆင်ခြင်း
- လုံလောက်သော တစ်ကိုယ်ရေသုံးကာကွယ်ရေးပစ္စည်းများ အသုံးပြုစေခြင်း
- ဆူညံသော နေရာများတွင် အလုပ်လုပ်သော အလုပ်သမားများအတွက် တစ်ကိုယ်ရေသုံး ကာကွယ်ရေး ပစ္စည်းများကို အသုံးပြုစေခြင်း
- တစ်နှစ်လျှင် ခန့်မှန်းကုန်ကျစရိတ် ၈၀၀၀၀၀ ကျပ်

၃။ အမှိုက်စွန့်ပစ်မှုဆိုင်ရာ စီမံခန့်ခွဲမှု အစီအစဉ်

- စွန့်ပစ်အစိုင်အခဲများကို အစိုအခြောက်ခွဲခြား၍ သီးခြားစွန့်ပစ်စေခြင်း
- နေ့စဉ်ထွက်စွန့်ပစ်ပစ္စည်းများကို ရန်ကုန်စည်ပင်သာယာရေးကော်မတီနှင့် ချိတ်ဆက်စွန့်ပစ်ခြင်း
- တစ်လ ခန့်မှန်းကုန်ကျစရိတ် ၅၀၀၀၀ ကျပ်

၄။ ရေဆိုးစွန့်ပစ်မှုဆိုင်ရာ စီမံခန့်ခွဲမှု အစီအစဉ်

- စက်ရုံမြောင်း ရေစီးရေလာကောင်းစေရန် ထိန်းချုပ်ခြင်း
- မိလ္လာစနစ်ကို စစ်ဆေးခြင်း
- စက်ရုံရေမြောင်းများ ပိတ်ဆို့ခြင်းမဖြစ်စေရန် စစ်ဆေးခြင်း
- တစ်နှစ်လျှင် ခန့်မှန်းကုန်ကျစရိတ် ၆၀၀၀၀၀ ကျပ်

၅။ စွမ်းအင်အသုံးပြုမှုဆိုင်ရာ စီမံခန့်ခွဲမှု အစီအစဉ်

- စွမ်းအင်အသုံးပြုမှုလျော့ချရေးစနစ်ကို အသုံးပြုခြင်း
- မလိုအပ်သော နေရာများတွင် လျှပ်စစ်အသုံးပြုခြင်း၊ မီးထွန်းထားခြင်း စသည်တို့ကို ကြည့်ရှုထိန်းသိမ်းခြင်း
- ပြည့်ဖြိုးမြဲစွမ်းအင် Solar အသုံးပြုခြင်း
- တစ်နှစ်လျှင် ခန့်မှန်းကုန်ကျစရိတ် ၆၀၀၀၀၀ ကျပ်

၆။ ရေအသုံးပြုမှုဆိုင်ရာ စီမံခန့်ခွဲမှု အစီအစဉ်

- ရေအသုံးပြုမှုကို သိရှိနိုင်ရန် water meter အသုံးပြုခြင်း
- ရေအသုံးပြုမှုကို ထိန်းသိမ်းမှုများ ပြုလုပ်နိုင်စေရန် ဝန်ထမ်းများကို သင်ကြားပေးခြင်း
- တစ်နှစ်လျှင် ခန့်မှန်းကုန်ကျစရိတ် ၅၀၀,၀၀၀ ကျပ်

၇။ အရေးပေါ်တုန့်ပြန်ရေး အစီအစဉ်

- မီးသတ်စနစ်များကို ကောင်းမွန်အောင်ပြုလုပ်ခြင်း
- အရေးပေါ်စနစ်ထားရှိခြင်း (ဥပမာ- အရေးပေါ်ထွက်ပေါက်)
- ငလျင်နှင့် တခြားသော အရေးပေါ်ကိစ္စရပ်များအတွက် ဆေးဝါး၊ ကြက်ခြေနီသင်တန်းများထားရှိခြင်း
- မီးသတ်တပ်ဖွဲ့များ၊ ကယ်ဆယ်ရေးတပ်ဖွဲ့များဖွဲ့စည်းခြင်း၊ လုံခြုံရေးအတွက် စက်ရုံဝန်ထမ်းများကို သင်တန်းပေးခြင်း။
- တစ်နှစ်လျှင် ခန့်မှန်းကုန်ကျစရိတ် ၁,၅၀၀,၀၀၀ ကျပ်

၈။ မီးဘေးအန္တရာယ် စီမံခန့်ခွဲမှုအစီအစဉ်

- အရေးပေါ်အခြေအနေများအတွက် မီးသတ်ဆေးဘူးများ၊ မီးသတ်ပိုက်ဘီးများနှင့် စက်ရုံနံရံများတွင် မီးသတ်ရေပိုက်များ ထားရှိခြင်း
- အရေးပေါ်ထွက်ပေါက်နှင့် စုဝေးရာနေရာတို့ကို ညွှန်ပြထားခြင်း
- မီးငြိမ်းသတ်ကိရိယာများကို ပုံမှန်စစ်ဆေးခြင်း၊ အရေးပေါ်အခြေအနေတွင် မီးငြိမ်းသတ်ရန်အတွက် ရေသိုလှောင်ကန်ထားရှိခြင်း
- မီးလောင်မှုဖြစ်ပွားပါက အလုပ်သမားများအား သတိပေးရန်အတွက် စက်ရုံတွင် အရေးပေါ် မီးသတိပေးကိရိယာများ တပ်ဆင်ထားခြင်း

- စက်ရုံ၏ မီးဘေးအရေးပေါ် အခြေအနေများအတွက် အဓိကဝင်ပေါက်များနှင့် လမ်းကြောင်းများကို ပစ္စည်းများ သို့မဟုတ် စက်များဖြင့် ပိတ်ဆို့ထားခြင်း မရှိစေခြင်း
- တစ်နှစ်လျှင် ခန့်မှန်းကုန်ကျစရိတ် ၁,၂၀၀,၀၀၀ ကျပ်

၉။ လုပ်ငန်းခွင်ကျန်းမာရေးနှင့် ဘေးကင်းရေး စီမံခန့်ခွဲမှုအစီအစဉ်

- ရှေးဦးသူနာပြုသင်တန်း၊ ဘေးကင်းရေးသင်တန်း၊ မီးငြိမ်းသတ်လေ့ကျင့်ရေး သို့မဟုတ် အလုပ်သမားများ၏ အရေးပေါ်အခြေအနေများနှင့် စက်ပစ္စည်းကိုင်တွယ်ခြင်းအတွက် အခြား လိုအပ်သော သင်တန်းများပေးခြင်း
- စက်ရုံအလုပ်သမားများအတွက် တစ်ကိုယ်ရေ အကာအကွယ်ပစ္စည်း (PPE) များ ပံ့ပိုးပေးခြင်း
- အလုပ်သမားများ၏ ကျန်းမာရေးအန္တရာယ်ကို ကာကွယ်ရန် စက်ရုံ၏ ရေနုတ်မြောင်းစနစ်များကို စီမံခန့်ခွဲခြင်း။
- တစ်နှစ်လျှင် ၁,၀၀၀,၀၀၀ ကျပ်

၁၀။ ဘေးအန္တရာယ်ရှိ စွန့်ပစ်ပစ္စည်း စီမံခန့်ခွဲမှုအစီအစဉ်

- အန္တရာယ်ရှိ စွန့်ပစ်ပစ္စည်းများ သိုလှောင်ရာတွင် စနစ်တကျ စစ်ဆေးခြင်းနှင့် ပြုပြင်ထိန်းသိမ်းခြင်း။
- အန္တရာယ်ရှိ စွန့်ပစ်ပစ္စည်းများကို YCDC နှင့် ချိတ်ဆက်၍ စနစ်တကျစွန့်ပစ်ခြင်း
- တစ်နှစ်လျှင် ခန့်မှန်းကုန်ကျစရိတ် ၁,၀၀၀,၀၀၀ ကျပ်

စီမံကိန်းဖော်ဆောင်သည့်အချိန်အတွင်း ပတ်ဝန်းကျင်အပေါ်သက်ရောက်မှုများ၊ လျော့ချရေးနည်းလမ်းများ၊ အစီအစဉ်များ၊ တိုင်းတာမှုများ စသည့် ပတ်ဝန်းကျင်စီမံခန့်ခွဲမှု အစီအစဉ်များကို လုပ်ဆောင်ရပါသည်။ Matsuya R&D (Myanmar) Company Limited မှ စက်ရုံတွင် ပတ်ဝန်းကျင်စီမံခန့်ခွဲမှုအစီအစဉ်အတွက် အဖွဲ့အစည်းဖွဲ့စည်းခြင်း၊ ပုံမှန်ဆန်းစစ်လေ့လာခြင်းများ ပြုလုပ်သွားမည်ဖြစ်ပါသည်။ ပတ်ဝန်းကျင် လေထုအရည်အသွေး၊ ဆူညံသံ၊ မိလ္လာစနစ်၊ စွန့်ပစ်အစိုင်အခဲ စွန့်ပစ်မှုများကို စက်ရုံ၏ ပတ်ဝန်းကျင်စီမံခန့်ခွဲမှုအစီအစဉ် အဖွဲ့အစည်းမှ ဆန်းစစ်သွားမည်ဖြစ်ပါသည်။ အဆိုပြုစီမံကိန်းမှ လူထုအကျိုးပြုလုပ်ငန်းများနှင့် အရေးပေါ်ဆောင်ရွက်ချက်များ၊ ဒေသဆိုင်ရာ အကျိုးပြုလုပ်ငန်းများကို လုပ်ဆောင်သွားမည်ဖြစ်ပါသည်။

<u>လူထုအကျိုးပြုလုပ်ငန်း (CSR) အစီအစဉ်</u>

Matsuya R&D (Myanmar) Company Limited သည် လုပ်သားများ၏ လုပ်ငန်းပိုင်းဆိုင်ရာ သင်တန်းပို့ချမှုများ၊ အားလပ်ရက်များတွင် ပညာရေးဆိုင်ရာသင်တန်းပို့ချမှုများ၊ လုပ်သားများ၏ ကျန်းမာရေး စောင့်ရှောက်မှုများ၊ ကျန်းမာရေးအသိပညာပေးခြင်းများနှင့် စက်ရုံပတ်ဝန်းကျင်ရှိ စာသင်ကျောင်းများအား အကူအညီများတွင် ၎င်းတို့၏အကျိုးအမြတ်မှ ၂% အား လူမှုရေး အကျိုးပြုအစီအစဉ်များတွင် အသုံးပြုလျှဒါန်းသွားမည် ဖြစ်ပါသည်။

Matsuya R&D (Myanmar) Company Limited ၏ လူထုအကျိုးပြုလုပ်ငန်းများ ဆောင်ရွက်မည့်အစီအစဉ်

စဉ်	အကြောင်းအရာ	လှူဒါန်းမှု ရာခိုင်နှုန်း
၁။	စာသင်ကျောင်းများ	၀.၅%
၂။	သင်တန်းကျောင်းများ	၁%
၃။	ဝန်ထမ်းများ၏ ကျန်းမာရေးစောင့်ရှောက်မှု	၀.၅%

နိဂုံးနှင့် အကြံပြုချက်

အကျဉ်းချုပ်အားဖြင့် ပြည်ထောင်စုသမ္မတ မြန်မာနိုင်ငံတော်၏ လမ်းညွှန်ချက်များ၊ ပတ်ဝန်းကျင်ဆိုင်ရာ ဥပဒေ၊ နည်းဥပဒေ၊ စည်းမျဉ်း စည်းကမ်းများနှင့် ချမှတ်ထားသော မူဝါဒလမ်းညွှန်ချက်များအတိုင်း ပတ်ဝန်းကျင်ဆိုင်ရာ စီမံခန့်ခွဲမှု အလေ့အကျင့်များ၊ လုပ်ငန်းစဉ်များနှင့် လိုက်နာဆောင်ရွက်ကျင့်သုံးရန် တာဝန်များကို ပတ်ဝန်းကျင်စီမံခန့်ခွဲမှု အစီအစဉ်တွင် ဖော်ပြရှင်းလင်းတင်ပြထားပါသည်။ စီမံကိန်းနှင့် သက်ဆိုင်သူများအား စီမံကိန်းဆိုင်ရာ အကြောင်းအရာများ ရှင်းလင်းတင်ပြခြင်း၊ အကြံပြုချက်များနှင့် ဆွေးနွေးတင်ပြလာသည့် သဘောထား အကြံဉာဏ် များကို ရယူပြီး အစီရင်ခံစာတွင် ဖော်ပြထားပါသည်။

အကြံပြုချက်များအရ-

- အစီရင်ခံစာတွင် ဖော်ပြထားသည့် ပတ်ဝန်းကျင် စီမံခန့်ခွဲမှုအစီအစဉ်နှင့် ကတိကဝတ်များကို စီမံကိန်း၏ သက်တမ်းတလျှောက်တွင် အကောင်အထည်ဖော် ဆောင်ရွက်ရမည်။
- အစိုင်အခဲနှင့် အရည် စွန့်ပစ်ပစ္စည်းများကို ရန်ကုန်မြို့တော် စည်ပင်သာယာရေးကော်မတီ၏ စည်းကမ်းများအတိုင်း စွန့်ပစ်ရမည်။
- အလုပ်သမားများအား သင့်တော်သော သင်တန်းများပေးခြင်း၊ လုပ်ငန်းခွင်အတွင်း တစ်ကိုယ်ရည် ကာကွယ်ရေး ပစ္စည်းများ အသုံးပြုစေခြင်းများ ဆောင်ရွက်ရမည်။
- ပတ်ဝန်းကျင် စီမံခန့်ခွဲမှုအစီအစဉ်များကို နေ့စဉ်၊ လစဉ်နှင့် နှစ်စဉ် လုပ်ငန်းခွင်အတွင်း လုပ်ဆောင်ရမည်။
- ပတ်ဝန်းကျင် စီမံခန့်ခွဲမှုအစီအစဉ် မှတ်တမ်းများကို သေချာသိမ်းဆည်း၍ တတိယအဖွဲ့အစည်းသို့ တင်ပြရမည်။
- ပြည်ထောင်စုသမ္မတ မြန်မာနိုင်ငံတော်၏ လမ်းညွှန်ချက်များ၊ ပတ်ဝန်းကျင်ဆိုင်ရာ ဥပဒေ၊ နည်းဥပဒေ၊ စည်းမျဉ်းစည်းကမ်းများနှင့် ချမှတ်ထားသော မူဝါဒ လမ်းညွှန်ချက်များအတိုင်း ပတ်ဝန်းကျင်ဆိုင်ရာ စီမံခန့်ခွဲမှု အလေ့အကျင့်များ၊ လုပ်ငန်းစဉ်များနှင့် လိုက်နာဆောင်ရွက်ရ မည်။

အချုပ်အားဖြင့်ဆိုသော် အဆိုပြုသူသည် ပတ်ဝန်းကျင်ထိန်းသိမ်းရေး ဦးစီးဌာနမှ ညွှန်ကြားလာသော အဆိုပြုချက်များ၊ အကြံပြုချက်များကို လိုက်နာဆောင်ရွက်ရမည်။ ထိရောက်သော ပတ်ဝန်းကျင်ဆိုင်ရာ စီမံခန့်ခွဲမှုကို အဆိုပြုသူမှ ဆောင်ရွက်ရမည်။ အဆိုပြုသူသည် ပြည်ထောင်စုသမ္မတ မြန်မာနိုင်ငံတော်၏ လမ်းညွှန်ချက်များ၊ ပတ်ဝန်းကျင်ဆိုင်ရာ ဥပဒေ၊ နည်းဥပဒေ၊ စည်းမျဉ်းစည်းကမ်းများနှင့် ချမှတ်ထားသော မူဝါဒ လမ်းညွှန်ချက်များအတိုင်း လိုက်နာဆောင်ရွက်ရမည်။

EXECUTIVE SUMMARY

The project is new investment for manufacturing of cuffs for Sphygmomanometers on CMP basic company. The Myanmar Investment Commission (MIC) issues the project on 13 February 2015 with the Permit No. YGN – 905/2015. MIC notified for the environmental approval and comments of the Ministry of the Natural Resources and Environmental Conservation (MONREC) on the proposed project and had approved the proposal for investment in manufacturing of garment on Cutting, Sewing and Packaging (CMP) basis. The estimated authorized capital investment is about US $ 1.50 million.

Type of Proposed Business	Manufacturing of Cuffs for Sphygmomanometers on CMP basic
Type of investment	100% foreign investment
Type of Share	Ordinary Share
Type of land	Industrial Land
Total land area	1.975 acres (7993 sq. meter)
Total building area	One and Half Storey factory building (1250 sq. meter)
Land lease year	34 years
Construction period	4 months
Investment period	Initial 10 years and extendable thereafter
Address	Plot No (A7-2), Mingaladon Industrial Park, Mingaladon Township, Yangon Region.
Contact person	Daw Thae Su 09-782714377 mm.matsuyaygn@matsuyard.co.jp

Policy, Legal and Institutional Framework

The brief summary of relevant national environmental legislations such as Environmental Impact Assessment Procedure (2015) and National Environmental Quality (emission) Guidelines, established by the Ministry of Natural Resources and Environmental Conservation (MONREC) and overview of current local and international environmental and social policies including related international or regional convention for the proposed project. These are as follow:

1. Constitution of the Union of Myanmar (2008)
2. Environmental Conservation Law, 30 March 2012
3. Environmental Conservation Rules, 2014
4. Environmental Impact Assessment Procedure (December 2015)
5. National Environmental Quality (Emission) Guideline (NEQG) (December 2015)
6. National Environmental Policy of Myanmar (2019)
7. Myanmar Investment Law, 2017 (Amendment 2019)
8. Myanmar Investment Rule, 2017
9. Myanmar Insurance Law (1993)

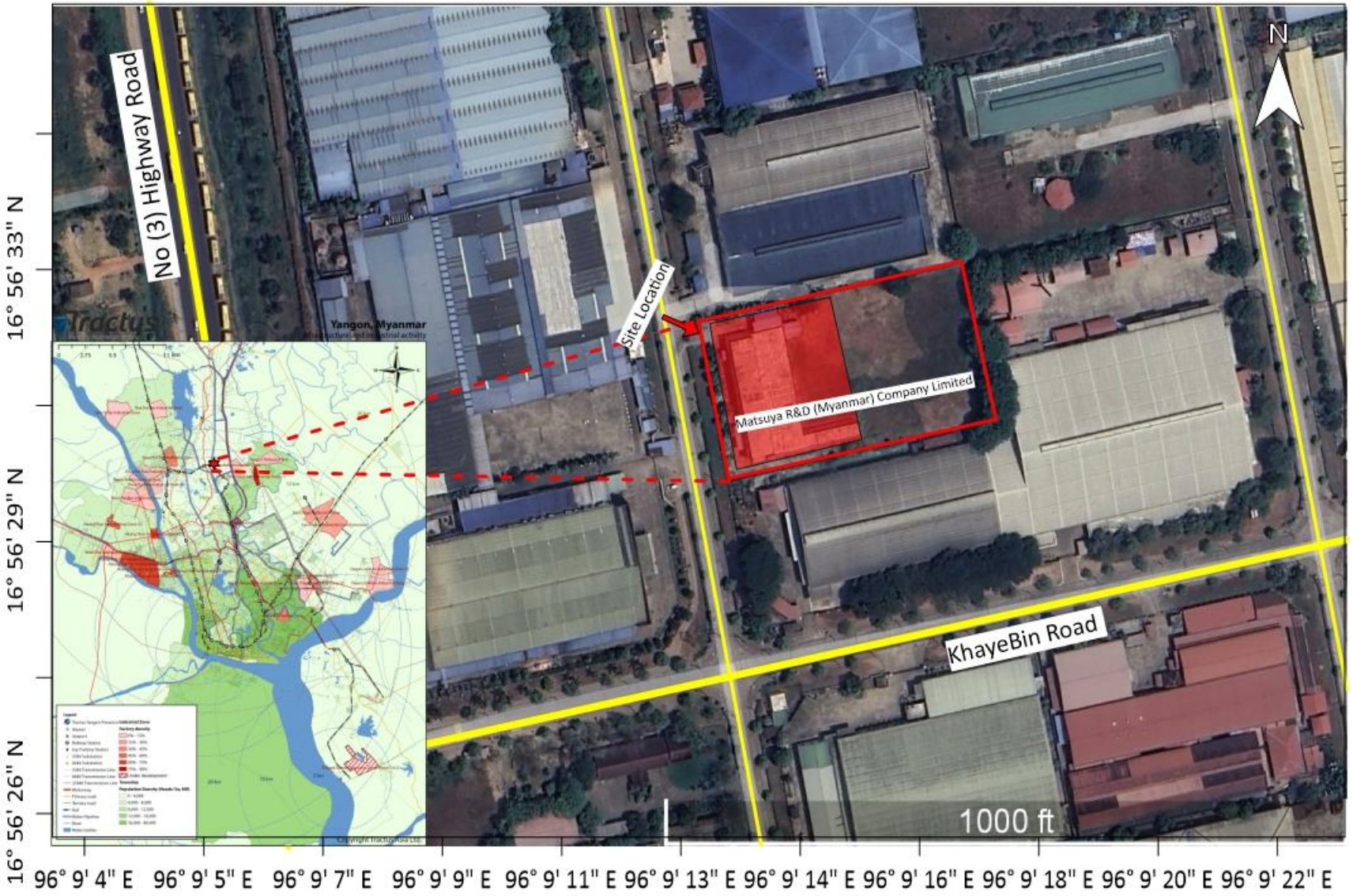
10. Payment of Wages Law (2016)
11. Yangon City Development Committee Law (2018)
12. The Amended Law for Factories Act, 1951 (2016)
13. The Private Industrial Enterprise Law, 1990
14. The Export and Import Law (2012)
15. The Prevention of Hazard from Chemical and Related Substances Law, 2013
16. Underground Water Act
17. Myanmar Fire Brigade Law (2015)
18. The Electricity Law (2014)
19. The Social Security Law 2012 (Amendment 2014)
20. The Settlement of Labor Dispute Law 2012 (Amendment 2019)
21. The Employment and Skill Development (2013)
22. The Workmen Compensation Act 1923 (Amendment 2005)
23. The Payment of Wages Act, 1936
24. The Leave and Holidays Act, (1951, partially revised in 20140
25. The Minimum Wage Law (2013)
26. Public Health Law (1972)
27. Prevention and Control of Communicable Disease Law 1995 (Amendment in 2011)
28. Occupational Safety and Health Law (2019)
29. The Law on Standardization (2014)
30. လုပ်ငန်းခွင်သုံးပေါက်ကွဲစေတတ်သော ဝတ္ထုပစ္စည်းများဆိုင်ရာ ဥပဒေ (2018)
31. Automobile Safety and Automobile Management Act (2020)
32. The Conservation of Water Resources and River Law (2006)
33. The Commercial Tax Law 1990 (Amendment 2014)

Project Description

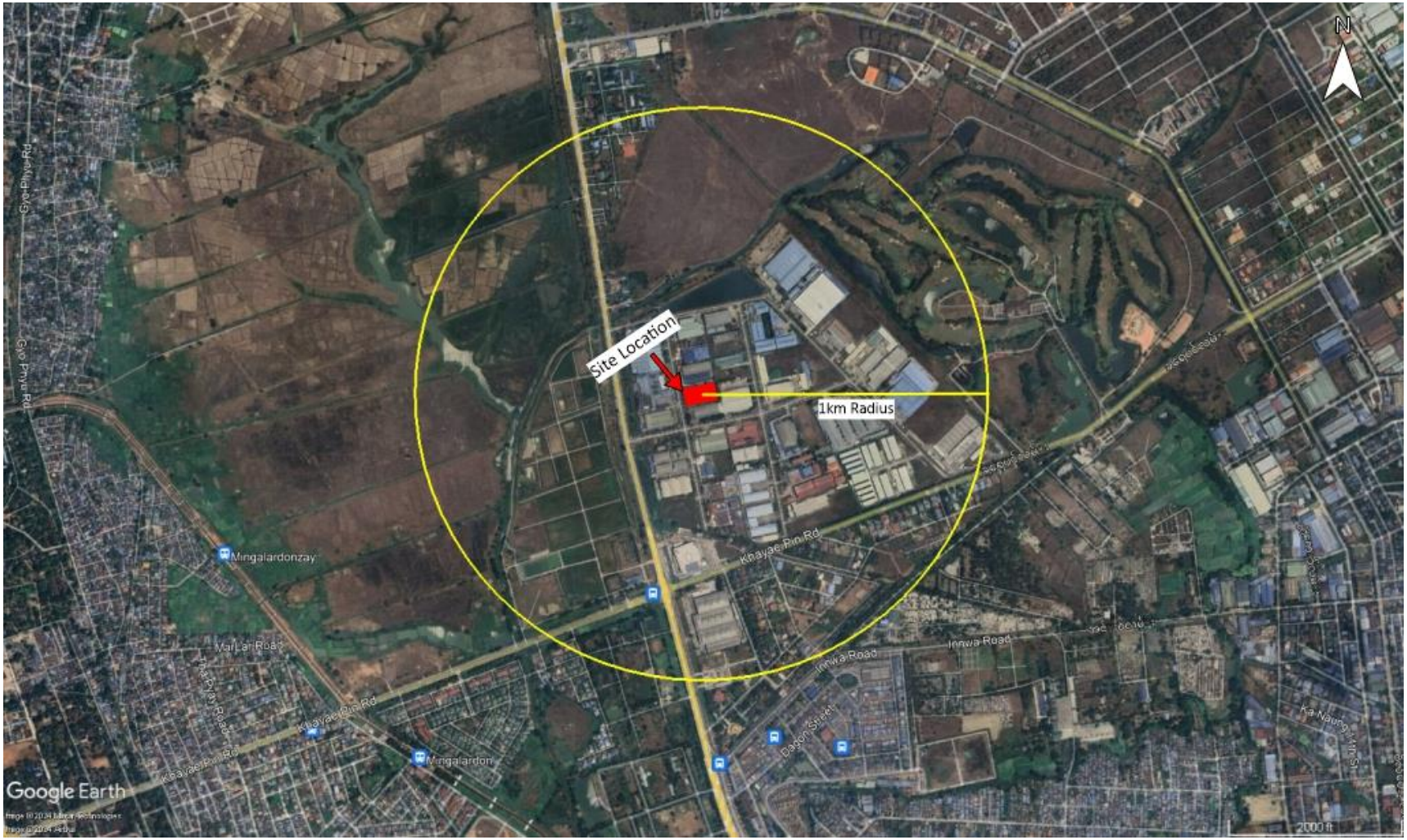
According to the Myanmar Environmental Conservation Law (2012), it requires that the proponents of every development project in the country submit either an Initial Environmental Examination (IEE) or an Environmental Impact Assessment (EIA) to Ministry of Natural Resources and Environmental Conservation

(MONREC). The Myanmar Investment Commission (MIC) said project requires an Environmental Management Plan (EMP) to meet the environmental assessment requirements of Notification No. DICA-3/FI-1117/2015 (256-C) on 13 February 2015. Matsuya R&D (Myanmar) Company Limited's factory is located at Plot No (A7-2), Mingaladon Industrial Park, Mingaladon Township, Yangon Region. The location point of proposed project is Latitude 16°56'31.59"N and Longitude 96°09'13.82"E. The project utilizes 1.975 acres of land and consists of main factory building. The commercial operation date is 9th March 2016. The designed area includes production building (one and half story), utilities of transformer room, guardhouse and general utility room, firefighting pump room, car parking shelter, offices and canteen facilities etc. 268 employees (3 foreigners + 265 local) are working at Matsuya R&D (Myanmar) Company Limited's factory. The estimated production rate will increase more than 1000 to 7000 in the first ten years.

The project is processed according to the relevant environmental legislations established by the MONREC and overview of current local and international environmental and social policies including related international or regional convention.



Location Map of Proposed Project



Adjacent Location Map of Proposed Project

Matsuya R&D (Myanmar) Company Limited uses Cutting-Making-Packaging (CMP) system in which raw material including fixtures and chemicals are imported and then processed into finished product, packaged and exported. The steps of production process of Matsuya R&D (Myanmar) Company Limited are storing, cutting, printing, sewing, quality control and packaging in order.

Details of Production Process by flow charts

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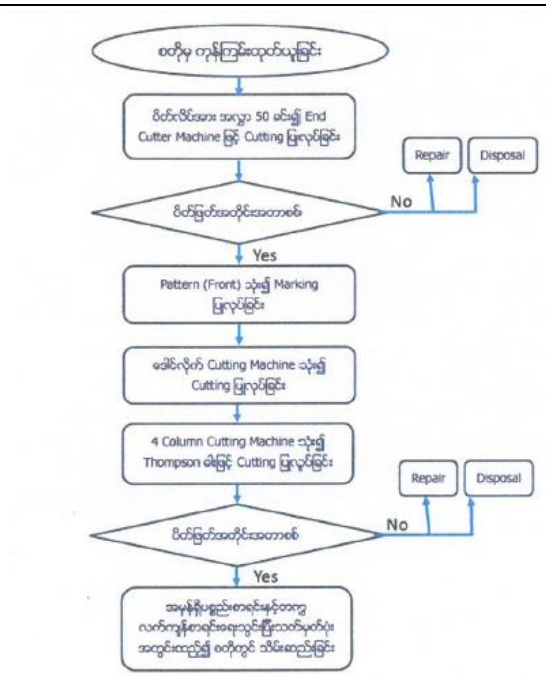
<tr><td> 
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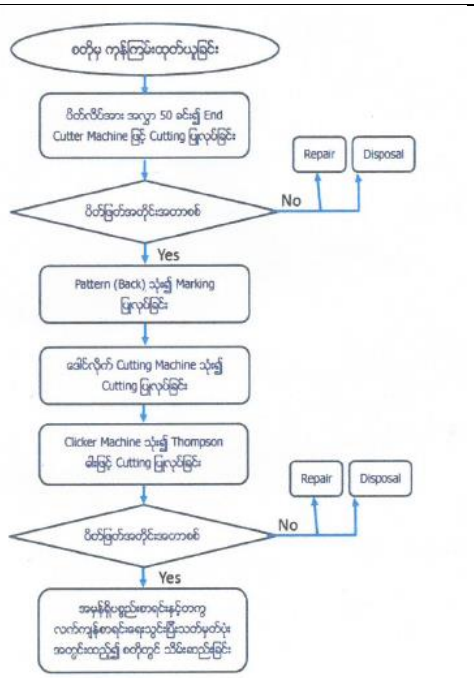
<td> 
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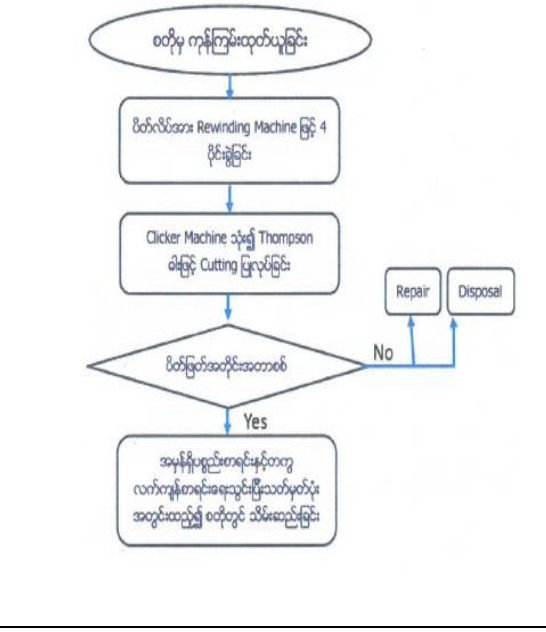
<tr><td>Cutting (Front)</td><td>Cutting (Back)</td></tr>
<tr><td> 
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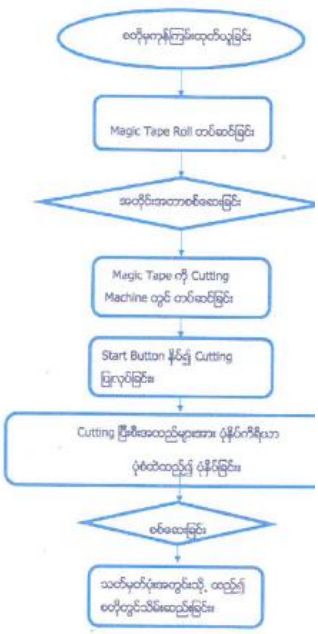
<td> 
</td></tr>
<tr><td>Cutting (Napped Cloth)</td><td>Magic Tape Cutting and Printing</td></tr>
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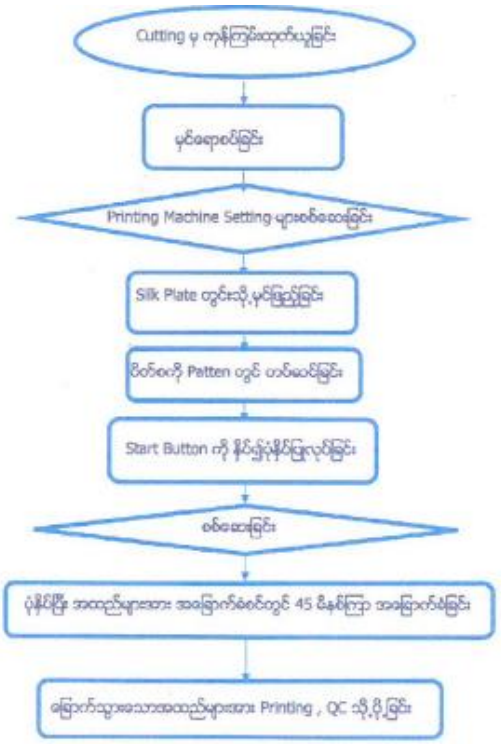
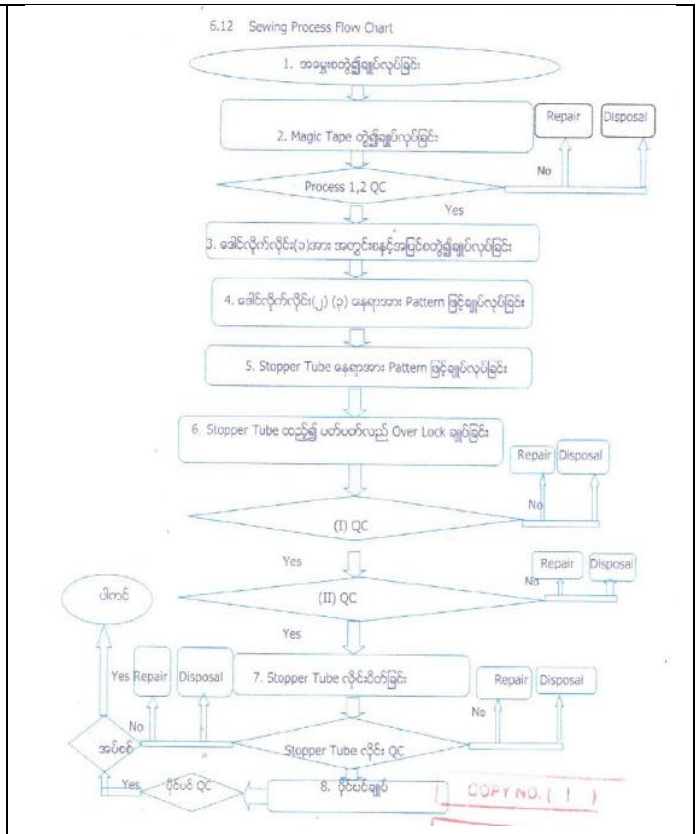


Printing Process



Sewing Process

Production Process Flow Diagram

Warehouse section

Cutting section

Printing Section

Sewing section

Quality Control Section

Packing

Production Process Photos

(37) types of equipment needed for the operation will be imported from China. The raw materials needed for the production of cuffs such as Tafeta (Cut and Raw), Vaicro, Napped Cloth (Cut and Raw), Stopperı Bias, Sewing Thread, Ink and Thinner will be imported from China, Japan and Vietnam. In terms of production, cuffs will be increased from 1000 to 7000 in the first ten years and exported to Vietnam.

Brief Description of Surrounding Environment

For environmental baseline, data were collected by onsite measurements analysis during operation phase on 22nd December 2023. On-site measurement was taken by indoor temperature, humidity, noise level and operation light condition at the factory. Moreover, secondary data collection of proposed project site

area such as socio-economic condition, physical/ biological environment, weather data were collected from official township data was obtained from Regional Data of Mingaladon Township.

Survey Result in Proposed Project

Type	Result
Weather Condition	
Indoor temperature	27.3 °C
Humidity	60.4 %
Noise level	
Outdoor Area	61.23 dBA
Operation Area (Sewing Line)	58.04 dBA
Air Quality	
Parameters	**Outdoor Air Quality Results**
PM_{10}	16.1 µg/m^3
$PM_{2.5}$	10.8 µg/m^3
SO_2	1.31 µg/m^3
NO_2	19.06 µg/m^3
CO	0.34 µg/m^3
CO2	1 ppm
O3	3.26 µg/m^3
TSP	20.36 µg/m^3
VOC	49.3 µg/m^3
Light	
Warehouse	119.5 Lux
Cutting Area	346 Lux
Printing Area	916 Lux
Sewing Area	634 Lux
Quality Control	1170 Lux
Water Quality	
Waste Water	Within the Guidelines

Risk Assessment and Mitigation Measure Plan

The development of infrastructure for the proposed project likely to happen changes in the local environment in terms of physical, biological and socio-economic aspects along with the perspective on both positive and negative impacts. The potential environmental impacts brought by various activities of proposed factory project will be identified and judged by site surveying with checklist, meeting with client team, including plant manager and supervisor, representatives from the factory operators and assessing the

environmental baseline information for operation and decommissioning phases along with its mitigation measure.

Impact Assessment Parameter and Its Skill

Assessment	Scale				
	1	**2**	**3**	**4**	**5**
Magnitude (M)	Insignificant	small and will have no effect on working environment	Moderate and will result in minor changes on working environment	High and will result in significant changes on working environment	Very high and will result in permanent changes on working environment
Duration (D)	0 - 1 year	2 - 5 year	6 - 15 year	Life of operation	Post Closure
Extent (E)	Limited to the site	Limited to the local area	Limited to the region	National	International
Probability (P)	Very improbable	Improbable	Probable	Highly probable	Definite

Then, the Significant Point (SP) calculated by following formula.

Significant Point (SP) = (Magnitude + Duration + Extent) × Probability

Impact Significance: Based on calculated significant point, impact significance can categorize as follows:

Significant Point (SP)	Impact Significance
<15	Very Low
15-29	Low
30-44	Moderate
45-59	High
60	Very high

Environmental Impact	Project Activities	Mitigation Measures
Operation Phase		
Air	• Dust and GHGs emission from vehicles used for transporting raw materials and final products	• To control air pollution, the vehicles, generators and machineries have to check and maintain regularly. • Ensuring vehicles, compressor and generator are well maintained.

Environmental Impact	Project Activities	Mitigation Measures
	• Emission of smoke from emergency diesel generator and vehicle movement	• The factory has planted trees to reduce carbon emission and minimize air pollution
Water	Domestic Waste	No Mitigation measures because the impact caused by factory operation is insignificant
Noise and vibration	Generating noise from the production machinery	• Should be built individual room like as generator room • Low noise equipment should be used • Should be provided the noise covering equipment or personal protective equipment (PPE)
Flora and fauna on terrestrial and aquatic life	Manufacturing of Cuffs for Sphygmomanometers on CMP basic	No Mitigation Measure
Fire	• Poor electrical installations • Accidental cases cause by operating machines	• To provide fire extinguishers, fire hose reels and fire hydrants on the walls of the factory for fire emergency cases. • Regular inspection for existing firefighting equipment must be done. In case of fire emergency, water storage tank for fire frightening. • The emergency fire alarms are installed at the factory for alerting the workers in case of fire. • The main entrances and route for emergency cases of the factory must not be blocked with materials or machines for fire emergency cases.
Occupational Safety	• Accidental cases cause by operating machines. • Unloading, cutting, and packaging activities. • Accidental cases of thermic fluid heater	• First aid training, safety training, firefighting training or other essential training for machinery handling must be provided for emergency cases of workers. • According to the observed light intensity values, the proponent provides sufficient lighting for workers for safe working and reducing optical problems of the workers. • Personal Protective Equipment (PPEs) like earmuffs, safety gloves, helmets and goggles are provided for each department. • To prevent electric shock hazards, electrical maintenance staff (handyman) is to be assigned to do regular inspections and take preventive measures.
Health	• Bad smell of the drainage • Noise from the generating of the emergency generators	• Manage the drainage systems of the factory to prevent health risk of the workers. • The maximum allowable noise level for workers is 70dB(A) for 8hours exposure a day. Thus, adequate protective noise impact measures in the form of ear muffs/ear plugs to the workers working in high noise areas.

Environmental Impact	Project Activities	Mitigation Measures
Solid waste	• Residual pieces of fabric scraps from the production lines • Waste from packaging materials • Waste from kitchen, dormitory and office	• Provides separate garbage bins at each building. • All of the solid wastes will be collected separately in garbage based on their types and stored in relevant separated waste storage area • Final wastes should be disposed by using YCDC's service.
Liquid waste	Septic system and sewage. Domestic liquid waste disposal from office, kitchen and dormitory.	Regular inspection and cleaning, oil traps, septic tank and adequate covers for all storage and waste disposal areas can decrease these contaminations.
Hazardous waste	Used oil and lubricant discharged from the maintenance of vehicles and machines.	• Proper inspection and maintenance in storage of hazardous waste. • The hazardous wastes are transported by specially licensed carriers and disposed in a licensed faculty (YCDC)
Natural Disaster (Earthquakes, Floods, landsides and cyclone)	• Natural disaster due to heavy raining, flooding from river • Accidental cases cause by operating machines.	Preserve relevant records and equipment for the subsequent inquiry into the cause and circumstances of the emergency
Decommissioning Phase		
Air pollution	• Decommissioning of buildings and related materials • Transportation of demolished materials	• Spray water twice a day • Cover mesh trap around the decommission area • Install shading net about 2 meters above temporary fence of decommission area • Carry broken material with cover by canvas.
Water pollution	Sewage form decommissioning workers Demolition machinery equipment	Systematically demolish the septic tanks.
Soil Contamination	No impact on soil at the decommissioning phase	Manage the spillage of oil and diesel and sewage.
Noise Pollution	Decommission activities Transportation of demolished materials	• Carry out the activities during day time. • Maintain the machines and vehicles to reduce noise pollution. • Provide the ear plugs to the workers.
Waste disposal	Demolished debris such as bricks, concrete materials	• Provides separate garbage bins at each building. • All of the solid wastes will be collected separately in garbage based on their types disposed by connecting with YCDC service.
Hazardous waste	Diesel storage boxes waste	• Recycle and dispose carefully the diesel storage boxes.

Environmental Impact	Project Activities	Mitigation Measures
		• All of the hazardous wastes will be collected separately in garbage based on their types disposed by connecting with YCDC service.
Occupational Health and Safety (Accidents, Injuries)	Decommissioning activities Transportation of demolished materials	• Personal Protective Equipment (PPEs) like earmuffs, safety gloves, helmets and goggles are provided. • Provide protective fencing or demarcation with tape at the boundaries of dangerous / hazardous zone and the appropriate warning signs, marking and safety signs and installation of the lost time injury notice board. • Use the third-party expert assisted by trained personnel to identify and remove hazardous materials.

Modified method of Institute of Environmental Management and Assessment (IEMA) from United Kingdom is applied in this report to assess the significance of the impacts. Results of analysis mention that most of the project activities are very low/low significant and some are moderate significant to be improved for environmental performance. Social and economic developments are positive impacts of the proposed project.

Environmental Management Action

The proposed project of environmental management plan, which need to made the PDCA plan especially Plan-Do-Check-Act cycle. In that plan, it includes not only reducing to the environmental and social-economic impact but also includes the environmental management plan and the monitoring plan. In this EMP to implement the health, safety and occupational for the industry, they need to create a team and to must be implemented that. The EMP for SCG has been prepared to address potential issues based upon discussion with factory management, workers, local community's view, stakeholder consultation and from the site visit of experts. The EMP is additional to and compliments the factory's safety management system. Environmental related works about the project is responsible by HSE manager. The following environmental issues that require environmental management plans based upon the potential impacts of activities by for SCG are as follows:

1. Air pollution/Dust Management Plan
    - The Factory has Planted Trees to reduce the carbon and minimize the air pollution
    - Workers are provided mask during working in any dusty area and handling the hazardous materials
    - Factory have to follow up the covering the materials lead to dust formation. To mitigate spreading the dust of loading and unloading raw materials, workers have to follow the working procedures and cleaning methods. The factory has to clean the dust of the production area regularly.
    - 1,600,000 kyat per year
2. Noise Management
    - Building noise insulated generator room
    - Provide sufficient personal protective equipment (PPE) at the work place

- All the related personal will be provided proper training about the relevant issues and ensure PPE wear during working in noisy area.
- 800,000 kyats per year

3. Solid waste Management Plan
    - The solid wastes are stored properly and separately in a certain in proper manner
    - The daily domestic waste of workers hands over to YCDC waste collector to collect every day
    - All related personal is provided proper training about the relevant issues.
    - 50,000 kyats per month
4. Wastewater Management Plan
    - Ensure that drainage lines and sewage system of factory and the nearest public drainage are watertight and sufficient capacity
    - Regular check and maintain sewerage facility
    - Clean the Factory's drainage to avoid odor emission and to avoid the block of water flow
    - 600,000 kyats per year
5. Energy Consumption Management Plan
    - Used of energy saving devices must be installed
    - Ensure that good housekeeping measures such as turning off equipment and lights when not in use
    - 600,000 kyats per year
6. Water Consumption Management Plan
    - Install water meter for internal control of water consumption
    - All staff trains and makes aware conservation practices and proper methods of water use must be place in toilets and other areas of water consumption
    - Trees plantation surrounding the factory
    - 500,000 kyats per year
7. Emergency Response Plan
    - Provision and inspection of firefighting equipment and fire hydrant system in all the sections
    - A detail evaluation plan (fire exist, emergency exit door, etc.) is established and communicated with workers
    - Workers are informed about what to do in earthquake and physics hazards. A medical team has been prepared for primary treatment (First Aid)
    - Build a safety committee which from firefighting team, rescue team. The committee arrange a meeting every month to discuss about safety management
    - 1,500,000 Kyats per year

8. Fire Management Plan
    - Must be provide fire extinguishers, fire hose reels and fire hydrants on the walls of the factory for fire emergency cases.
    - Must be indicated the emergency exit and assembly point in public area.
    - Regular inspection for existing firefighting equipment must be done. In case of fire emergency, water storage tank for firefighting.
    - The emergency fire alarms are installed at the factory for alerting the workers in case of fire.
    - The main entrances and route for emergency cases of the factory must not be blocked with materials or machines for fire emergency cases.

- 1,200,000 Kyats per year

9. Occupational Safety and Health Management Plan
   - First aid training, safety training, firefighting training or other essential training for machinery handling must be provided for emergency cases of workers.
   - Personal Protective Equipment (PPE) are provided for each department.
   - Manage the drainage systems of the factory to prevent health risk of the workers.
   - 1,000,000 Kyats per year

10. Hazardous Waste Management Plan
    - Proper inspection and maintenance in storage of hazardous waste.
    - Dispose of hazardous chemicals and containers in accordance with occupational health, safety and environmental requirements.
    - The hazardous wastes are transported by specially licensed carriers and disposed in a licensed faculty (YCDC)
    - 1,000,000 Kyats per year

The Environmental Management Plan (EMP) formulated with the anticipated impacts, mitigation measures, management and monitoring plans during all phases are implemented. Matsuya R&D (Myanmar) Company Limited has organized Environmental Management Team to accomplish these plans and to review EMP regularly for improvements and modifications. Ambient air quality, noise, water quality, sewage and solid waste disposal are monitored by Team Leaders of Committee. The project proponent has performed Corporate Social Responsibility (CSR) plan and Emergency Preparedness for the benefits of residents and local community.

Corporate Social Responsibility (CSR) Plan

Matsuya R&D (Myanmar) Company Limited will contribute 2% of our Net Profit to social welfare activities that will help society and country of Myanmar.

CSR plan of Matsuya R&D (Myanmar) Company Limited

No	Particle	Contribution
1	Public school	0.5%
2	Non-profit training	1
3	Employee healthcare	0.5%

Conclusion

In Conclusion, the environmental management practices, procedures and responsibilities are defined here in to get full compliance with the existing environmental policy, laws, rules and instructions of the Republic of the Union of Myanmar. All the feed backs, desired and needs of local public recorded in

public consultation meetings are well addressed and incorporated in formulation of EMP. It has been figured out that, the proposed manufacturing garment factory is going to generate local employment opportunities and enhance capabilities and working skills of employees. Consequently, their socio-economic standard is expected to be improved and undertaking corporate social responsibilities (CSR) as recommended.

This is recommended that;

- All appropriate environmental management measures detailed in this report, together with any other environmental management commitments should be implemented throughout the entire life of the factory
- Solid wastes and liquid wastes need to dispose according to YCDC rules and regulation
- Workers should be provided proper training and it should be ensured that workers use PPE during factory operation area.
- Daily, monthly and annual action plan shall be formulated based on this EMP and practiced at operation level.
- Keep full records of environmental management activities and present to annual independent third-party environment audit.
- Abide environmental policy, laws, rules and instructions of the Republic of the Union of Myanmar.

Finally, the proponent should follow the comments and suggestions made by ECD after reviewing this EMP report. Once concerned authorities approve EMP, effective implementation of EMP by the project proponent is essential. The proponent should abide environmental policy, laws, rules and instructions of the Republic of the Union of Myanmar.

1. INTRODUCTION

Environment Management Plan is required for ensuring sustainable development. It should not affect the surrounding environment adversely. The management plan presented in this chapter needs to be implemented by the proposed expansion of Matsuya R&D (Myanmar) Company Limited. The Environment Management Plan (EMP) aims at controlling pollution at source with available and affordable technology followed by treatment measures. Waste minimization and waste recycling measures are emphasized. In addition to the industry specific control measures, the proposed industry should adopt following guidelines.

1.1. AIM OF PROPOSED PROJECT

The proposed project intends to manufacture cuffs for Sphygmomanometers on CMP basic and to export 100% of the finished products. Raw materials for products are getting from China.

1.2. THIS EMP DOCUMENTS AIMS

- Provide environmental management plans that minimize the environmental impact of the works and identify those responsible for its implementation.
- Define the monitoring program which assesses the implementation

1.3. PROJECT BACKGROUND

The project is new investment for manufacturing of cuffs for Sphygmomanometers on CMP basic. The Myanmar Investment Commission (MIC) issues the project on 13 February 2015 with the Permit No. YGN – 905/2015. MIC notified for the environmental approval and comments of the Ministry of the Natural Resources and Environmental Conservation (MONREC) on the proposed project and had approved the proposal for investment in manufacturing of garment on Cutting, Sewing and Packaging (CMP) basis.

According to the Myanmar Environmental Conservation Law (2012), it requires that the proponents of every development project in the country submit either an Initial Environmental Examination (IEE) or an Environmental Impact Assessment (EIA) to Ministry of Natural Resources and Environmental Conservation (MONREC). The Myanmar Investment Commission (MIC) said project requires an Environmental Management Plan (EMP) to meet the environmental assessment requirements of Notification No. DICA-3/FI-1117/2015 (256-C) on 13 February 2015.

This EMP report is prepared based on the impact identified in EIA procedure (2015). The EMP is prepared provide additional guidance on the means, methods and mechanisms by which such mitigation

measures will be implemented. The EMP is one of the most important outputs of the environmental assessment process. The EMP is the synthesis of all proposed mitigate and monitoring actions, set to a timeline with specific responsibility assigned and follows up actions defined. The EMP can be prepared at different times of the project life. Operation environmental management plan is developed to ensure that appropriate environmental practices are followed during a project's operation and decommissioning phases. As the factory is already built operation environmental management plan is designed for this factory.

1.4. PROJECT PROPONENT PROFILE

This is the information of the project proponent from the registration of MIC which is described in below Table 1-1. The estimated authorized capital investment is about US $ 1.50 million. Organization chart of Matsuya R&D (Myanmar) Company Limited is presented in Figure 1-1.

Table 1-1 Salient features of the project

Type of Proposed Business	Manufacturing of Cuffs for Sphygmomanometers on CMP basic
Type of investment	100% foreign investment
Type of Share	Ordinary Share
Type of land	Industrial Land
Total land area	1.975 acres (7993 sq. meter)
Total building area	One and Half Storey factory building (1250 sq. meter)
Land lease year	34 years
Construction period	4 months
Investment period	Initial 10 years and extendable thereafter
Address	Plot No (A7-2), Mingaladon Industrial Park, Mingaladon Township, Yangon Region.
Contact person	Daw Thae Su 09-782714377 mm.matsuyaygn@matsuyard.co.jp

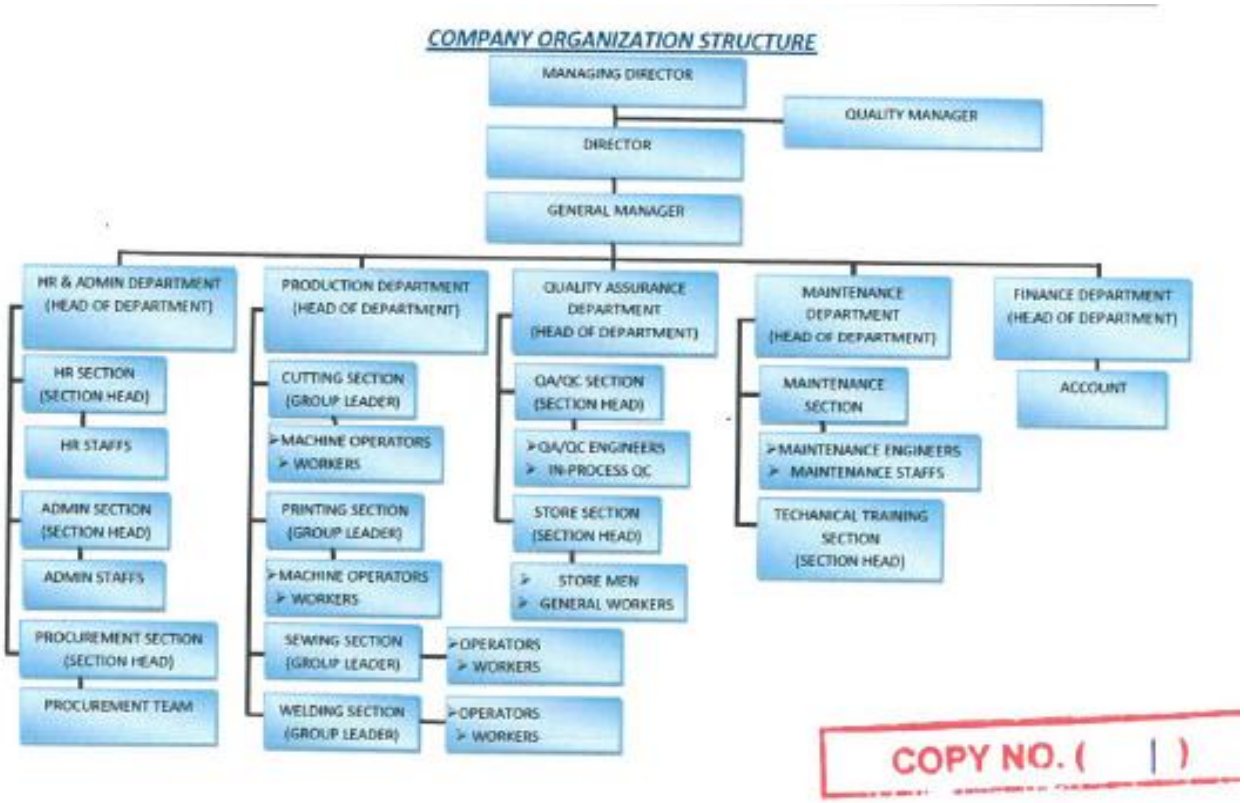


Figure 1-1 Organization Chart of Matsuya R&D (Myanmar) Company Limited

1.5. ENVIRONMENTAL CONSULTANT PROFILE

The environmental study was carried out by the study team and the following is a summary of team member's responsibilities during the study period. Member of EMP study teams is shown in

Table 1-2 Member of EMP Study Team

Team	Name	License Number	Role	Responsibility
Management Team	Mr. Lin Htet Sein	EIA-AC 053/2023	Team Leader	Report Review
Management Team	Dr. Hein Lynn Aung	EIA-AC 052/2023	Advisor	Advice
Technical Team	Mr. Htun Lin Kyaw	EIA-AC 051/2023	Member	Report Writing (Introduction and Environmental Management Plan), Participating and Presentation of Public Consultation and Public Disclose, Baseline Environmental Quality Monitoring
Technical Team	Mr. Saw Yan Naung	EIA-AC 054/2023	Member	Report Writing (Introduction and Environmental Management Plan, Participating and Presentation of Public

Team	Name	License Number	Role	Responsibility
				Consultation Meeting and Public Disclose)
Technical Team	Mr. Kaung Sett Lwin	EIA-AC 055/2023	Member	Report Writing (Policy, Legal and Institutional Frame- work, Description of Surrounding Environment), Baseline Environmental Quality Monitoring
Technical Team	Mr. Lynn Than Thaung	လျှောက်ထားဆဲ	Member	Report Writing (Impact Assessment and Mitigation Measures), Baseline Environmental Quality Monitoring, Biodiversity Survey
Technical Team	Mr. Aung Ye Thaw		Member	Baseline Environmental Quality Survey, Environmental Impact Assessment and Mitigation Measures (Waste), Environmental Management Plan (Waste)
Technical Team	Ms. Su Myat Hlaing	လျှောက်ထားဆဲ	Member	Report Writing (Project Description and Alternative), Participating of Public Consultation Meeting, Baseline Environmental Quality Monitoring (Air and Noise), Environmental Management Plan (Air and Noise), Environmental Impact Assessment and Mitigation Measures (Air and Noise)
Technical Team	Ms. Pyae Phyo Win		Member	Baseline Environmental Quality Monitoring, Biodiversity Survey, Environmental Impact Assessment and Mitigation Measures
Technical Team	Ms. Haymar Htet Naing	လျှောက်ထားဆဲ	Member	Participating of Social Survey and Public Consultation Meeting, Baseline Environmental Quality Monitoring (Air and Water), Environmental Management Plan (Air and Water), Environmental Impact Assessment and

Team	Name	License Number	Role	Responsibility
				Mitigation Measures (Air and Water)
Technical Team	Ms. Wint Zar Ni Mg Mg	လျှောက်ထားဆဲ	Member	Baseline Environmental Quality Monitoring, Water Quality Analysis, Environmental Impact Assessment and Mitigation Measures (Water Pollution)
Technical Team	Ms. No No Shee Sho		Member	Baseline Environmental Quality Monitoring, Biodiversity Survey
Technical Team	Mr. Min Tu Kyaw		Member	Baseline Environmental Quality Monitoring, Biodiversity Survey

1.6. OBJECTIVE OF ENVIRONMENTAL MANAGEMENT PLAN

The primary purpose of the EMP is to provide an easily interpreted reference document which ensures that the project environmental commitments, safeguards and mitigation measures from the environmental planning documents, project approvals and project implementation. It aims to minimized impacts associated with the operation of the project. The purpose of operational EMP is to:

- Define details of who, what, where and when environmental management and mitigation measures are to be implemented
- Provide government and their stakeholders batter on-site environmental management control over the life of operation
- Ensure that the commitments made as a part of the project's EMP are implemented throughout the project life
- Ensure the environmental management detail is captured and documented at all stages of the project

2. POLICY, LEGAL AND INSTITUTIONAL FRAMEWORK

This section provides a brief summary of relevant national environmental legislations established by the MONREC and overview of current local and international environmental and social policies including related international or regional convention for the proposed project.

2.1. MYANMAR REGULATORY FRAMWORK

Myanmar has 29 ministries under the Office of the President. The leading ministries in-charge of environmental and social considerations is the Environmental Conservation Department (ECD) of the MONREC that was reorganized Ministry of Environmental Conservation and Forestry (MOECAF) in April 2016.

2.1.1. Laws and Regulations Related to Environmental and Social Considerations

Requirements related to environmental (and social) impact management for development projects are described in Table 2-1.

Table 2-1 List of Myanmar's Law relating to environmental management

Law and Regulation	Description
National Environmental Policy of Myanmar, (Notification No. 26/94 dated 5 December 1994)	To achieve harmony and balance between socioeconomic, natural resources and environment through the integration of environmental considerations into the development process enhancing the quality of the life of all its citizens.
Constitution of the Union of Myanmar (2008)	
Section 37, (a)	The Union is the ultimate owner of all lands and all-natural resources above and below the ground, above and beneath the water and in atmosphere in the Union.
Section 37, (b)	The Union shall permit citizens rights of private property, right of inheritance, right of private initiative and patent in accord with the laws.
Section 372	The Union guarantees the right to ownership, the use of property and the right to private invention and patent in the conducting of business if it is not contrary to the provisions of this Constitution and the existing laws.
Section 45	The Union shall protect and conserve natural environment.
Section 390, (a),(b),(c),(d)	Every citizen has the duty to assist the Union in preserving and safeguarding the cultural heritage, conserving the environment, striving for the development of human resources, and protecting and preserving the public property.
Environmental Conservation Law, 30 March 2012	
Objectives	to contract a healthy and clean environmental and to conserve natural and cultural heritage for the benefit of present and future generations; to maintain the sustainable development through effective management of natural resources and to enable to promote international, regional and bilateral cooperation in the matters of environmental conversation.
Section 3	c) to enable to emerge a healthy and clean environment and to enable to conserve natural and cultural heritage for the benefit of present and future generations;

Law and Regulation	Description
	(d) to reclaim ecosystems as may be possible which are starting to degenerate and disappear; (e) to enable to manage and implement for decrease and loss of natural resources and for enabling the sustainable use beneficially;
Provisions of Duties and Powers relating to the Environmental Conservation of the Ministry: Section 7	(a) To specify categories and classes of hazardous wastes generated from the production and use of chemicals or other hazardous substances in carrying out industry, agriculture, mineral production, sanitation and other activities; (b) To prescribe categories of hazardous substances that may affect significantly at present or in the long run on the environment; (c) To promote and carry out the establishment of necessary factories and stations for the treatment of solid wastes, effluents and emissions which contain toxic and hazardous substances; (j) To prescribe the terms and conditions relating to effluent treatment in industrial estates and other necessary places and buildings and emissions of machines, vehicles and mechanisms; (m) To lay down and carry out a system of EIA and SIA as to whether or not a project or activity to be undertaken by any Government department, organization or person may cause a significant impact on the environment; (o) To manage to cause the polluter to compensate for environmental impact, cause to contribute fund by the organizations which obtain benefit from the natural environmental service system, cause to contribute a part of the benefit from the businesses which explore, trade and use the natural resources in environmental conservation works.
Chapter VI Environmental Quality Standards: Section10	The Ministry may, with the approval of the Union Government and the Committee, stipulate the following environmental quality standards: (a) suitable surface water quality standards in the usage in rivers, streams, canals, springs, marshes, swamps, lakes, reservoirs and other inland water sources of the public; (b) water quality standards for coastal and estuarine areas; (c) underground water quality standards; (d) atmospheric quality standards; (e) noise and vibration standards; (f) emissions standards; (g) effluent standards; (h) solid wastes standards; (i) other environmental quality standards stipulated by the Union Government.
Section 14	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 15	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 16	A person or organization operating business in the industrial estate or business in the SEZ or category of business stipulated by the Ministry: (a) is responsible to carry out by contributing the stipulated cash or kind in the relevant combined scheme for the environmental conservation including the management and treatment of waste;

Law and Regulation	Description
	(b) shall contribute the stipulated users 'charge s or management fees for the environmental conservation according to the relevant industrial estate, SEZ and business organization; (c) shall comply with the directives issued for environmental conservation according to the relevant industrial estate, SEZ or business.
Section 24	The project proponent has to allow relevant governmental organization or department to inspect whether performing is conformity with the terms and condition include in prior permission, stipulated by the ministry, or not.
Section 25	The project proponent has to comply with the terms and conditions include in prior permission.
Section 29	The project proponent has to abide by the stipulations included in the rules, regulations, by-law, order, notification and procedure, which are issued by said law.
Environmental Conservation Rules, 2014	
Rules 58	The Ministry shall form the EIA Report Review Body with the experts from the relevant Government departments, organizations.
Rules 59	The Ministry may assign duty to the Department to scrutinize the report of EIA prepared and submitted by any organization or person relating to EIA and report through the EIA Report Review Body.
Rules 61	The Ministry may approve and reply on the EIA report IEE or EMP with the guidance of the Committee.
Sub-rule (a) of rule 68	The project proponent has to avoid emit, discharge or dispose the materials which can pollute to environment, or hazardous waste or hazardous material prescribed by notification in the place where directly or indirectly injure to public.
Sub-rule (b) of rule 68	The project proponent has to avoid performing to damage to ecosystem and the environment generated by said ecosystem.
Environmental Impact Assessment Procedure (December 2015)	
Objectives	The project proponent has to be liable for all adverse impacts caused by doing or emitting of project owner or contractor, sub-contractor, officer, employee, representative or consultant who is appointed or hired to perform on behalf of project owner, under sub-paragraph (a) of paragraph 102. The project proponent has to support, after consulting with effected persons by project, relevant government organization, government department and other related persons, to resettlement and rehabilitation for livelihood until the effected persons by the project receiving the stable socio-economy which is not lower than the status in pre-project, under sub-paragraph (b) of paragraph 102 The project proponent has to fully implement all commitments of project and conditions included in EMP. Moreover, the project proponent has to be liable for contractor and sub-contractor who perform on behalf of him/her have to fully abide by the relevant laws, rules, this procedure, EMP and all conditions, under paragraph 103. The project proponent has to be liable and fully & effectively implement all requirements included in ECC, relevant laws and rules, this procedure and standards under rule 104. The project proponent has to inform the completed information, after specifying the adverse impacts caused by the project, from time to time, under paragraph 105. The project proponent has to continuously monitor all adverse impacts in the pre-construction phrase, construction phrase, operation phrase, suspension phrase, closure phrase and post-closure phrase, moreover has to implement

Law and Regulation	Description
	the EMP with abiding the all conditions included in ECC, relevant laws & rules and this procedure, under paragraph 106. The project proponent has to submit, as soon as possible, the failures of his or her responsibility, other implementation, ECC or EMP. If dangerous impact caused by this failure or failure should be known by the Ministry the project proponent has to submit within 24 hours and other than this situation has to submit within 7 days from knowing it, under paragraph 107. The project proponent has to submit the monitoring report dually or prescribed time by Ministry in line with the schedule of EMP, under paragraph 108. The project proponent has to prepare the monitoring report in accord with the rule 109. The project proponent has to show this monitoring report in public place such as library, hall and website and office of project for the purpose to know this report by public within 10 days from the date which the report is submitted to the Ministry. Moreover, has to give the copy of this report, by email or other way which way agreed with the asked person, to any asked person or organization, under paragraph 110. The project proponent has to allow inspector to enter and inspect in working time and if it is needed by Ministry has to allow inspector to enter and inspect in the office and work-place of project and other work-place related to this project in any time, under paragraph 113. The project proponent has to allow inspector to immediately enter and inspect in any time if it is emergency or failure to implement the requirements related to social or environment or caused to it, under paragraph 115. The project proponent has to allow inspector to inspect the contractor and sub-contractor who implement on behalf of project, under paragraph 117.
Screening: Section 23	a) The project proponent shall submit the Project Proposal to the Ministry for Screening. b) The Ministry will send the Project Proposal to the Environmental Conservation Department to determine the need for environmental assessment. c) Following the preliminary Screening and verification that the Project Proposal contains all required documents and related materials, subject to Articles 8, 9, 10, 11, 26 and 27 the Department shall make a determination in accordance with Annex 1 _ Categorization of Economic Activities for Assessment Purposes ‘, taking into account Article 25 and the additional factors listed in Article 28 in order to designate the Project as one of the following, and then submit it to the Ministry: i) An EIA Type Project, or ii) An IEE Type Project, or iii) A Non IEE or EIA Type, and therefore not required to
National Environmental Quality (Emission) Guidelines (NEQG) (December 2015)	
Objectives	To 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.
National Environmental Policy of Myanmar (2019)	

Law and Regulation	Description
National Environmental Policy Vision & mission	Vision A clean environment, with healthy and functioning ecosystem, that ensures includes development and wellbeing for all people in Myanmar. Mission To establish national environmental policy principle for guiding environmental protection and sustainable development and for mainstreaming environmental consideration into all polices, laws, regulation, plans, strategic, programmes and projects in Myanmar.
Myanmar Investment Law, 2016	
Endorsement	Means an order described the approval of the Commission relating to the endorsement application submitted by the proposed investor.
Foreign Investor	Means a person who invests within the union and is not a citizen. In this expression, foreign companies, branch offices and other enterprises and registered in accordance with the Myanmar Companies Act and enterprises formed in accordance with the laws of any other country are also included.
Myanmar Investment Rules, 2017	
Rule 202	The project proponent has to comply with the conditions of the permit issued by the MIC and applicable laws when making the investment
Rule 203	The project proponent has to fully assist while negotiating with the authority for settling the grievance of the local community which has been affected due to investment
Rule 206.	The project proponent has to submit the passport, expert evidence or document of degree and profile to the MIC office for approval if decide to appoint a foreigner as senior management, technician expert or consultant according to subsection (a) of section 51 of Myanmar Investment Law
Myanmar Insurance Law (1993)	Section 15 - If the project proponent uses the owned vehicles the project owner has to ensure the insurance for the injured person. Section 16 - The project proponent has to ensure insurance to compensate for general damages because the project may cause damages to the environment and injury to the public.
Payment of Wages Law (2016)	
Section 3 & 4	The project proponent has to pay the wages in accord with section 3 and 4 of said law,
Section 5	The project proponent has to submit with the agreements of employees & reasonable ground to the department if it is difficult to pay because of force majeure included in a natural disaster
Section 7-13	The project proponent has to abide by the provisions of section 7 to 13 in the chapter (3) in respect of deduction from wages.
Section 14	The project proponent has to pay the overtime fees, prescribed by law, to the employees who work over working hours
Yangon City Development Committee Law (2018)	
Section (317)	The proponent shall not block the natural river channel, change the course, and disrupt the water channel, filling with soil within the city boundaries without the consent of the Committee
Section (318)	The project proponent shall not construct buildings, factories, and industries without sewage, toilet, septic tanks, and wastewater treatment system

Law and Regulation	Description
Section (322)	The project proponent is not allowed to make activities that will produce noise pollution, water pollution, air pollution, and soil pollution to impact the environment within the city's boundaries
The Amended Law for Factories Act, 1951 (2016)	
Hygiene in Working Environment: Section 3	Mentions responsibilities of employer and manager regarding waste disposal, ventilation, extreme temperature, dust and gas generation, minimum space for each worker, lighting, portable drinking water and toilets for employees.
Safety in Working Environment: Section 4	States responsibilities of employer and manager concerning with machine guarding, personal protective equipment, housekeeping, aisles and exits, chemical storage and fire protection system to avoid accident.
The Private Industrial Enterprise Law, 1990	
Basic Principles: Section 3	Private Industrial Basis shall be conducted in accordance with the following basic principles: - (a) to enhance the higher proportion of the manufacturing value added in the gross national product and value of services, and to increase the production of the respective economic Basis which are related to the industrial enterprise; (b) to acquire modern technical know-how for raising the efficiency of industrial Basis and to establish the sale of finished goods produced by the industrial enterprise not only in the local market, but also in the foreign market; (d) to cause narrowing down of the gap between rural development and urban development by causing the development and improvement of industrial Basis; (e) to cause opening up of more employment opportunities; (f) to cause avoidance of or reduction of the use of technical know-how which cause environmental pollution; (g) to cause the use of energy in the most economical manner.
The Export and Import Law (2012)	
Objectives	The objectives of this law are as follows: a) To enable to implement the economic principles of the State successfully. b) To enable to lay down the policies relating to export and import that supports the development of the State. c) To cause the policies relating to export and import of the State and activities are to be in conformity with the international trade standards. d) To cause to be streamlined and speedy in carrying out the matters relating to export and import.
Prohibitions: Section 5	No persons shall export or import restricted, prohibited and banned goods.
Prohibitions: Section 6	Without obtaining license, no person shall export or import the specified goods which are to obtain permission.
Prohibitions: Section 5	A person who obtained any license shall not violate the conditions contained in the license.
The Prevention of Hazard from Chemical and Related Substances Law, 2013	
This law was enacted with the objectives of: a. To protect from being damaged the natural environment resources and being hazardous any living beings by chemical and related substances; b. To supervise systematically in performing the chemical and related substances business with permission for being safety;	

Law and Regulation	Description
c. To perform the system of obtaining information and to perform widely educative and research for using the chemical and related substance systematically; d. To perform the sustainable development for the occupational safety, health and environmental conservation. Regarding the chemical management and storage, currently, regulations governing chemicals management are divided between various Acts, mostly dating from colonial times; hence the legislation is in many respects related to the British framework. The Factory Act and the Public Health Act contain the provisions for chemicals management and storage. Some chemicals are likely to require permits.	
Underground Water Act (1930)	
The underground water act enacted on the date of 21st June in 1930 whereas it is expedient to conserve and protect underground sources of water supply in the Union of Burma. This act prohibits sinking of a tube for the purpose of obtaining underground water except under and in accordance with the terms of a license granted by the water officer. Township Officer or sub-divisional officer had power to close a license tube after exercising jurisdiction over the local area concerned and the expense of such closure shall be recoverable from the owner of the tube as if it were an arrear of land-revenue.	
Myanmar Fire Brigade Law (2015)	
The Pyidaungsu Hluttaw enacted this law-by-Law No.11/2015 on the date of 17th March, 2015 with the following objectives: (a) to take precautionary and preventive measures and loss of state own property, private property, cultural heritage and the live and property of public due to fire and other natural disasters (b) to organize fire brigade systemically and to train the fire brigade (c) to prevent from fire and to conduct release work when fire disaster, natural disaster, epidemic disease or any kind of certain danger occurs (d) to educate, organize and inside extensively so as to achieve public corporation (e) to participate if in need for national security, peace for the citizens and law and order	
Section-8 Fire Safety Procedures	
Rule17	The relevant Government Department or organization shall, for the purpose of precaution and prevention obtain the approval of the Fire Force Department before granting permission for the following cases: a. Constructing three-storied and above buildings market and condominium buildings, b. Operating hotel, motel, guest house enterprise c. Constructing factory, workshop, storage facilities and warehouse d. Operating business expose to fire hazard by using in inflammable materials or explosive materials e. Producing and selling fire-extinguishing apparatuses f. Doing transport business, public utility vehicles train, airplane, helicopter, vessel, ship, tonkin tug
Rule18	The relevant government department or organization shall obtain the opinion of the Fire Services Department for the purpose of fire precaution and prevention, when laying down plans for construction for town, village and downtown or village development plans
The Electricity Law (2014)	
In 2014, the new Electricity Law, a comprehensive piece of legislation covering licensing, a new regulatory commission, standards, inspection, tariff, and restrictions, replaced the Electricity Law of 1984. The Electricity Law divides projects into “small” (up to 10 MW), “medium” (between 10 MW to 30 MW) and large (upwards of 30 MW); the states and regions can issue permits for small and medium power plants. In case these plants are not connected to the national grid, the Union Government Ministry is not the primary authority involved. The authorities have a legal right to use land for the purpose of power plants under the Electricity Law, and have the	

Law and Regulation	Description
right to expand and maintain their facilities. The law also provides that the authorities can build transmission lines in accordance with existing laws.	
The Social Security Law (2012)	
The Social Security Law, enacted in 2012, was amended the Social Security Act in 1954. It stipulates the formation and implementation of social security systems.	
Section 53(a)	The employers and workers shall co-ordinate with the Social Security Board or insurance agency in respect of keeping plans for safety and health in order to prevent employment injury, contracting disease and decease owing to occupation and in addition to safety and educational work of the workers and accident at the establishment;
The Settlement of Labor Dispute Law 2012 (Amendment 2019)	
This law was enacted for safeguarding the right of workers or having good relationship between employer and workers and making peaceful workplace or obtaining the rights fairly, rightfully and quickly by settling the dispute of employer and worker justly. It stipulates that employer in which more than 30 workers are employed shall form the workplace coordinating committee consisting of the representatives of workers and the representatives of employer.	
Section 23	A party, employer or worker, may complain individual dispute relating to his grievance to the Conciliation Body and if he is not satisfied with the conciliation of such body in accord with stipulated manners, may apply to the competent court in person or by the legal representative.
Section 24	The relevant Conciliation Body shall, in respect of the collective dispute known or received by the complaint of either party, employer or worker, in respect of the dispute; information sent by the Minister or the Region or State Government or any other means, carry out as follows: (a) conciliating so as to be settled within three days, not including the official holidays, from the day of knowing or receipt of such dispute; (b) concluding mutual agreement if the settlement is reached in conciliating under sub-section (a), before the Conciliation Body.
Section 25	The Conciliation Body shall refer the collective dispute which does not reach settlement to the relevant Arbitration Body and inform the persons relating to the dispute.
Section 38	No employer shall fail to negotiate and coordinate in respect of the complaint within the prescribed period without sufficient cause.
Section 39	No employer shall alter the conditions of service relating to workers concerned in such dispute at the consecutive period before commencing the dispute within the period under investigation of the dispute before the Arbitration Body or Tribunal, to affect the interest of such workers immediately.
Section 40	The project proponent has to not close the work without negotiation, discussion on dispute in accord with this law, decision by Tribunal
Section 51	The project proponent has to pay the compensation decided by Tribunal f violates any act or any emission to omission to damage the interest of labour by reducing of product without efficient cause.
Section 46	Any employer who violates any prohibition contained in sections 38 and 39 shall, on conviction, be punished with a fine for a minimum of one-lakh kyats.
The employment and skill development (2013)	
This law was enacted for safeguarding the right of workers or having skillful of workers and making peaceful workplace or obtaining the rights fairly, rightfully and quickly by settling the dispute of employer and worker justly. Employer shall conduct occupational training to enhance the skills of workers.	
Section 5	The project proponent has to appoint employees with the contract in line with the provision of section 5 of said law.

Law and Regulation	Description
Section 14	Employer shall conduct occupational training to enhance the skills of workers who are to be employed as well as workers who are presently employed in accordance with the requirements of the enterprise and the policy of the Skills Development Agency.
The Workmen Compensation Act 1923 (Amendment 2005)	It stipulates that employer is required to make payments 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.
The Payment of Wages Act, 1936	The Payment of Wage Act defines the payment obligation to the workers employed in the factories or railway administration. It stipulates the method of payment stating that the payment should be made in cash on a regular payday, and allows legal action against delayed payment or un-agreeable deduction.
The Leave and Holidays Act (1951, partially revised in 2014)	This act has been used as the basic framework for leaves and holidays for workers with minor amendment in 2006 and 2014. This defines the public holidays that every employee shall be granted with full payment. It also defines the rules of leaves for workers including medical leave, earned leave and maternity leave.
The Minimum Wage Law (2013)	The minimum wage law, passed in March 2013, was replaced the 1949 Minimum Wage Act. The law provides a framework for minimum wage determination: the presidential office establishing a tripartite minimum wage committee shall decide minimum wage with industrial variation based on a survey on living costs of workers possibly every two years. This also stipulates equal payment.
Public Health Law (1972)	**Chapter 2; Prevention of Public Health**
Objectives	To ensure the public health include not only employees but also resident people and cooperation with the authorized person or organization of health department. This law focuses as follows The project owner has to cooperate with the authorized person or organization in line with the section 3 and 5 of said law. The project proponent has to abide by any instruction or stipulation for public health under the section 3 of said law. The project proponent has to allow any inspection, anytime, anywhere if it is needed under the section 5 of said law.
Prevention and Control of Communicable Disease Law 1995 (Amendment in 2011)	
Chapter 2 Prevention	4. When a Principal Epidemic Disease of a Notifiable Disease occurs; Immunization and other necessary measures shall be undertaken by the Department of Health, in order to control the spread there of; The public shall abide by measures undertaken by the Department of Health under sub-section (a).
Chapter 4 Environmental Sanitation	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 carrying out the following environmental sanitation measures; - Indoor, outdoor sanitation or inside the fence outside the fence sanitation; Well, ponds and drainage sanitation; Proper disposal refuse and destruction there of by fire; Construction and use of sanitary latrines; Other necessary environmental sanitation measures.
Occupational Safety and Health Law (2019)	

Law and Regulation	Description
Purpose:	To effectively implement measures related to safety and health in every industry and to set occupational safety and health standards;
Section-26 Sub-section (e)	The project proponent has to provide adequate and relevant personal protective equipment to workers free of charge and make them wear it during work so as not to expose workers to any serious occupational diseases or hazards.
Section-26 Sub-section (1)	The project proponent has to arrange and display occupational safety and health instructions, warning signs, notices, posters, and signboards.
Section-30 Sub-section (a)	The worker shall wear or use at all times any protective clothes, equipment and tools provided by the employer for the purpose of safety and health.
Section-30 Sub-section (d)	The worker shall proper and systematic use any equipment and tools, machines, any parts of the machines, vehicles, electricity and other substances being used at the workplace.
Section-30 Sub-section (e)	The worker shall take reasonable care for the safety and health of himself/ herself and of other persons who may be affected by his/ her acts or omissions at work.
The law on Standardization (2014)	
Objectives	The Objectives of this Law are as follows: to enable to determine Myanmar Standard to enable to support export promotion by enhancing quality of production organizations and their product, production processes and services to enable to protect the consumers and user by guaranteeing imports and products are not lower than prescribed standard, and safe from health hazards to enable to support protection of environment related to products, production process and services from impact, and conservation of natural resources 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 to support on establishing the ASEAN Free Trade Area and to enable to reduce technical barriers to trade to facilitate technological transfer and innovation by using the standards for the development of national economic and social activities in accordance with the national development programme.
Chapter 7 Taking Action by Committee No. 19	The committee may, if it is found out that holder of certificate of certification violates any term or condition contained in the relevant recommendation, pass any of the following administrative order: warning suspending the certificate of certification for limited period cancelling the certificate of certification
လုပ်ငန်းခွင်သုံးပေါက်ကွဲစေတတ်သောဝတ္ထုပစ္စည်းများဆိုင်ရာဥပဒေ (၂၀၁၈)	
ရည်ရွယ်ချက်	လုပ်ငန်းခွင်သုံးပေါက်ကွဲစေတတ်သော ဝတ္ထုပစ္စည်းများကို စနစ်တကျပြုလုပ်ခြင်း၊ တင်သွင်းခြင်း၊ သယ်ယူခြင်း၊ သိုလှောင်ခြင်းနှင့် သုံးစွဲခြင်းတို့ပြုနိုင်ရန်၊ ယမ်းဘီလူးနှင့် ဆက်စပ်သုံးပစ္စည်းများ အသုံးပြုသည့် လုပ်ငန်းခွင်ဘေးအန္တရာယ် ကင်းရှင်း၍ လုံခြုံမှုရှိစေရန်၊ လုပ်ငန်းခွင်သုံး ပေါက်ကွဲစေတတ်သော ဝတ္ထုပစ္စည်းများ ပြုလုပ်သုံးစွဲမှုများကို စနစ်တကျ ကြီးကြပ်နိုင်ရန်။

Law and Regulation	Description
အခန်း ၇ တားမြစ်ချက်များ အမှတ် ၁၈	လိုင်စင်ရရှိသူနှင့် ခွင့်ပြုချက်ရရှိသူ မည်သူမျှ စစ်ဆေးရေးအရာရှိချုပ် သို့မဟုတ် စစ်ဆေးရေးအရာရှိ၏ စစ်ဆေးခြင်းကို ခံယူရန် ငြင်းပယ်ခြင်းမပြုရ။
အမှတ် ၁၉ (ခ)	ပုဒ်မ ၈ အရ ကာကွယ်ရေးဌာနကောင်စီ အမှုဆောင်အဖွဲ့၏ အတည်ပြုချက်မရရှိဘဲ လုပ်ငန်းခွင် ပေါက်ကွဲစေတက်သော ဝတ္ထုပစ္စည်းများကို ဖျက်ဆီးခြင်းမပြုရ။
အမှတ် ၁၉ (ဂ)	ဤဥပဒေအရ ထုတ်ပြန်သည့် နည်းဥပဒေ၊ စည်းမျဉ်း၊ စည်းကမ်း၊ အမိန့်ကြော်ငြာစာ၊ အမိန့်နှင့် ညွှန်ကြားချက်များနှင့်အညီ ဆောင်ရွက်ရန် ပျက်ကွက်ခြင်း မရှိစေရ။
Automobile Safety and Automobile Management Act (2020)	
Objectives	When the constructions periods and if it is needed in operation and production period for all vehicles • The project proponent has to promise to abide by the nearly all provisions of said law and rules, especially the provisions related to air pollution, noise pollution and life safety.
The Conservation of Water Resources and Rivers Law (2006)	
Aims	The aims of this Law are as follows: to conserve and protect the water resources and rivers system for beneficial utilization by the public; to smooth and safety waterways navigation along rivers and creeks; to contribute to the development of State economy through improving water resources and river system; to protect environmental impact.
Chapter 5 Prohibitions No. 8	No person shall: (a) Carry out any act or channel shifting with the aim to ruin the water resources and rivers and creeks. (b) Cause the wastage of water resources wilfully.
No. 10	No person shall anchor the vessels where vessels are prohibited from anchoring in the rivers and creeks.
No.11 (a)	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.
No. 12	No person shall carry out growing of garden, digging, filling, silt trapping, closing pond, dyke building or erecting spur in the river-creek boundary, bank boundary and waterfront boundary without the permission of the relevant government department and organization.
No. 15	No person shall carry out the construction of switchback, dockyard, wet dockyard, water-tight dockyard, building of jetty, pier, landing stage or vessel landing by drainage in the river-creek boundary, bank boundary and waterfront boundary without the permission of the Directorate.
The Commercial Tax Law 1990 (Amended 2014)	
Chapter 5 Registration and Intimation of Commencement of Enterprise 11 (b)	Any Person who commences operation of a goods production enterprise or service enterprise shall furnish letter of intimidation on the commencement of the operation as such to the relevant Township Revenue Officer as stipulated by regulations.

Law and Regulation	Description
Chapter 6 Monthly Payment of Tax and Sending of Three-Monthly Return 12 (a)	Any person who has taxable proceed of sale or receipt from service within a year, shall pay due monthly tax within ten days after the end of the relevant month. Moreover, a three-monthly return shall be furnished to the relevant Township Revenue Officer within one month after the end of relevant three-month.
12 (b)	The Township Revenue Officer may intimate any person to pay due monthly tax and send three-monthly return if there is cause to consider that he has taxable proceed of sale or receipt from service within a year.
12 (c)	If it is failed to pay tax under sub-section (a) or (b), or if there is cause to consider that the tax paid is less than the tax payable, the Township Revenue Officer may, based on the information received, estimate and claim the tax payable or the additional tax payable.
12 (d)	The tax paid under sub-section (a), (b) or (c) shall be set-off from the tax due in the assessment.
12 (e)	The tax payable on goods imported under sub-section (c) of section 4 of the Law shall be collected together with the customs duties by the Customs Department in accord with the manner of collecting customs duties.

2.2. NATIONAL ENVIRONMENTAL QUALITY (EMISSION) GUIDELINES

As specified in the EIA Procedure, all projects are obliged to use, comply with and refer to applicable national guidelines or standards or international standards adopted by the Ministry. As specified in the EIA Procedure, following project approval a project shall commence implementation strictly in accordance with the project EMP and any additional requirements set out in the project ECC, which will encompass conditions relating to emissions. While these Guidelines generally apply to all projects subject to the EIA Procedure, it is the prerogative of the Ministry to decide how the Guidelines should be applied to existing projects as referred to in the EIA Procedure.

According to the Environmental Conservation Law, MOECAF shall set standards of environmental qualities as agreed by the Union Government and the Environmental Conservation Committee to 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.

2.2.1. General Guidelines

General guidelines of related environmental impact guideline for proposed project are –

2.2.1.1. Air Emission

Projects with significant sources of air emissions, and potential for significant impacts to ambient air quality, should prevent or minimize impacts by ensuring that: (i) emissions do not result in concentrations that reach or exceed national ambient quality guidelines and standards, or in their absence current World Health Organization (WHO) Air Quality Guidelines1 for the most common pollutants as summarized below; and (ii) emissions do not contribute a significant portion to the attainment of relevant ambient air quality guidelines or standards (i.e. not exceeding 25 percent of the applicable air quality standards) to allow additional, future sustainable development in the same air shed. Industry-specific guidelines summarized hereinafter shall be applied by all projects to ensure that air emissions conform to good industry practice. Reference should be made to WHO's Air Quality Guidelines for Europe2 for air pollutants not included in the following Table 2-2.

Table 2-2 NEQG's Air Quality Guideline

Parameter	Averaging Period	Guideline Value
Nitrogen Dioxide	1-year 1-hour	40 200
Ozone	8-hour	100
Particulate Matter PM10[a]	1-year 24-hour	10 50
Particulate Matter PM2.5[b]	1-year 24-hour	10 25
Sulfur dioxide	24-hour 10-minute	20 500

2.2.1.2. Wastewater

Industry-specific guidelines apply during the operations phase of projects and cover direct or indirect discharge of wastewater to the environment. They are also applicable to industrial discharges to sanitary (domestic) sewers that discharge to the environment without any treatment. Wastewater generated from project operations includes process wastewater, wastewater from utility operations, runoff from process and storage areas, and miscellaneous activities including wastewater from laboratories, and equipment maintenance shops. Projects with the potential to generate process wastewater, sanitary sewage, or storm water should incorporate the necessary precautions to avoid, minimize, and control adverse impacts to human health, safety or the environment. Industry-specific guidelines summarized hereinafter

shall be applied by all projects, where applicable, to ensure that effluent emissions conform to good industry practice.

For project types where industry-specific guidelines are not set out in these Guidelines, the following general guideline values, or as stipulated on a case-by-case basis, apply during project operations.

Table 2-3 Wastewater, Storm Water Runoff, Effluent and Sanitary Discharges

Parameter	Unit	Guideline Values
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	mg/l	250
Chlorine (total residual)	mg/l	0.2
Chromium (hexavalent)	mg/l	0.1
Chromium (total)	mg/l	0.5
Copper	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	S.U.[a]	6-9
Phenols	mg/l	0.5
Selenium	mg/l	0.1
Silver	mg/l	0.5
Sulphide	mg/l	1
Temperature increase	°C	<3[b]
Total coliform bacteria	100 ml	400
Total phosphorus	mg/l	2
Total suspended solids	mg/l	50
Zinc	mg/l	2

Table 2-4 Drinking Water Quality Standard (WHO Guidelines)

Parameter	Unit	Guideline Values

Colour	TCU	5
Turbidity	NTU	10
pH	mg/l	6.5 To 8.5
Total Hardness	mg/l	300
Calcium	mg/l	75
Magnesium	mg/l	30
Copper	mg/l	0.05
Iron	mg/l	0.3
Manganese	mg/l	0.1
Chlorides	mg/l	250
Sulphates	mg/l	150
Nitrates	mg/l	45
Fluoride	mg/l	0.6 To 1.2
Phenols	mg/l	0.001
Mercury	mg/l	0.001
Cadmium	mg/l	0.01
Selenium	mg/l	0.01
Arsenic	mg/l	0.05
Cyanide	mg/l	0.05
Lead	mg/l	0.1
Zinc	mg/l	5.0
Chromium	mg/l	0.05

2.2.1.3. Noise levels

Noise prevention and mitigation measures should be taken by all projects where predicted or measured noise impacts from a project facility or operation exceed the applicable noise level guideline at

the most sensitive point of reception. Noise impacts should not exceed the levels shown below, or result in a maximum increase in background levels of three decibels at the nearest receptor location off-site.

Table 2-5 Noise Levels of National Environmental Quality (Emission) Guideline

Receptor	One Hour LAeq (dBA)[a]	
	Daytime 07:00 – 22:00 (10:00 – 22:00 for public holidays)	**Nighttime 22:00 – 07:00 (22:00 – 10:00 for public holidays)**
Residential, institutional, education	55	45
Industrial, commercial	70	70

[a] Equivalent continuous sound level in decibels

2.2.1.4. Air emission levels

Parameter	Unit	Guideline Value
Ammonia	mg/Nm^{3a}	30
Carbon disulfide	mg/Nm^3	150
Chlorine	mg/Nm^3	5
Formaldehyde	mg/Nm^3	20
Hydrogen sulfide	mg/Nm^3	5
Particulates	mg/Nm^3	50[b]
Volatile organic compounds	mg/Nm^3	2/20/50/75/100/1 150 [c, d]

2.2.1.5. Illuminating Engineering Society of North America Lighting Handbook

Area / Task / Process	Illuminance levels (lux)
Exterior calculating, walkways, stores, main entrances and exit roads, car parking, internal factory roads, etc.	20-50
Boiler house, transformer yards, furnace rooms, entrances, corridors, stairs, etc.	70-100
Calculation area in industry, stores, stock rooms and canteen.	100-150
Coarse Work	200-300
Medium work	300-500
Fine Work	500-1500
Very fine minute and precise work	1500-3000

Department	Type of Light	Wattage of Light	Lux Level
Fabric store	Fluorescent tube light	40 W	300
Sewing floor	LED tube light	20 W (T8)	400

Cutting floor	LED tube light	22 W (T8)	1000
Finishing	LED tube light	28 W (T8)	600
Inspection points	LED tube light	28 W (T8)	900 (except 1500 at audit tables)
Sampling	LED tube light	22 W (T8)	500
Office areas	Fluorescent tube light	36 W (T)	300

2.3. POLICY AND LEGAL FRAMEWORK INCLUDING INTERNATIONAL CONVENTIONS, TREATIES AND AGGREMENTS, AND INTERNATIONAL STANDARDS, GUIDELINES

International Conventions, Treaties and Agreements Myanmar has signed a number of international treaties related to the environment which may have implications for the Project. These include:

a) Plant Protection Agreement for the Asia and Pacific Region; Vienna Convention for the Protection of the Ozone Layer; Montreal Protocol on Substances that Deplete the Ozone Layer;

b) London Amendment to the Montreal Protocol on Substances that Deplete the Ozone Layer;

c) United Nations Framework Convention on Climate Change (UNFCCC); United Nations Convention to Combat Desertification;

d) International Civil Aviation Organization: ANNEX 16 Annex to the Convention on International Civil Aviation Environmental Protection Vol. I, II, Aircraft Noise;

e) Vienna Convention for the Protection of Ozone Layer;

f) Montreal Protocol on Substances that Deplete the Ozone Layer;

g) Convention Concerning the Protection of the World Cultural and Natural Heritage;

h) Convention on Biological Diversity (CBD); International Tropical Timber Agreement (ITTA);

i) Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES);

j) ASEAN Agreement on the Conservation of Nature and Natural Resources; Catagena Protocol on Bio-safety

k) Kyoto Protocol to the United Nations Framework Convention on Climate Change; Ramsar Convention on Wetlands; and

l) Copenhagen Amendment to Montreal Protocol on Substances that deplete the Ozone Layer.

m) United Nations Declaration on the Rights of Indigenous People

International Standards and Guidelines

The following international standards, guidelines, policies and procedures are referred to, in preparation of this Report:

a) UNEP Environmental Impact Assessment Training Resource Manual

b) European Bank for Reconstruction and Development (Sub-sectoral Environmental and Social Guidelines)

c) International Finance Corporation, World Bank Group (Environmental, Health, and Safety Guidelines)

d) NHS, Health, Scotland (Health Impact Assessment in Practice)

e) BS 14001:2004 Environmental management systems - Requirements with guidance for use

f) Principles of Environmental Impact Assessment Best Practice International Association for Impact Assessment

g) OHSAS 18001, Occupational Health and Safety Assessment

2.4. NATIONAL SUSTAINABLE DEVELOPMENT STRATEGY

The National Sustainable Development Strategy (NSDS) is part of a broader programme of the UN Sustainable Development Commission set up after the World Summit on Sustainable Development in 2002.Every country, including Myanmar, that signed Agenda 21 at the Earth Summit in Rio de Janeiro in 1992, agreed to develop an NSDS by 2010 in line with the Millennium Development Goals (MDGs). UNEP provided funding for Myanmar to develop an NSDS. The main aim of the process was to develop an NSDS in line with international standards by meeting the MDGs and ensure that environmental and social impacts are mitigated when implementing development projects. Myanmar's NSDS was published in August 2009. The three goals described in Myanmar's NSDS are sustainable management of natural resources, integrated economic development and sustainable social development. Specific strategies are outlined under each goal. For example, the goal for Sustainable Management of Natural Resources suggests strategies for forest resource management, sustainable energy production and consumption, biodiversity conservation, sustainable freshwater resources management, sustainable management of land resources, sustainable management for mineral resources utilization, and so on.

2.5. PROJECT'S ENVIRONMENTAL AND SOCIAL STANDARD

Principle 17 of the Rio Declaration on Environment and Development stated; 'Environmental impact assessment, as a national instrument, shall be undertaken for proposed activities that are likely to have a

significant adverse impact on the environment and are subject to a decision of competent national authority'.

2.6. THE EVOLVING SCOPE OF EIA PROCESS AND PRACTICE

In the early stages of EIA, only the biophysical impacts of proposals were considered (such as effects on air and water quality, flora and fauna, noise levels, climate and hydrological systems). Increasingly EIA processes are used to analyses a range of impact types within a single framework, include social, health, and economic aspects, e.g. social impact assessment (SIA), health impact assessment (HIA) and risk assessment. However, this trend toward integrated assessment for decision-making is by no means universal or uniform. Even in EIA systems where this trend is well established, the degree and extent of integration varies with legal requirements and accepted practice. Despite a lack of internationally consistent practice, integrated impact assessment, linking biophysical and socio-economic effects, is identified as an important priority in Agenda 21.

2.7. UNITED NATIONS DECLARATION ON THE RIGHTS OF INDIGENOUS PEOPLES

Myanmar has endorsed the United Nations Declaration on the Rights of Indigenous Peoples in September 2007 as one of 144 states. Article 32 describes indigenous peoples' right to free and prior informed consent (FPIC): "States shall consult and co-operate in good faith with the Indigenous Peoples concerned through their own representative institutions in order to obtain FPIC prior to approval of any project affecting their land or territories". Article 10 and Article 26 elaborate on forcible relocation of indigenous people, the need for FPIC and land rights. It is required to ensure conformance to all relevant international environmental and social conventions in relation to this project.

2.8. WORLD BANK CLASSIFICATION

World Bank Operational Directive on EIA, which is illustrative and provides a framework for screening.

Category A: for projects likely to have significant adverse environmental impacts that are serious (i.e., irreversible, affect vulnerable ethnic minorities, involve involuntary resettlement, or affect cultural heritage sites), diverse, or unprecedented, or that affect an area broader than the sites of facilities subject to physical works. A full EIA is required.

Category B: for projects likely to have adverse environmental impacts that are less significant than those of Category A projects, meaning that few if any of the impacts are likely to be irreversible, that they are site-specific, and that mitigation measures can be designed more readily than for Category A projects. Normally, a limited EIA will be undertaken to identify suitable mitigation and management measures, and incorporate them into the project.

Category C: for projects that are likely to have minimal or no adverse environmental impacts. No EIA is required.

2.9. DIRECTIVE 2011/92/EU FO THE EUROPEAN PARLIAMENT AND OF THE COUNCIL OF 13 DECEMBER 2011 ON THE ASSESSMENT OF THE EFFECTS OF CERTAIN PUBLIC AND PRIVATE PROJECTS ON THE ENVIRONMENT

The EIA Directive (85/337/EEC) has been in force since 1985 and applies to a wide range of defined public and private projects, which also respectively list projects subject to mandatory EIA and non-mandatory EIA.

Usually this kind of major projects, will warrant a full EIA, because they are known or considered to have potentially significant adverse impacts on the environment; for example, on human health and safety, rare or endangered species, protected areas, fragile or valued ecosystems, biological diversity, air and water quality, or the lifestyle and livelihood of local communities.

2.10. IFC EHS GUIDELINES

The EHS Guidelines[1] by International Finance Cooperation (IFC) are technical reference documents with general and industry–specific examples of Good International Industry practice (GIIP), as defined in IFC's Performance Standard 3: Resources Efficiency and Pollution Prevention. The EHS Guidelines contain the performance levels and measures that are normally acceptable to IFC, and that are generally considered to be achievable in new facilities at reasonable costs by existing technology.

There are two kinds of guidelines, General EHS Guidelines and Industry Sector Guidelines. The General EHS Guidelines contain information on cross-cutting environmental, health, and safety issues potentially applicable to all industry sectors in the following section: (1) Environment, (2) Occupational Health and Safety, (3) Community Health and Safety and (4) Construction and Decommissioning. Table 2-6 shows the contents of the section of Community Health and Safety.

Table 2-6 Community health and Safety contents

Contents	Brief Description
Water Quality and Availability	Drinking water sources should at all times be protected so that they meet or exceed applicable national acceptability standards or in their absence the current edition of WHO Guidelines for Drinking-Water Quality. Project activities should not compromise the availability of water for personal hygiene needs and should take account of potential future increases in demand. The overall target should be the availability of 100 liters per person per day.
Structural Safety of Project Infrastructure	Reduction of potential hazards is best accomplished during the design phase when the structural design, layout and site modifications can be adapted more easily. The following issues should be considered and incorporated as appropriate into the planning, siting, and design phases of a project (1) inclusion of buffer strips or other methods of physical separation around project sites to protect the public from major hazards associated with hazardous materials incidents or process failure (2) incorporation of siting and safety engineering criteria to prevent failures due to natural risks posed by earthquakes, tsunamis, wind, flooding, landslides and fire, and (3) application of locally regulated or internationally recognized building codes, standards and regulations, and mitigation measures.
Traffic Safety	Traffic safety should be promoted by all project personnel during displacement to and from the workplace, and during operation of project equipment on private or public roads. Prevention and control of traffic related injuries and fatalities should include the adoption of safety measures that are protective of project workers and of road users, including those who are most vulnerable to road traffic accidents.
Transport of Hazardous Materials	Projects should have procedures in place that ensure compliance with local laws and international requirements applicable to the transport of hazardous materials.
Disease Prevention	Recommended interventions against the communicable diseases at the project level include (1) providing surveillance and active screening and treatment of workers, (2) preventing illness among workers in local communities by undertaking health awareness and education initiatives, training health workers in disease treatment and conducting immunization programs for workers, and (3) providing treatment through standard case management in on-site or community health care facilities.
Emergency preparedness and Response	All projects should have an Emergency preparedness and Response Plan that is commensurate with the risks of the facility and that includes the following basic elements: (1) Administration (policy, purpose, distribution, definitions, etc.) (2) Organization of emergency areas (command centers, medical stations, etc. (3) Roles and responsibilities, (4) Communication systems, (5) Emergency response procedures, (6) Emergency resources, (7) Training and updating, (8) Checklists (role and action list and equipment checklist), and (9) Business Continuity and Contingency.

2.11. INSTITUTIONAL ARRANGEMENT

The Ministry of Environmental Conservation and Forestry (MOECAF) was reformed as the Ministry of Natural Resources and Environmental Conservation (MONREC) on 30th March, 2016 in order to undertake both environmental and natural resources conservation and management more effectively. Under Section 3 of the Environmental Impact Assessment Procedure (2015), pursuant to section 21 of the law and Articles 52, 53 and 55 of the Environmental Conservation Rules, all projects and project expansions undertaken by any organization, which may cause impact on environmental quality that, are required to obtain prior permission. This is to be in accordance with section 21 of the Environmental Conservation Law, and Article

62 of the Environmental Conservation Rules, having the potential to cause adverse impacts, that are required to undertake IEE or EIA or to develop an EMP, and to obtain an Environmental Compliance Certificate (ECC) in accordance with this EIA procedure.

2.12. INTERNATIONAL GUIDELINES

Organization's Guidelines, World Bank Safeguard Policies, IFC Performance Standards and National Environmental Quality (Emission) Guidelines (2015) are referred for EMP of the proposed factory project.

2.13. COMMITMENT OF MATSUYA R&D (MYANMAR) COMPANY LIMITED

Matsuya R&D (Myanmar) Company Limited shall be responsible for the preservation of the environment at and around the area of project site. In addition to this, it shall carry out as per instructions made by Ministry of Natural Resources and Environmental Conservation (MONREC) in which to conduct an EMP which describe the measure to be taken for preventing, mitigation and monitoring significant environment impacts resulting from the implementation and operation of proposed project or business or activity has to be prepared and submitted and to perform activities in accordance with this EMP and be abided by the environment policy, Environmental Conservation Law and other environmental related rules and procedures. Matsuya R&D (Myanmar) Company Limited shall be responsible for the environmental assessment of factory development as follows:

- Monitoring the factory area operations according to EMP and Environmental Monitoring Plan (EMoP)
- Submitting environmental monitoring reports to ECD
- Planning and implementation of CSR activities
- To set up welfare plan such as staff medical checkup, training program and public talk for getting knowledge, risk prevention, bonus and social security services
- To carry out fire safety assessment and ensure adequate and appropriate fire safety measures for employees

Masayuki MIZOI
Director
MATSUYA R&D (Myanmar)Co.,Ltd

3. PROJECT DESCRIPTION

3.1. LOCATION

Matsuya R&D (Myanmar) Company Limited's factory is located at Plot No (A7-2), Mingaladon Industrial Park, Mingaladon Township, Yangon Region. The location point of proposed project is between Latitude 16°56'31.59"N and Longitude 96°09'13.82"E. Location map is shown in Figure 3-1.

3.1.1. Project implementation

The operation period started in March 2015. The designed area mainly includes a one and half story building. Number of people 268 employees working at Matsuya R&D (Myanmar) Company Limited's factory. Most are local people, who manage the company by their dynamic, enthusiastic, experienced, and cooperative skills. The estimated production rate will increase more than 1000 to 7000 in the first ten years.

Decommissioning phase; the proposed project investment duration is 10 years and they will close and return to land owner.

3.1.2. Adjacent condition of project site

As the main roads, no (3) highway Road and KhayeBin Road was situated near the factory. Myanmar Asia Optical International Company Limited (in front of the Matsuya), Famaso Clothing Company Limited (left side of the Matsuya) and Kangaroo Myanmar Warehouse (right side of the Matsuya) is the adjacent factories of the project site. List and map of adjacent condition of project site is shown in Figure 3-2.

3.1.3. Site Description

The total area of the project site is 1.975 acres (7993 sq-m). The project has one main building. The project layout plan can be seen in Figure 3-3 and Figure 3-4. Main structure was designed into warehouse, HR office room, cutting line, printing line, sewing line and final inspection room are separated by main factory building structure. Other facilities were composed of nearby main building included generator room, transformer room, firefighting pump room, fuel storage room, garbage room, car packing area and dining area.

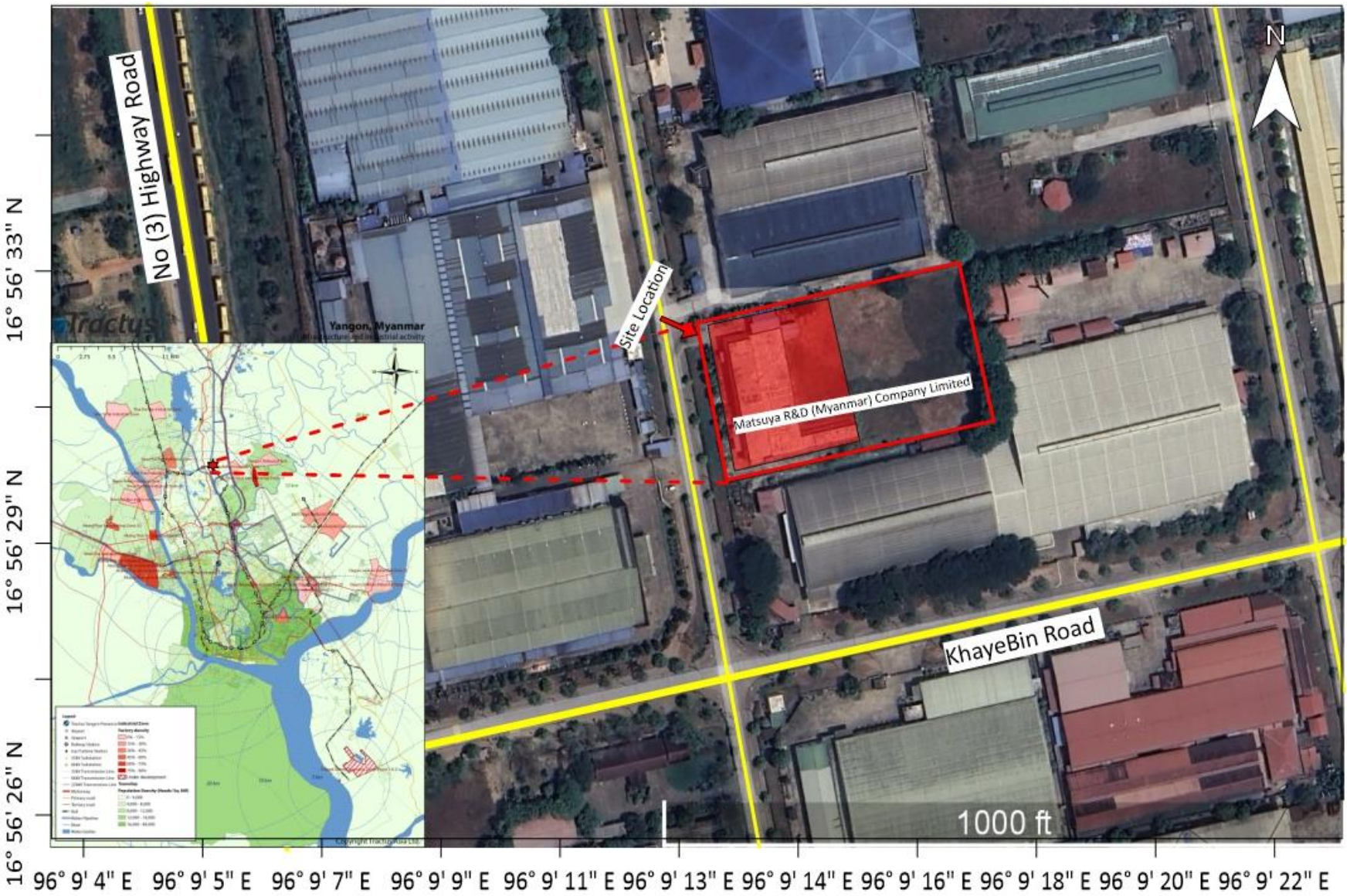


Figure 3-1 Location map of Matsuya R&D (Myanmar) Company Limited

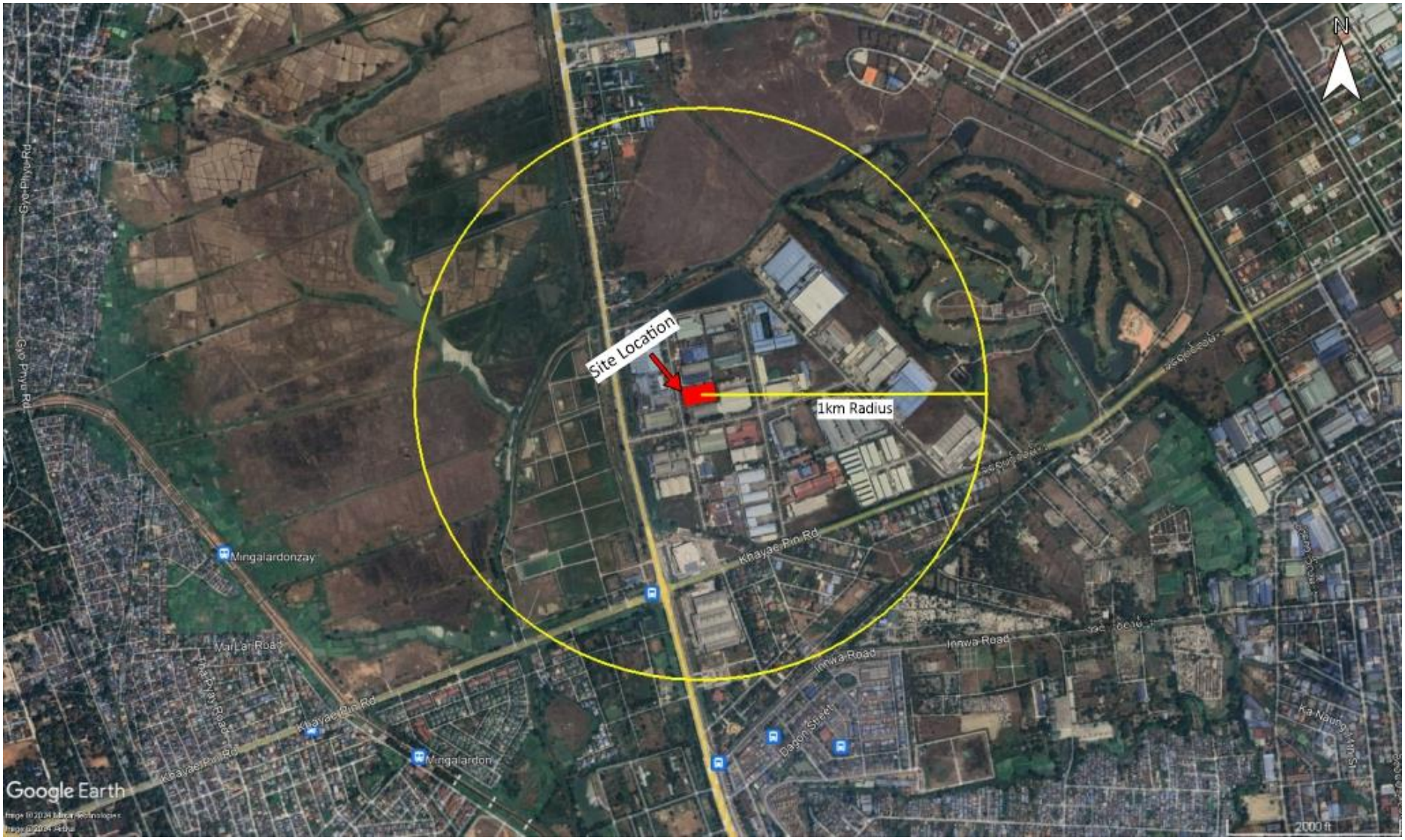


Figure 3-2 Adjacent condition map of Matsuya R&D (Myanmar) Company Limited

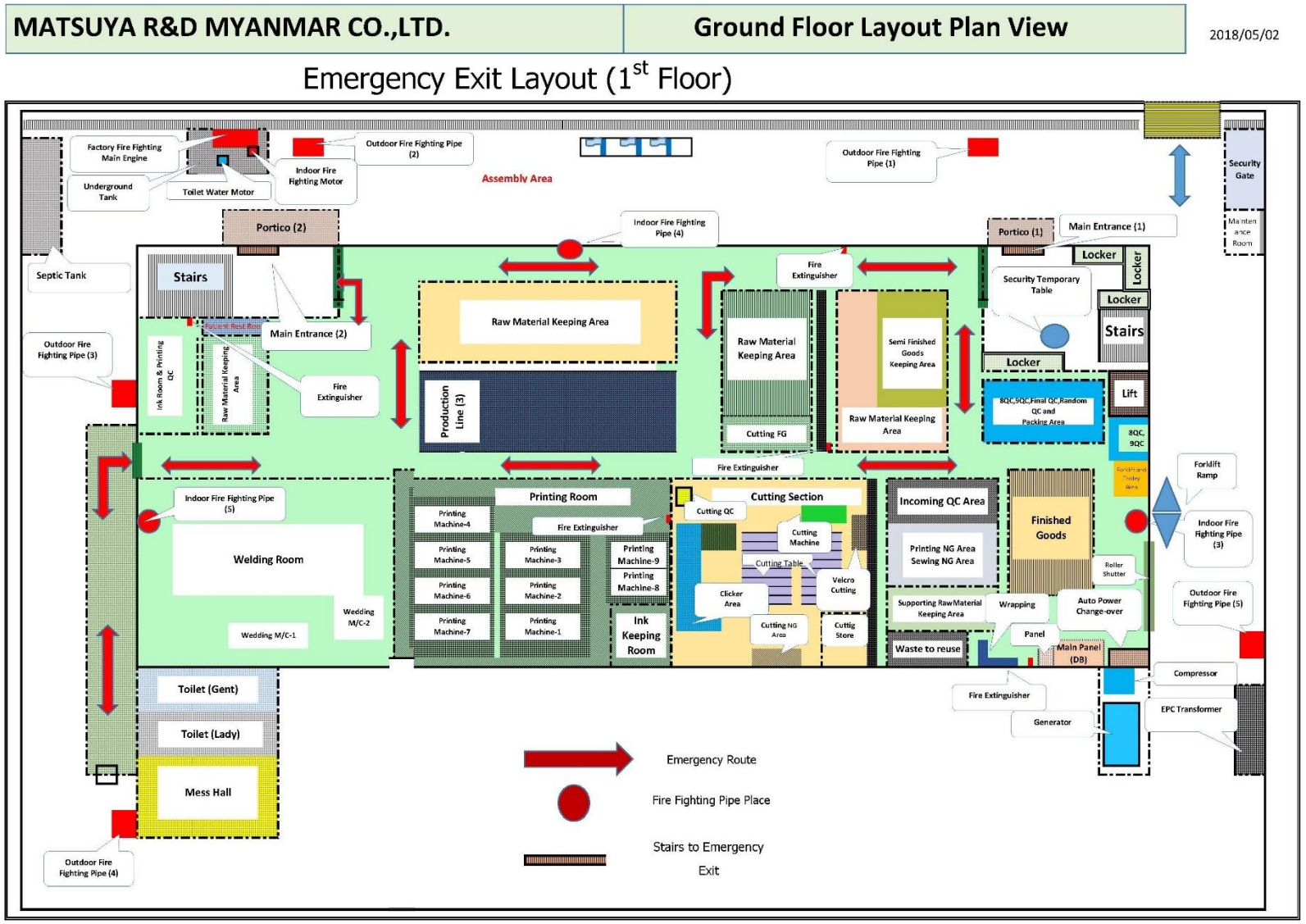


Figure 3-3 Factory Layout plan (Ground floor)

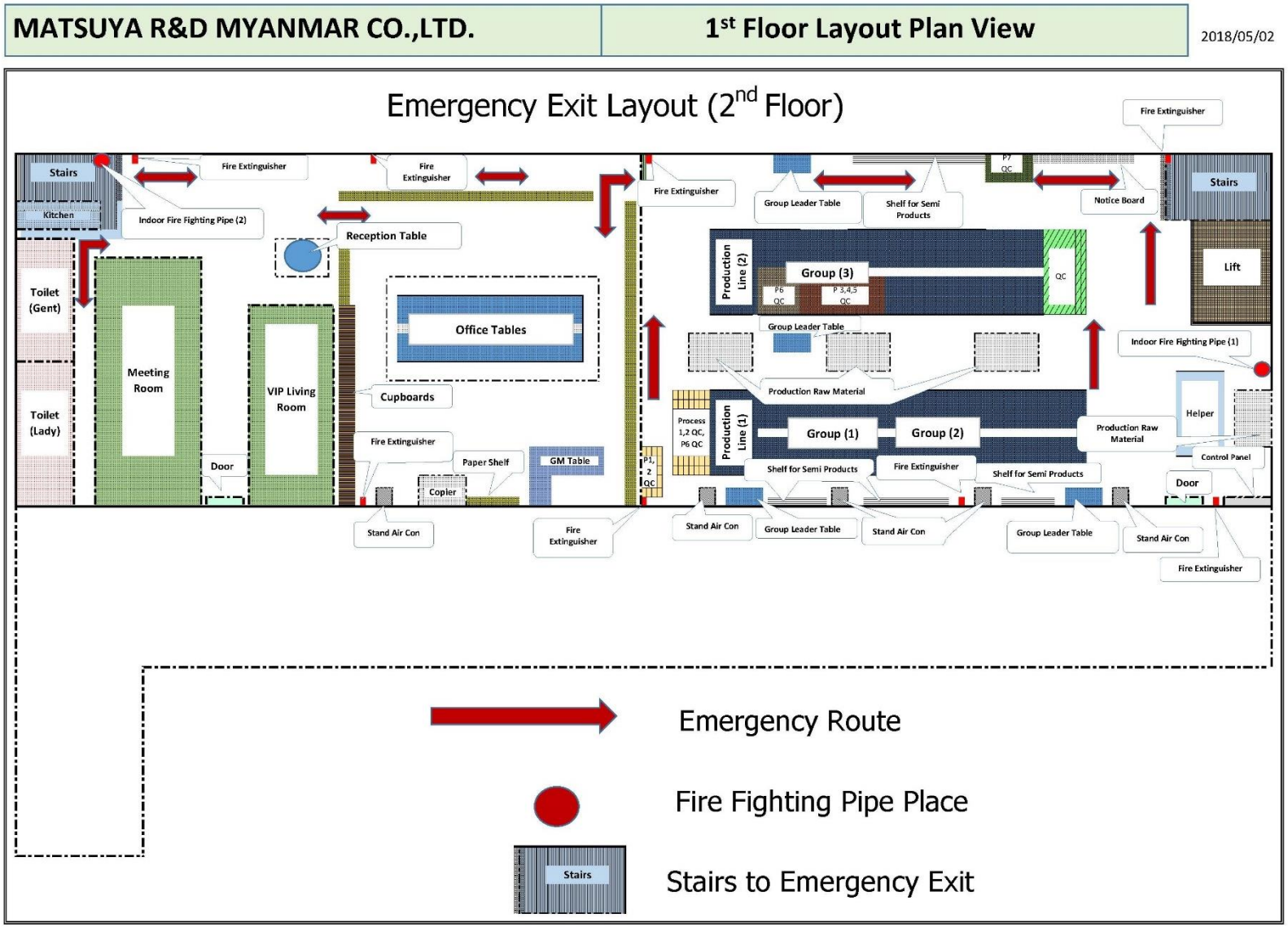
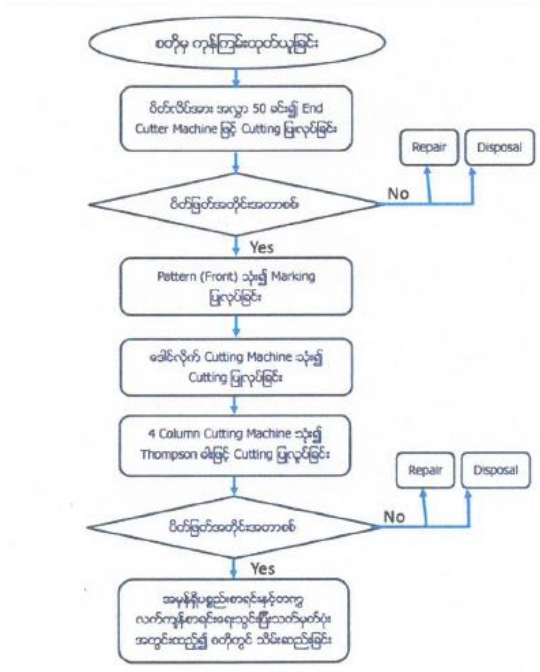


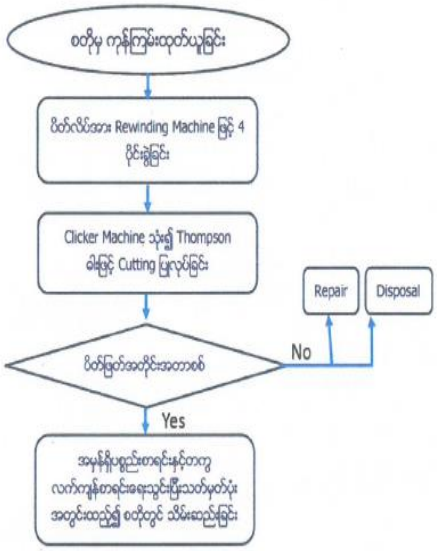
Figure 3-4 Factory Layout plan (1st floor)

3.2. PRODUCTION PROCESS

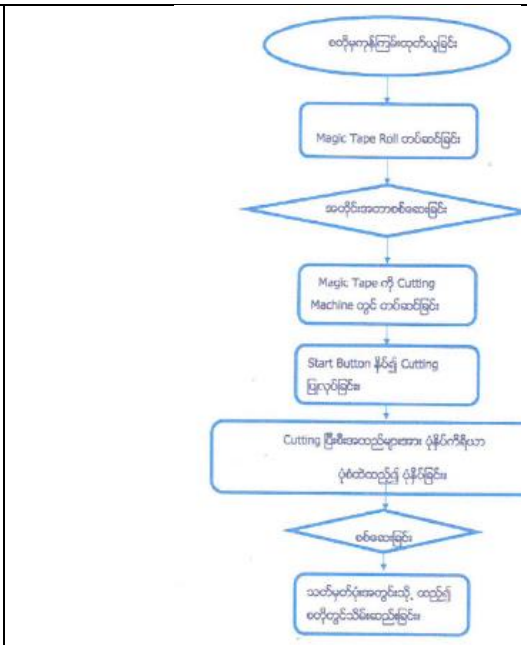
Cutting-Making-Packaging (CMP) is a production system in which raw materials including fixtures and chemicals are imported and then processed into finished product, packaged and exported. The CMP system is a form of production on consignment in which the main raw materials (Tafeta (Cut and Raw), Vaicro, Napped Cloth (Cut and Raw), Stopperı Bias, Sewing Thread, Ink and Thinner) are provided by overseas buyers and imported free of charge, then cut, sewn and packed in the domestic factories, after which all of the finished products are exported. The operation of cuffs for Sphygmomanometers with CMP system includes production costs covering wages, electricity and diesel, transportation, communication, factory and office rental, maintenance and repair of sewing machines, and administrative expenses. Steps of production process of proposed factory are described in Figure 3-5.



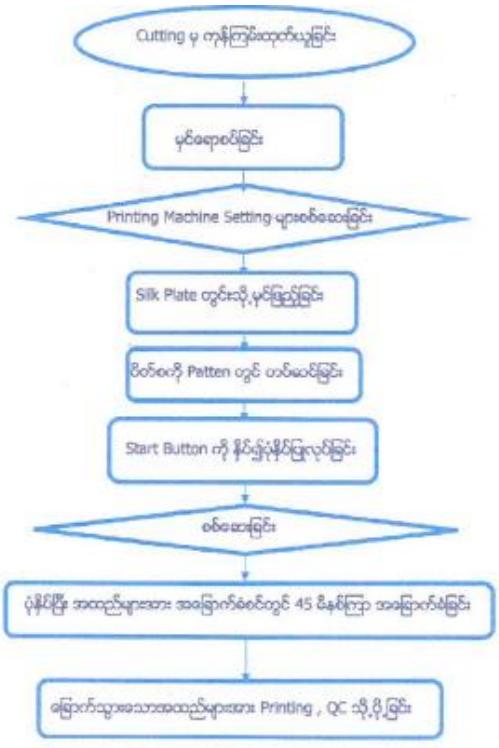
Cutting (Front) **Cutting (Back)**



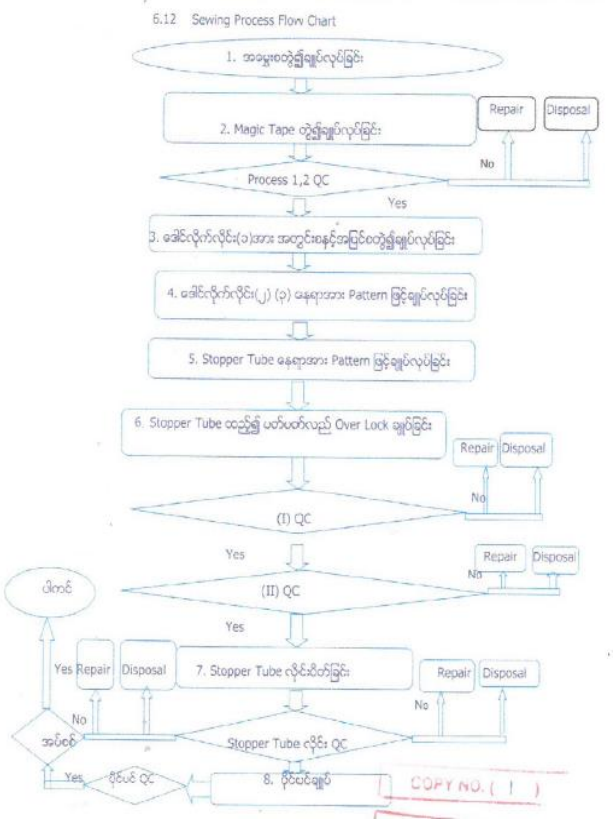
Cutting (Napped Cloth)



Magic Tape Cutting and Printing



Printing Process



Sewing Process

Figure 3-5 Production Process flow diagrams

3.2.1. Description of Production Process

The first stage in the manufacturing of cuffs for Sphygmomanometers is the cutting and for that pattern, making is the base. Once the marker is made, pattern pieces must be cut out of the specified fabric.

Printing process involves after cutting process. Firstly, ink is mixed for printing. Like the process is only print design for logo, sign, small word, etc., directed to printing or digital printing system. Printing process is the process that art work document of Electrical document (Computing system) is received from sample and pattern drawing room firstly and then spreading the layer, preparation and checking. And then layout the film and receiving the film, check the dots size and matching all the layer. And then cutting pcs are received, preparation the layer frame and then printing. The printed fabric is fired in the dryer for 45 minutes and then, send to the quality checking room.

The process of sewing involves fastening of fabrics, napped cloth, magic tape or similar other materials with the help of needle and threads. Stitching is the process of passing threaded needle in and out of a material to make a specific design pattern.

Quality Control (QC) checks for any error. Quality control was done by manually.

The QC passed units are sent to packing as a final production process. This step sends packed units for distribution to the customers. These packed units are sent to the Vietnam. Packing process was done manually by manpower.

Warehouse section

Cutting section

Printing Section

Sewing section

Quality Control Section

Packing

Figure 3-6 Production process photo

3.2.2. **Products**

The products of the factory are cuffs for Sphygmomanometers. Annual production rate is presented in Table 3-1.

Table 3-1 Annual production at Matsuya R&D (Myanmar) Company Limited's factory

Cuffs for Sphygmomanometers	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**	**2024**	**2025**
Amount of Processing (Unit: 1000 Processing)										
CR-24 (sewing only)	1200	2400	3600	-	-	-	-	-	-	-
CR-24 (cutting, printing and sewing)				3600	4800	4800	6000	6000	7200	7200
Total Amount	1200	2400	3600	3600	4800	4800	6000	6000	7200	7200

3.3. UTILITIES

3.3.1. Raw Material

Raw Materials such as Tafeta (Cut and Raw), Vaicro, Napped Cloth (Cut and Raw), Stopperı Bias, Sewing Thread, Ink and Thinner are imported from China and carried to the Matsuya R&D (Myanmar) Company Limited by the containers. After quantity verification, these raw materials are stored properly in specified area as per their varieties. Annual raw material requires for production process are provided in Figure 3-8.

Raw Material	Num/ pc	Unit	Year								
			2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
Tafeta (already cut)	30.0	g	36,000kg	72,000kg	108,000 kg	-	-	-	-	-	-	-
Tafeta (Raw fabric)	30.0	g	-	-	-	108,000 kg	144,000 kg	144,000 kg	180,000 kg	180,000 kg	216,000 kg	216,000 kg
Vaicro	5.5	g	66,000 kg	13,200 kg	19,800 kg	19,800 kg	26,400 kg	26,400 kg	33,000 kg	33,000 kg	39,600 kg	39,6000 kg
Napped cloth(already cut)	3.5	g	4 , 200kg	8 , 400kg	12 , 600 kg	-	-	-	-	-	-	-
Napped cloth (Raw fabric)	3.5	g	-	-	-	12,600kg	kg16,800	16,800kg	21,000kg	21,000kg	25,200kg	25,200kg
Stopper tube	2.0	g	2400 kg	4800kg	7200kg	7,200kg	9,600kg	9,600kg	12,000kg	12,000kg	14,400kg	14,400kg
Bias	1.5	g	1800 kg	3600 kg	5400 kg	5400 kg	7200 kg	7200 kg	9000 kg	9000 kg	10800 kg	10800 kg
Sewing Thread	2.0	m	2400 kg	4800 kg	7200 kg	7200 kg	9600 kg	9600 kg	12000 kg	12000 kg	14400 kg	14400 kg
Ink	0.230	g	-	-	-	828 kg	1104 kg	1104 kg	1380 kg	1380 kg	1656 kg	1656 kg
Thinner	0.025	g	-	-	-	90 kg	120 kg	120 kg	150 kg	150 kg	180 kg	180 kg

Figure 3-7 List of Raw Material Requirements

Figure 3-8 Raw materials

3.3.2. **Chemical**

The chemicals for the printing process are imported from Bangkok, Thailand. List of chemicals required for the proposed factory are described in Table 3-2.

Table 3-2 Chemical List

No	Name of Chemical
1	T-15 Solvent
2	Screen Printing Ink (Hardener)
3	T 980 Solvent
4	SG740 T-0832

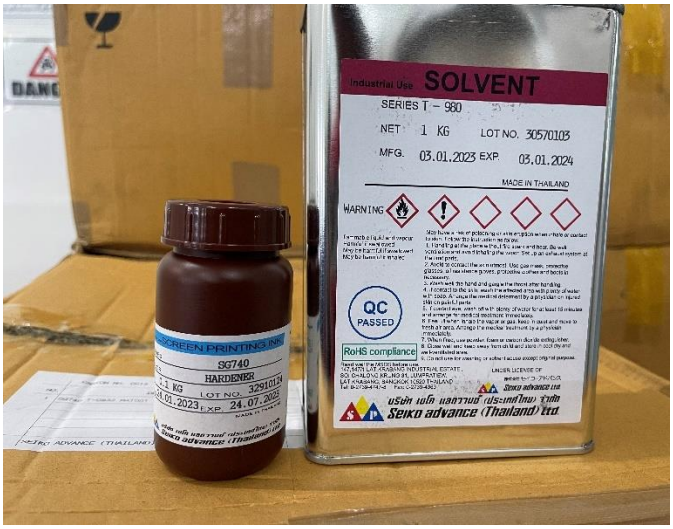


Figure 3-9 Chemicals storage area

3.3.3. **Machinery and equipment**

Lists of machinery and equipment required for the Matsuya R&D (Myanmar) Company Limited's factory is listed in Figure 3-10.

Sr. No	Name	Qty
1	Inspection Table	17
2	Working Table	20
3	Cutting Machine	4
4	Sewing Machine	76
5	Screen Printing Machine	12
6	Full Auto End Cutter	2
7	Air –operated transduction semi-automatic silter and bunder	1
8	Model 2A multi- functional trabsition cloth rewinder	1
9	End Cutter	1

10	Fork lift	1
11	Needle Detector	1
12	Cutting Machine GS8-2C	4
13	Cutting Mold	10
14	Drying Rack	12
15	Generator (300KVA)	1
16	Viscometer	1
17	High Frequency Plastic welding Machine	5
18	Pull strength tester	1
19	Endurance tester	1
20	Leak Tester	2
21	Fabric spread table	2
22	Thermometer	10
23	RKC Digital Thermometer	1
24	Nipple Mold	3
25	Air Bag Mold	3
26	Workbench	3
27	Polyure thane	36.6
28	Template	10
29	Punch	100
30	Microscope	1
31	Spot air con	2
32	PP Board	112
33	Check with fixture	2
34	Automatic knife cutting machine	2
35	Air con	14
36	One needle sewing machine	20
37	Wrapping auto machine + film	1

Figure 3-10 List of machinery of Matsuya R&D (Myanmar) Company Limited's factory

3.3.4. Human Resource

Human resource required by foreign experts/technicians and local persons for administrative and production process are about 268 persons which are also described in Table 3-3. Proposed project's operation running days are 265 days in a year. Working hour starts from 7:30 am to 4:30 pm for weekdays and 7:30AM to 11:30AM for Saturday. The lunch time is from 11:30 am to 12:30 pm. Ferries are provided to all staff and employees by the company.

Table 3-3 List of Local and Foreign Employee on 1st September 2017

No	Type of Employee	Male	Female	Total
1	Foreign Employees	2	-	2
2	Local Employees	22	87	109
	Total	24	87	111

Table 3-4 List of Human Resources Requirement in 2025

No	Type of Employee	Year-5 to Year-10
		No. of Employee
1	Foreign Employees	3
2	Local Employees	265
	Total	268

3.3.5. Water requirement

The factory gets water from the tube well installed inside the factory compound. The main water use in the proposed project is for domestic usage such as for personal washing, food preparation, and washing of utensils. Drinking water provides by outsource of drinking water suppliers (Jasmine Drinking Water Company). Groundwater from this tube well is pumped into the groundwater tank and overhead tank for the factory and domestic use. The estimated annual water consumption for the whole factory is shown in Table 3-5.

Table 3-5 Annual Requirement of Water

No	Year	Water (m^3)	Water (Gallon)
1	2016	600	158503
2	2017	960	253605
3	2018	1440	280407.8
4	2019	1680	443809
5	2020	2160	570611.6
6	2021	2160	570611.6
7	2022	2640	697414.2
8	2023	2640	697414.2
9	2024	3120	824216.8
10	2025	3120	824216.8

Figure 3-11Water supplying system

3.3.6. **Electricity and fuel requirement**

The proposed project is intended to get required electricity supply form Myanmar Electricity Power Enterprise (MEPE) and distributed by 1000 kVA Transformer. The transformer is located in front of the factory compound. Another source of energy 500 kVA generator (GB Power) will also be kept as the emergency generator if normal electricity supply could not provide for the proposed project. Estimate electricity usage is 138240 units per year (kwh per Year) for 2023. Annual electricity requirement is shown in Table 3-6.

Required diesel for generator are purchased from the MOONSUN premium diesel station located in Thingangyun, and is transported by 600gal fuel tanker truck. Annual diesel requirement for proposed Matsuya R&D (Myanmar) Company Limited's Factory is 26,040 liters.

Table 3-6 Annual Requirement of Electricity

No	Year	Electricity (kwh)
1	2016	43776
2	2017	62280
3	2018	82944
4	2019	89856
5	2020	117504
6	2021	117504
7	2022	138240
8	2023	138240
9	2024	172800
10	2025	172800

Figure 3-12Electricity Facilities

3.4. FACILITIES

3.4.1. Liquid waste control facility

The factory plan has kitchen, canteen and toilet facilities attached in various buildings of the factory. In the kitchen, separated drainage lines are provided to flow wastewater from the activities washing. And around the compound area of the project, drainages are also provided and maintain to flow storm water (rain water, snow and surface water). The existing drainage system includes internal and external drainage system. Internal drainage system is underground pipe system connecting to the external drainage. The water from the project is discharged to industrial zone drainage system located in front of the factory. The factory water flows to industrial drainage channel then to the industrial regulating pond. The compound area of the factory is paved with concrete and the drainages are covered and holes are there to flow the storm water. The existing drainage at the project area can be seen in Figure 3-13. Liquid waste from the toilet facilities is collected in septic tank and the proponent will connect and cooperate with YCDC to be carried out for disposing of these septic tank wastes.

Drainage

Septic Tank

Toilet

Figure 3-13 Drainage, Septic Tank and Toilet facility

3.4.2. Solid waste management facility

The factory provides separate garbage bins at the north side of the factory building. All of the solid wastes will be collected separately in color coded waste bins based on their types, and stored in relevant separated waste bin: non-hazardous waste, hazardous waste, re-usable waste and final wastes will be disposed by using YCDC's service. There are about 25 garbage bins in the factory. The amount of disposed

industrial waste is about 7 tons per month (production 5 tons+ food waste 2 tons). These solid wastes disposal from each operation sectors are disposed by connecting with the Yangon City Development Committee (YCDC) once a month. The recyclable waste is sold to the local waste buyers.

Figure 3-14 Waste storage photo

3.4.3. **Medical and Health facility for employments**

Medicines and first aid kits are provided in this clinic. Moreover, these medicines and first aid kits are provided for emergency cases of workers. First aid training, safety training, firefighting training or other essential training for machinery handling must be provided for workers. According to the observed light intensity values, the proponent provides sufficient lighting for workers for safe working and reducing optical problems of the workers. Personal Protective Equipment (PPEs) like earmuffs, safety gloves, helmets and

goggles are provided for relevant department. To prevent electric shock hazards, electrical maintenance staff (handyman) is to be assigned to do regular inspections and take preventive measures.

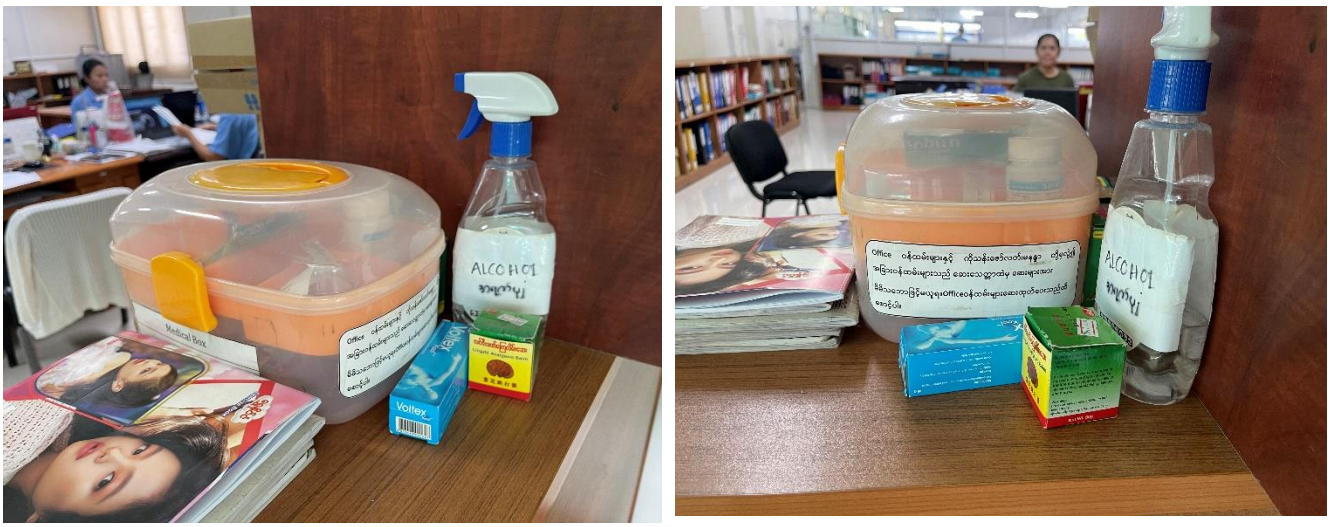


Figure 3-15 First Aids Photo

3.4.4. Ventilation System

The factory ventilation system consists of natural ventilation system and mechanical ventilation system.

The natural ventilation system of an occupied space shall be through windows, doors, louvers or other openings to the outdoors.

The mechanical ventilation system is provided in office room, production area, canteen and warehouse area. The factory has 5 small 10 large air conditioners as mechanical ventilation system. Exhaust ventilation system is also installed in printing room and in the building area.

Figure 3-16 Ventilation System Photo

3.4.5. **Fire hazards protect facility**

24 Fire extinguishers, 5 fire hose reels and fire hydrants are installed in the factory for fire emergency cases. Regular inspection for existing firefighting equipment must be done. The emergency contact numbers of township and district fire services department printed and tagged at easily visible places for fire emergency cases. The emergency fire alarms are installed at the factory for alerting the workers in case of fire. The main entrances and route for emergency cases of the factory are keeping clear to never get blocked with materials or machines for fire emergency cases. In addition, the project proponent has plans to provide trainings on firefighting for the workers by a professional or otherwise by sending to training courses. The plan to install fire alarm system and fire-frightening system are mentioned in Figure 3-17.

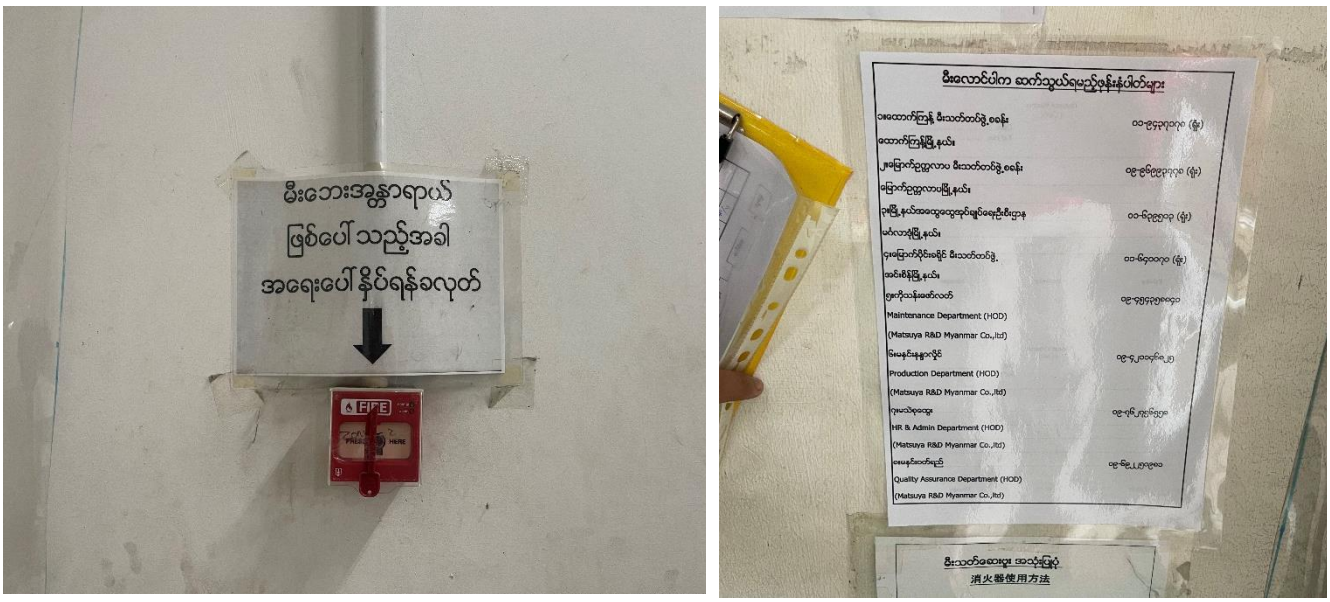


Figure 3-17 Firefighting system

3.4.6. **Drinking Water Facility**

The proposed project purchases the drinking water from the outside supplier named Jasmine Purified Drinking Water Company. The factory has to order about 100 pcs of 20-liter water jar per month for employees to drink. Laboratory analysis results for drinking water can be seen in **Appendix C**.

Figure 3-18 Drinking Water system

3.4.7. **Other Facilities for Employees**

Working hour starts from 7:30 am to 4:30 pm for weekdays and 7:30AM to 11:30AM for Saturday. The lunch time is from 11:30am to 12:30pm. Adequate dustbins are provided in the dormitories. The

ventilation systems consist of natural ventilation system and mechanical ventilation system. The mechanical ventilation system will be provided in office room, production area, toilet, kitchen and dormitory. Landscaping, green area and sporting area will provide in project boundary area. Detail presentation plan in follow.

3.4.7.1. Transportation for office staffs

A plan of provide ferry which that is used for coming to factory and going to home. It is free cost to employees when they take the ferry of factory.

3.4.7.2. Providing awards in punctually of work

Overtime fees is counted in twice to one hour for employees of factory. In order to need of work here provides additional fees for them working till night.

3.4.7.3. Providing peace and harmony of the compound of work

The employees who are hardworking and no absence of work will get the bonuses of yearly in plan.

3.5. WASTE GENERATION

The project will be generated solid waste, liquid waste and hazardous waste from the operation of the Matsuya R&D (Myanmar) Company Limited's factory. Detail description of waste generation and waste amount are shown in Table 3-7.

Table 3-7 Waste generation and waste amount

Waste		Type of wastes	Estimated waste amount	Source of generation
Solid waste	Re-usable	Raw material cutting wastes/ Disposed packaging materials, paper or plastic wrapping	4535.92 kg / month	Production line and cutting line, Materials store and supply packaging
	Non re-usable	Food residues, domestic waste	1814.37 kg / month	Canteen, Kitchens, dormitory
Liquid waste		Sanitary discharge water	156 m^3 /day*	Toilet facility, kitchen and canteen
Hazardous waste		Residual chemicals, use chemical container	10.45 kg / month	Chemical usage and store area
		diesel leakage and spills	-	Operation of generator and movements of vehicles

* The Yangon City solid waste generation rate as of 2012 is 0.39 kg per person per day (Pollution Control and Cleansing Department, Yangon City Development Committee, 2014).

*The domestic wastewater generation was based on typical wastewater generation rate of 0.1 m3 per person per day (Metcalf & Eddy, 2004)

4. BRIEF DESCRIPTION OF SURROUNDING ENVIRONMENT

The purpose of this Chapter is to predict how environmental and socio-economic conditions will affect because of the implementation of the proposed Project. This requires a sound understanding of the baseline conditions at the project site, which established through desktop study research, site surveys, primary data collection and projections for future developments. Findings provide the current and future characteristics of the project site and the value and vulnerability of the key environmental and socio-economic resources and receptors. The following sections provide a description of the environmental and socio-economic aspects of the project.

4.1. METHODOLOGY FOR DATA COLLECTION AND ANALYSIS

The followings are methodologies used for the Environmental Management Plan (EMP) report preparation;

- Onsite Measurements and Analysis – Baseline parameters such as air quality and noise quality of the project site during operation phase were measured onsite. The analyzed results are mentioned in this chapter.
- Secondary data collection of proposed project site area – Socio economic condition, physical/biological environment, and weather data are collected from official township data of Mingaladon Township, Yangon Region.

4.2. ENVIRONMENTAL BASELINE STUDY

The field observation for determining the environmental baseline of the proposed project area was undertaken during operation period. The survey team consists of the senior consultant and environmental quality team. The baseline data collected regarding the environmental condition of the project area was conducted in the following section.

4.2.1. Site survey and Environmental Monitoring

The baseline environmental quality at the Project Site and its immediate surroundings was established by groundwater, wastewater, ambient air quality samples, noise and indoor temperature and humidity measurements at immediate surrounding areas. To determine the existing baseline environmental quality within the project site 22nd December of 2023.

The overall conditions of air quality, water quality, light level and noise level are quoted from the project. The summary of the field survey for overall conditions is shown in Table 4-1.

Table 4-1 Summary of Environmental Survey

Item	Parameter
Air quality	(1) PM10 (2) PM2.5 (3) SO_2 (4) NO_2 (5)CO (6)CO_2 (7)O_3 (8) TSP (9)VOC
Noise level	Indoor sound level (LAeq)
Light Level	Industry light condition (Lux)
Water Quality	Domestic waster water

4.2.2. Air Quality

To determine the existing baseline ambient air quality status within the project site on 22nd December 2023, 24-hours air pollutants level, which include dust (PM_{10} and $PM_{2.5}$) and gases (CO, CO_2, SO_2, NO_2) were measured at the selected site using the AQM – 09 air monitoring station. To reveal the existing status of baseline air quality, the average ambient air qualities measured were compared with National Environmental Quality (Emission) Guideline. The measurement location point is situated at Latitude 16°56'30.48"N and Longitude 96° 9'13.54"E.

Table 4-2 Observed air quality results

Parameters	Survey Point	Observed Value	Guideline Value	Unit	Organization	Period
PM_{10}	16°56'30.48"N, 96° 9'13.54"E (Beside the portico-2)	16.1	50	µg/m^3	NEQEGs	24 hrs
$PM_{2.5}$		10.8	25	µg/m^3	NEQEGs	24 hrs
SO_2		1.31	500	µg/m^3	NEQEGs	10 minutes
NO_2		19.06	200	µg/m^3	NEQEGs	1 hour
CO		0.34	10	µg/m^3	NEQEGs	8 hours
CO2		1	NG	ppm	-	-
O3		3.26	100	µg/m^3	NEQEGs	8 hours
TSP		20.36	NG	µg/m^3	-	-
VOC		49.3	NG	µg/m^3	-	-

NEQEG = National Environmental Quality (Emission) Guideline

NG = No Guideline

Figure 4-1 Outdoor air quality measurement of the project

4.2.2.1. Summary of air quality result

It was observed that the air quality of SO_2 concentration level is within the limit of NEQ (emission) guideline but particulate matter (PM_{10}, $PM_{2.5}$) and gases level of Nitrogen Dioxide (NO_2) are also within the National Environmental Quality (Emission) Guideline.

4.2.1. Generator Stack Emission

On 22nd December 2023, the observations were tabulated and analyzed section wise to understand the environmental status prevailing in the units considered for the study. It was observed that NO2, SO2, CO2 and CO are within both of the Occupational Safety and Health Administration (OSHA) standard and National Environmental Quality (Emission) Guideline. The detail of stack emission measurement result is shown in Table 4-3.

Table 4-3 Generator stack emission measurement

Location	Parameter	Observed Value	OSHA Guideline	NEQ Guideline
Generator Chimney	CO_2	471 ppm	5000 ppm	-
	SO_2	0.01 ppm (10 µg/m3)	5 ppm	20 µg/m3
	NO_2	0 ppm (0 µg/m3)	5 ppm	200 µg/m3
	CO	1.57 ppm	50 ppm	-

Figure 4-2 Stack Emission of the generator

4.2.2. Noise

The Noise level was measured by using Digital Sound Level Meter on 22nd December 2023. The average noise level in the project site area is 61.23 dBA for outdoor and 58.04 dBA for indoor area. Receptor (nearby production area at project site) noise level of measurement is within the acceptable level of National Environmental Quality (Emission) Guideline.

Outdoor Noise Quality Monitoring **Indoor Noise Quality Monitoring**

Figure 4-3 Noise Measurements of the project

Table 4-4 Noise level measurements in the factory

Date and Time	Location	GPS value	Result value	NEQEGs
22.12.2023	Outdoor Area	16°56'30.50"N, 96° 9'13.54"E (Beside the portico-2)	61.23 dBA	70 dBA

	Operation Area (Sewing Line)	16°56'31.99"N, 96° 9'14.09"E (sewing area)	58.04 dBA	70 dBA

4.2.2.1. Summary of Noise Result

However, found to be the Noise source monitoring at the operation area (inside the production sector), overall level of noise in the workshop area is acceptable when compared with National Environmental Quality (Emission) Guideline. Therefore, no obvious influence can be caused occupational health and safety of employees during operation. Moreover, Personal Protective Equipment (PPE) to decrease adverse impact of noise will be provided for employees when necessary. Noise measurement result and graph are presented in **Appendix C**.

4.2.3. Light

Activities of the workers in the bag factory are highly dependent on the quality of light. Therefore, the consultant conducted the light measurement in the factory is presented in Figure 4-4. The illustrates the recommended illumination and limiting glare index applicable to typical works (fairly severe to very severe tasks) in bag factory is provided in Table 4-5.

Table 4-5 IESNA Lighting Handbook

Department	Type of Light	Wattage of Light	Lux Level
Fabric store	Fluorescent tube light	40 W	300
Sewing floor	LED tube light	20 W (T8)	400
Cutting floor	LED tube light	22 W (T8)	1000
Finishing	LED tube light	28 W (T8)	600
Inspection points	LED tube light	28 W (T8)	900 (except 1500 at audit tables)
Sampling	LED tube light	22 W (T8)	500
Office areas	Fluorescent tube light	36 W (T)	300

Source: Koenigsberger, et al. 1975

Figure 4-4 Light quality measurement in Matsuya R&D (Myanmar) Company Limited's factory

Table 4-6 Light Measurement in factory

No.	Location	Measure value (Lux)	Standard*	Remark
1	Warehouse	119.5	300	Below

2	Cutting Area	346	1000	Below
3	Printing Area	916	300	Above
4	Sewing Area	634	400	Above
5	Quality Control	1170	900-1500	Normal

* Lighting standards and codes usually provide recommended illuminance ratios between the task area and its surroundings (EN 12464-1 2002) (CIBSE 1997) (IESNA 2000, 676708).

4.2.3.1. Summary of Light result

Appropriate lighting is the need for every department, irrespective to the task being handled. Although, there are some areas where focus on maintaining proper illumination is very crucial in a factory, like the inspection points (on-floor and in stores), sampling, and the finishing section, as these areas are crucial to the quality of the production. The tasks involved in these areas require high levels of worker focus and accurate lighting ensures lower errors and defects passing on to the next stage.

According to the monitoring results, factory light level condition, some places need to reduce the light level and ought to put on the electricity bulb more over the higher places. On the other hand, some places are a bit lower that is why which need to change like a more powerful light bulb in that light level lower places. In these ways is able to adjust the light pollution of this factory.

4.2.4. **Water Quality**

4.2.4.1. Domestic Waste Water Quality Test

The waste water sample was taken from the factory's outlet drainage (Latitude 17°15'2.25"N and Longitude 96°27'31.82"E) on 22nd December, 2023. Waste water quality has been tested at the Alarm Ecological Laboratory with respect to NEQEGs wastewater standard, and can be seen in **Appendix C**. According to the waste water analysis results see in Table 4-7. All of the lists of parameters are within the limit of NEQEGs wastewater standard.

Table 4-7 Waste Water quality laboratory results

No.	Parameter	Results	Unit	NEQEGs Wastewater Standards	Remarks
1.	pH	7	S.U	6.0-9.0	Normal
2.	Temperature	29.6	°C	±3*	-
3.	Colour	11	HU	-	Normal
4.	TSS	14	mg/L	≤50	Normal
5.	BOD_5	7	mg/L	≤50	-

No.	Parameter	Results	Unit	NEQEGs Wastewater Standards	Remarks
6.	COD	34	mg/L	≤250	-
7.	Oil & Grease	5	mg/L	≤10	-

Figure 4-5 Domestic Waste Water Sample Collection

4.3. PHYSICAL COMPONENT

4.3.1. Topography

Yangon area is the largest; most populated and urbanized area in Myanmar. There are thirty-three townships in Yangon City, where located at the convergence on the Yangon and Bago River region about 34km away from the Gulf of Martaban. The proposed project area is situated at Mingaladon Township, and its topographic condition is flat. The proposed project site is primarily agricultural land, but now is initiated into the industrial zone area.

4.3.2. Geology

In Yangon area mainly composed of Pegu Group, Irrawaddy Formation and Alluvium. Alluvial deposits (Pleistocene to Recent), the non-marine fluviatile sediments of Irrawaddy formation (Pliocene), and hard, massive sandstone of Pegu series (early-late Miocene) underlie the Yangon area. Alluvial deposits are composed of gravel, clay, silts, sands and laterite which lie upon the eroded surface of the Irrawaddy formation at 3-4.6 m above mean sea level (MSL). The rock type in Yangon is mainly soft rocks, which consist of sandstone, shale, limestones and conglomerate. Geological map of Yangon Regional area is shown in Figure 4-6.

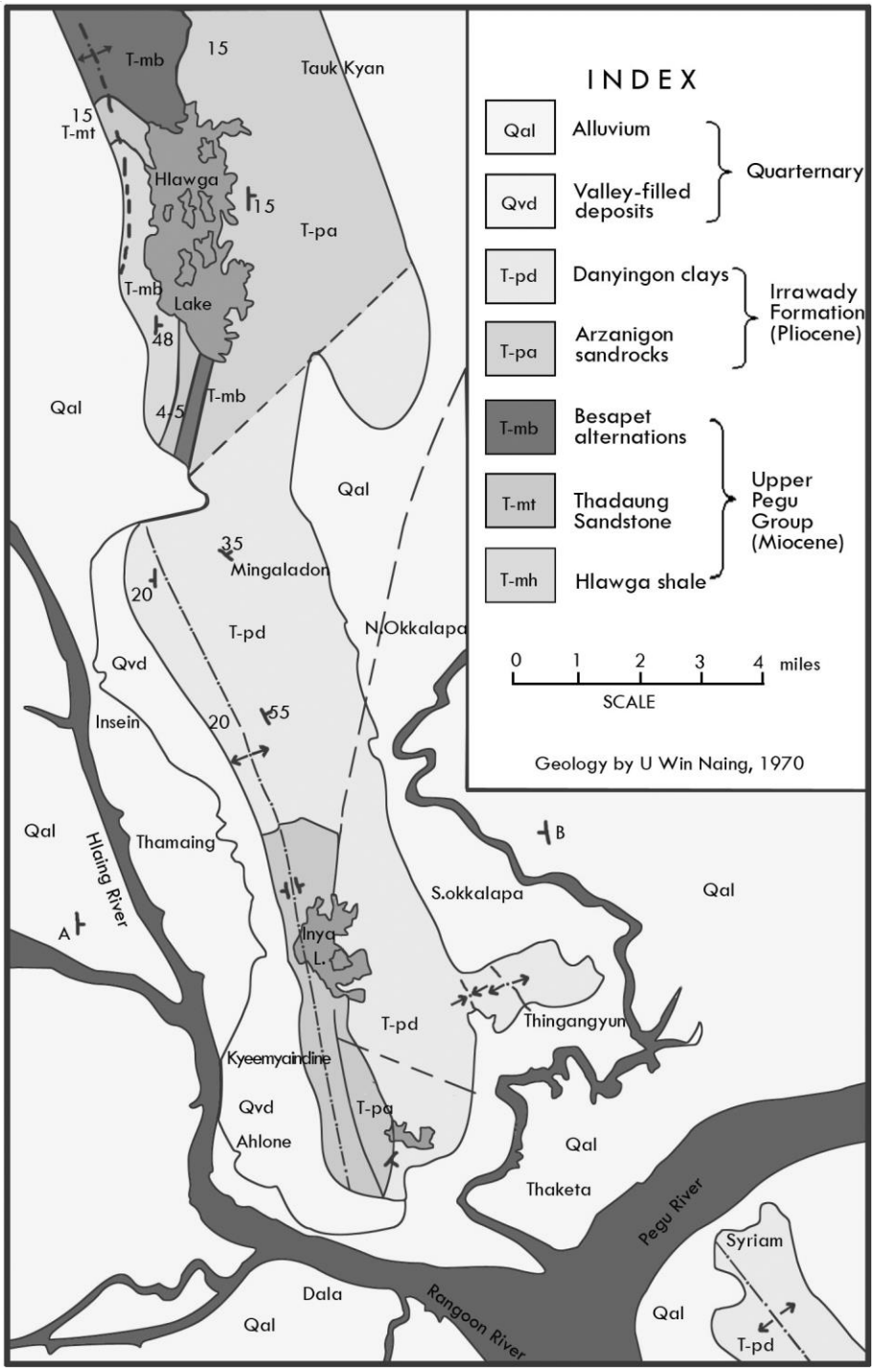


Figure 4-6 Geological Map of Yangon Region

4.3.3. **Tectonics**

Yangon is situated in the southern part of the Central Lowland which is one of the three major tectonic provinces of Myanmar. The Taungnio Range of the Gyophyu catchments area of Taikkyi District, north of Yangon, through the Thanlyin Ridge, south of Yangon forming a series of isolated hills probably resulted from the progressive deformation of the Upper Miocene rocks as the eastern continuation of the

subduction or stretching and compression along the southern part of the Central Basin and regional uplifting of the Pegu Yoma (Aung Lwin 2012).

4.3.4. **Soil**

The underlying soil type at the Project Site and its surroundings is characterized as the Meadow and Meadow Alluvial Soil. Meadow Soil is soil, which occurs near the river plains exposed to occasional tidal floods, is non-carbonate and usually contains a large amount of salt. Both materials mainly comprise salty clay loam and neutral soil rich in plant nutrient. The upper layers (approximately 0 to 7 m) of the soil at the Project Site comprise largely of cohesive layers with traces of sand and gravel, followed by sand layers with low silt content and trace gravel from 7 to 35 m. The lower layers comprise denser silt layer with traces of sand and gravel from approximately 57 to 70 m. Standard Penetration Test (SPT) results obtained from testing at the Project Site indicate that the soil strength generally increases with depth. The STP results showed that the current soil quality could accommodate the construction of the Project.

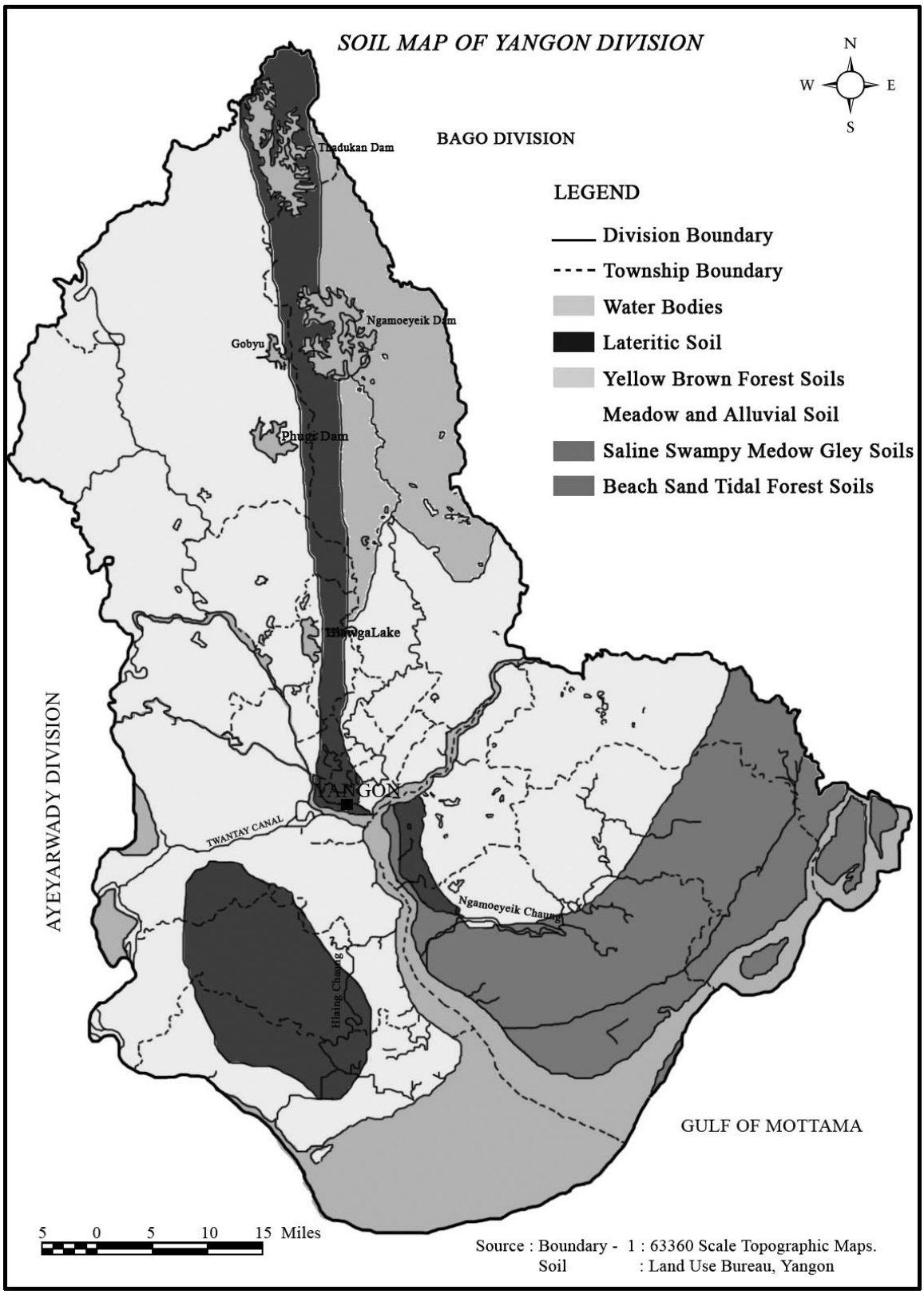


Figure 4-7 Soil Map of Yangon (Source: Land use of Bureau of Yangon)

4.3.5. **Hydrogeology**

Yangon is rich in groundwater resources conserved by unconsolidated Tertiary-Quaternary deposits. In Yangon, groundwater is mostly extracted from Valley filled deposits and Ayeyarwady sandstones.

Groundwater: Groundwater availability is generally based on the distribution of permeable and relatively impermeable rocks. The nature of openings in the rocks determines permeability of rocks. Based on local geological considerations, potential groundwater source of Yangon can be roughly divided into two sub regions, namely the low potential area and high potential area. Low potential areas are areas with those rock units of Hlawga Shale, Thadugan Sandstones and Basepet Alternation of upper Pegu Group (Miocene epoch) and Danyingon Clays of Irrawaddy rocks. These rocks and formations are a dense, massive and consolidated nature and have impervious characteristic. High potential areas are underlain by Pliocene Series and recent Formations. High potential area covers approximately 85 percent of the Yangon city including Pabedan. Stand pipe piezometers were installed at a depth of up to 30 m from the existing ground level while a pumping well was installed upon completion of the soil investigation works. Based on the results recorded up to the 8th of December 2012, stabilized groundwater level was observed to range between 0.49 m MSL to -1.81 m MSL4.

Water Supply: The Yangon City Development Committee (YCDC) has an overall responsibility for the management and distribution of water for Yangon City. Presently, YCDC's water supply is obtained from two main sources: (1) reservoir (Hlawga, Gyobu, Pugyi and Ngameoyeik reservoirs) and, (2) groundwater from YCDC's tube wells. Water from these sources is utilized to varying degrees. Areas not supplied with water from the YCDC rely on shallow surface wells and private boreholes. Water supply for the Project Site will be obtained from onsite borewells for both construction and operations due to the poor reliability of municipal supply. Permitting is part of the Planning Consent Application currently underway. The boreholes will be provided and operated by the Developer.

Hydrology: The Project Site lies along the catchment of the Hlaing River which flows north to south. The Yangon River (also known as the Rangoon River or Hlaing River) is formed by the confluence of the Pegu and Myitmaka rivers and flows into the Gulf of Martaban which is part of the larger Andaman Sea. The river flows along a 40 km stretch flowing from southern Myanmar as an outlet of the Ayeyarwady River into the Ayeyarwady delta. A small portion of the Bago River (the estuary) lies within the Yangon Division. The

Pazundaung Creek and Bago River joins the Yangon River and from there, flow towards the Southwestern direction into Andaman Sea.

4.3.6. Climate and Meteorology

4.3.6.1. Average Weather in Yangon

In Yangon, the wet season is oppressive and overcast, the dry season is muggy and partly cloudy, and it is hot year-round. Over the course of the year, the temperature typically varies from 67 °F to 97 °F and is rarely below 62 °F or above 101 °F. [6]

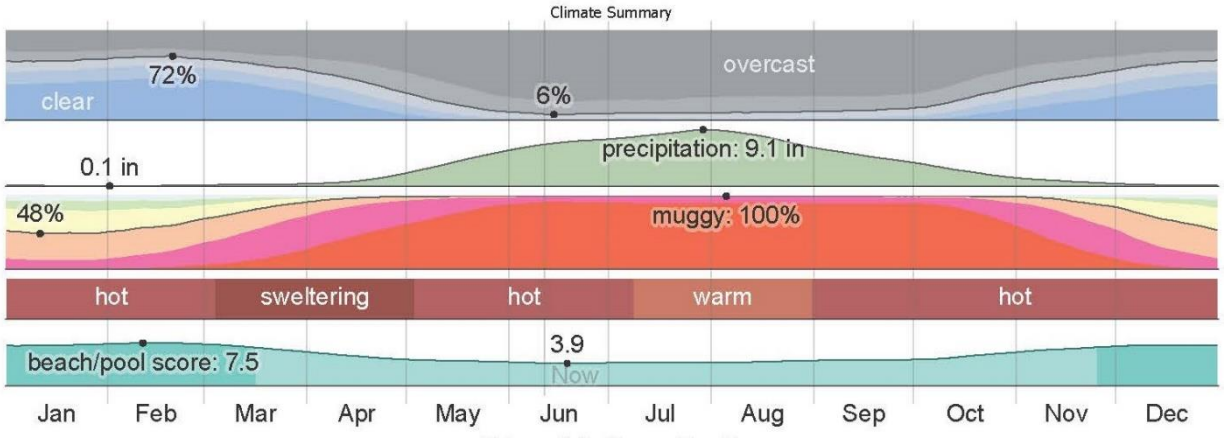


Figure 4-8 Climate Summary of Yangon Region

4.3.6.2. Temperature

The hot season lasts for 2.0 months, from March 2 to May 3, with an average daily high temperature above 95 °F. The hottest day of the year is April 11, with an average high of 97 °F and low of 78 °F.

The cool season lasts for 3.9 months, from June 2 to September 29, with an average daily high temperature below 87 °F. The coldest day of the year is January 10, with an average low of 67 °F and high of 88 °F.

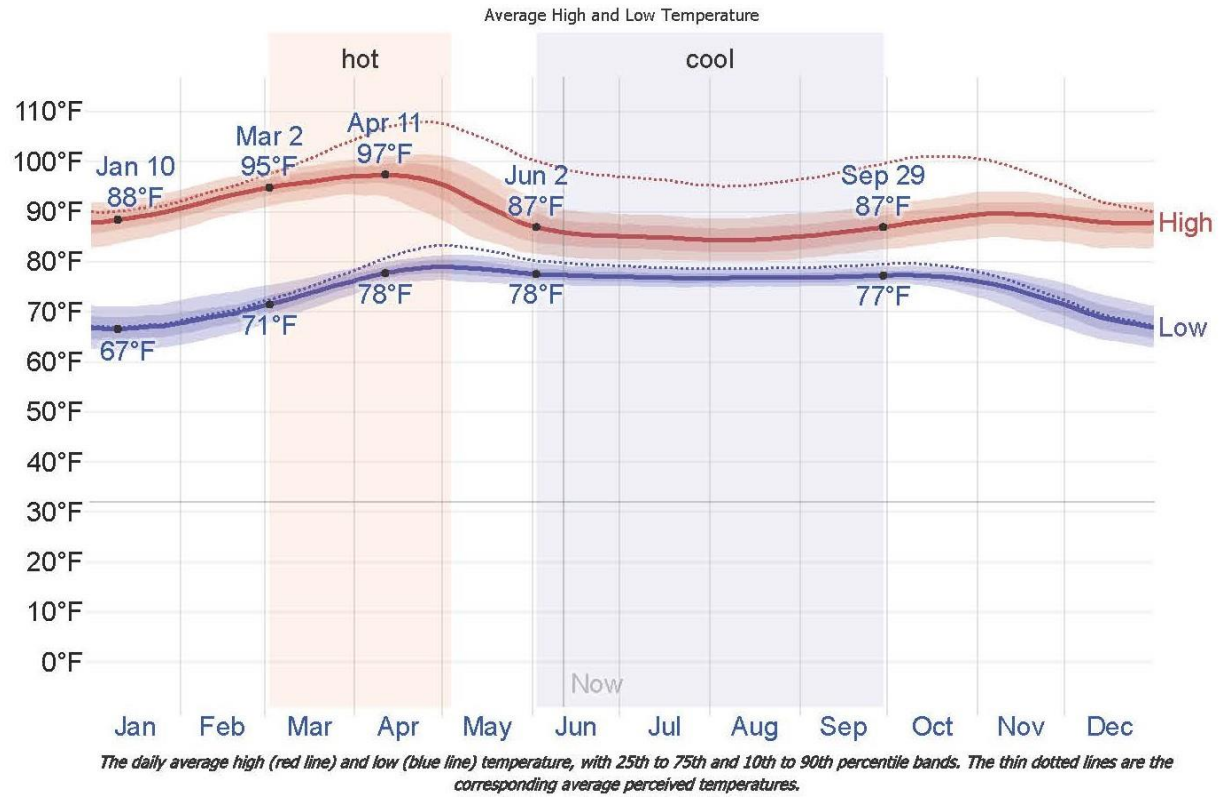


Figure 4-9 Average Temperature of Yangon Region

4.3.6.3. Clouds

In Yangon, the average percentage of the sky covered by clouds experiences extreme seasonal variation over the course of the year. In clearer part of the year in Yangon begins around November 2 and lasts for 5.6 months, ending around April 22. On February 20, the clearest day of the year, the sky is clear, mostly clear, or partly cloudy 72% of the time, and overcast or mostly cloudy 28% of the time.

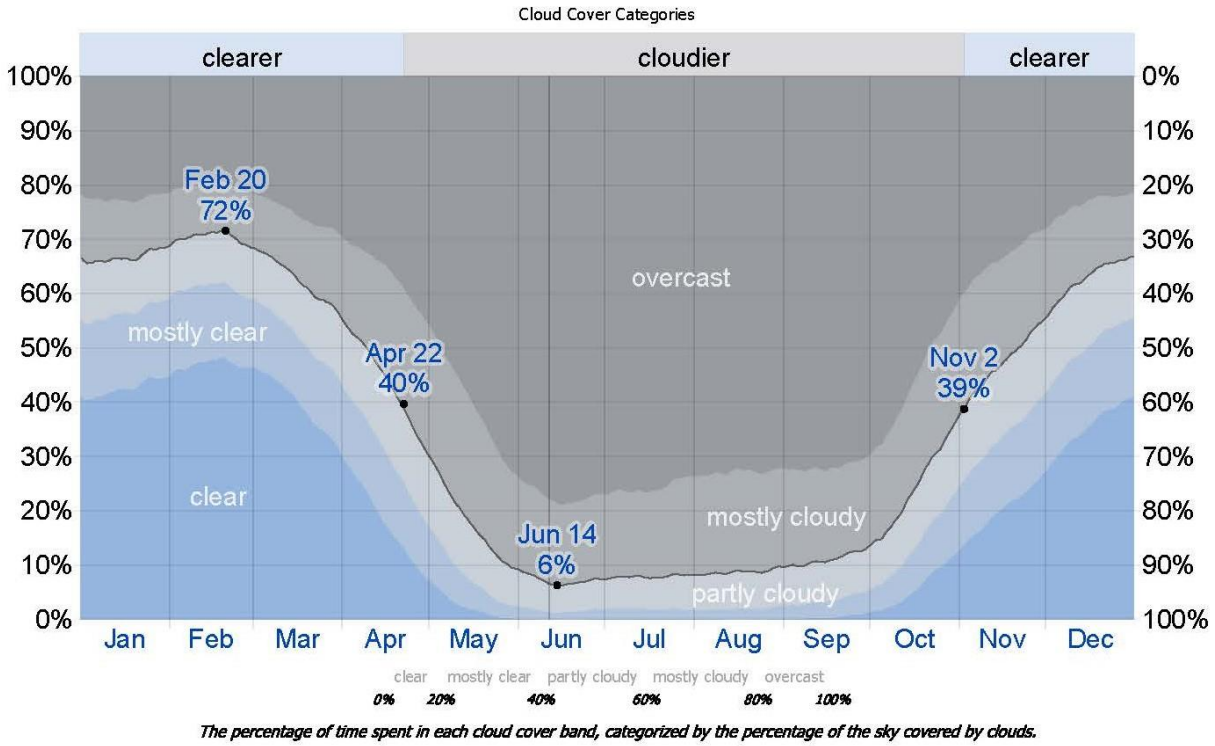


Figure 4-10 Cloud Cover Categories

4.3.6.4. Rainfall

To show variation within the months and not just the monthly totals, we show the rainfall accumulated over a sliding 31-day period centered around each day of the year. Yangon experiences extreme seasonal variation in monthly rainfall. The rainy period of the year lasts for 7.7 months, from April 5 to November 28, with a sliding 31-days rainfall of at least 0.5 inches. The most rain falls during the 31 days centered around July 30, with an average total accumulation of 9.1 inches. The rainless period of the year lasts for 4.3 months, from November 28 to April 5. The least rain falls around February 1, with an average total accumulation of 0.1 inches.

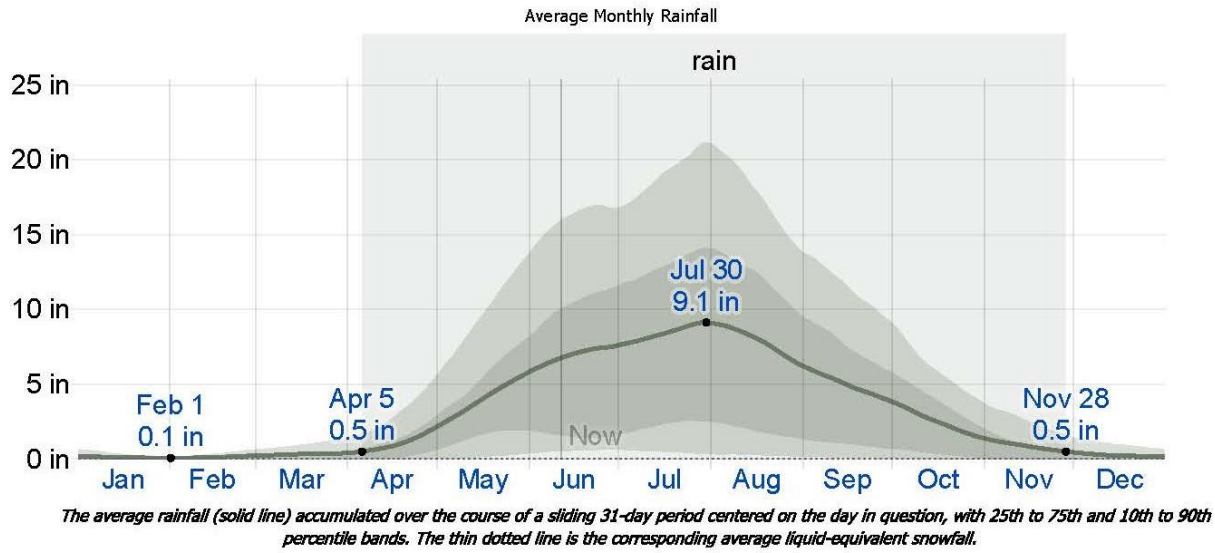


Figure 4-11 Average Monthly Rainfall at Yangon Region

Table 4-8 Annual rainfall and temperature

Year	Rainfall		Temperature	
	Raining day	Rainfall value	Summer season Max (°C)	Winter season Min (°C)
2016	126	104	38° C	15.7° C
2017	117	101.93	39° C	15.5° C
2018	81	79.07	39° C	15.5° C
2019	135	132.85	38° C	15.8° C

Source: Department of Administrative Mingaladon Township, Regional data (www.gad.gov.mm.com)

4.3.6.5. Humidity

We base the humidity comfort level on the dew point, as it determines whether perspiration will evaporate from the skin, thereby cooling the body. Lower dew points feel drier and higher dew points feel more humid. Unlike temperature, which typically varies significantly between night and day, dew point tends to change more slowly, so while the temperature may drop at night, a muggy day is typically followed by a muggy night.

Yangon experiences extreme seasonal variation in the perceived humidity. The muggier period of the year lasts for 10 months, from February 22 to December 23, during which time the comfort level is muggy, oppressive, or miserable at least 61% of the time. The muggiest day of the year is August 5, with muggy conditions 100% of the time. The least muggy day of the year is January 11, with muggy conditions 48% of the time.

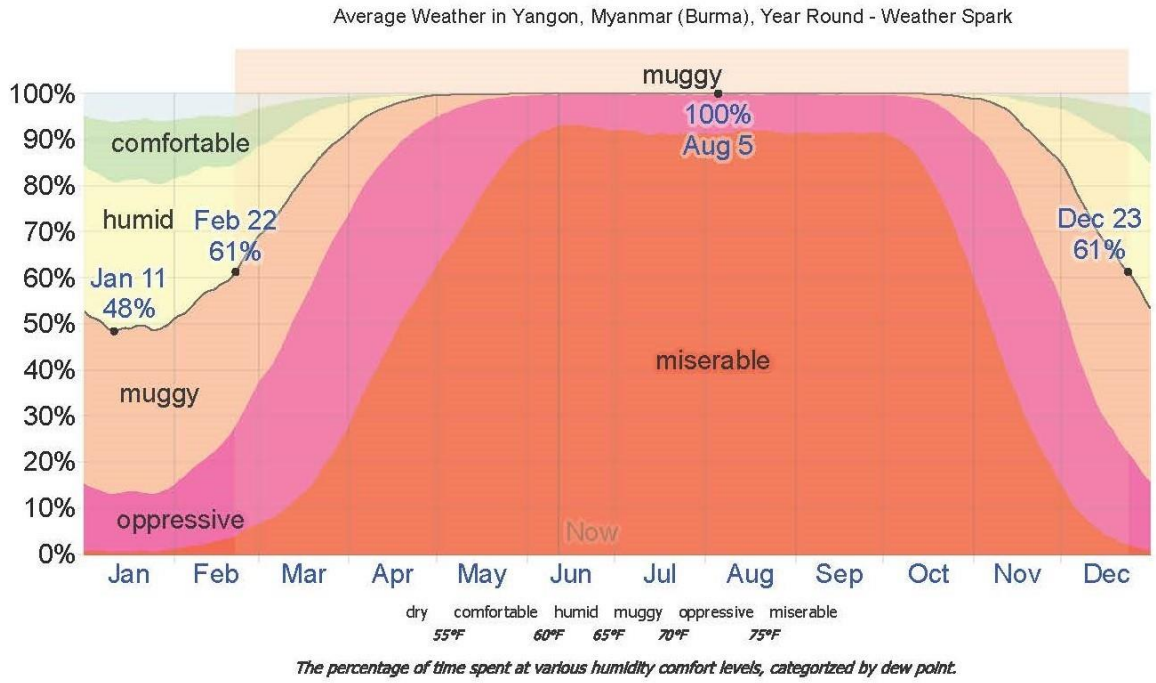


Figure 4-12Humidity of Yangon

4.3.6.6. Wind

This section discusses the wide-area hourly average wind vector (speed and direction) at 10 meters above the ground. The wind experienced at any given location is highly depended on local topography and other factors, and instantaneous wind speed and direction vary more widely than hourly averages. The average hourly wind speed in Yangon experiences significant seasonal variation over the course of the year. The winder part of the year lasts for 4.1 months, from May 1 to September 4, with average wind speeds of more than 8.2 miles per hour. The windiest day of the year is June 24, with an average hourly wind speed of 10.6 miles per hour. The calmer time of year lasts for 7.9 months, from September 4 to May 1. The calmest day of the year is January 9, with an average hourly wind speed of 5.8 miles per hour.

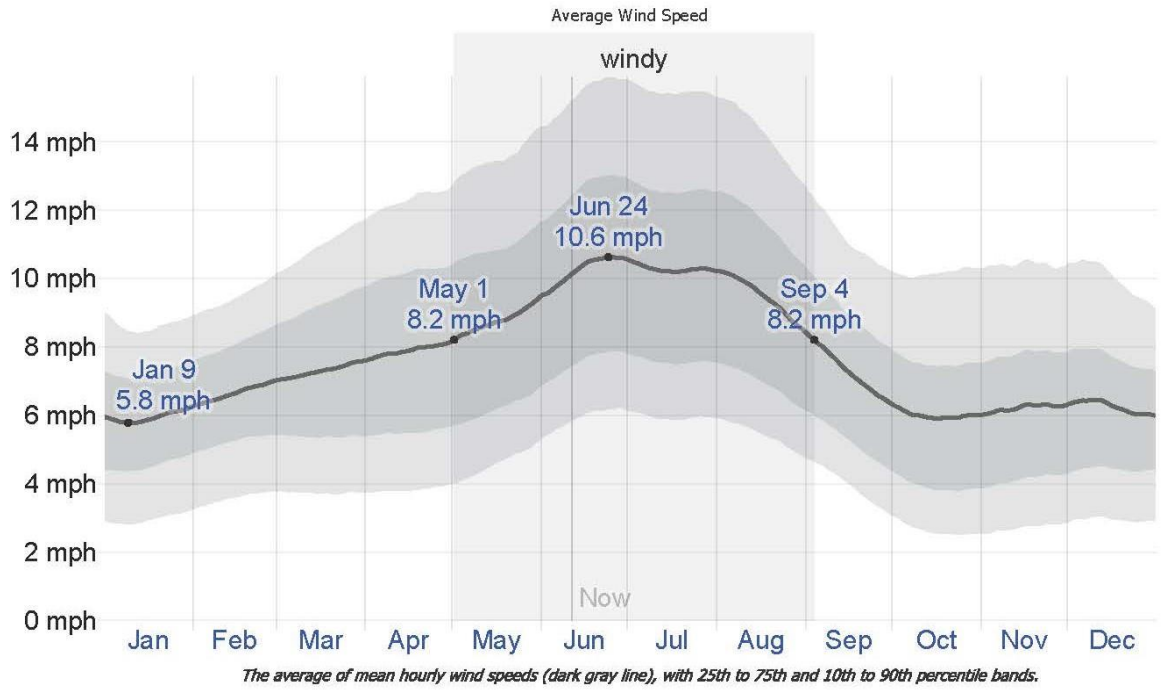


Figure 4-13 Average Wind Speed in Yangon

4.4. BIOLOGICAL COMPONENT (SECONDERY DATA)

As the proposed project area is located in the industrial park, the information of ecological resources is very unlikely. In addition, within the proposed project area, there are no forests, wild life and rare or endangered species. The proposed project site is not located in or near a sensitive ecosystem as the proposed project area is situated in the Mingaladon Township. The Project Site is a built-environment and the species of flora surveyed at the site are native species uncommon to the Yangon area.

Ecological Resources	Existing condition
Fisheries, aquatic biology	The nearest river is Pazundaung Creek. Fresh water fish species are residing in the river.
Wildlife	Non existence
Forests	Non existence
Rare or endangered species	Non existence
Protected areas	The nearest protected area is Hlaw Gar Park which is located in the northeastern part of the project site

Coastal resources	A few mangrove species observed at the river banks of Pazundaung Creek.

4.5. SOCIO-ECONOMIC COMPONENT

4.5.1. Population

In 2019, the population of Mingaladon Township is about 263,798 people as present in Table 4-9. [1]

Table 4-9 Population of Males and Females at Mingaladon Township (2019)

Item	Older 18 year			Younger 18 year			Total		
	Males	Females	Total	Males	Females	Total	Males	Females	Total
Urban	50578	59513	110091	19242	20564	39806	69820	80077	149897
Rural	31976	44422	76398	18459	19044	37503	50435	63466	113901
Total	82554	103935	186489	37701	39608	77309	120255	143543	263798

Source: Department of Administrative Mingaladon Township, Regional data (www.gad.gov.mm.com)

4.5.2. Religion

The different kinds of religion present in Mingaladon Township are shown in Table 4-10. More than 90% of the people living in the township are Buddhists. [1]

Table 4-10 Religion in Mingaladon Township (2019)

Township	Buddhist	Christian	Hindu	Muslim	other	Total
Mingaladon	252156	4339	3232	4071	-	263798

Source: Department of Administrative Mingaladon Township, Regional data (www.gad.gov.mm.com)

4.5.3. Local Economy

Among regional towns, Mingaladon Township has a variety of businesses and services operating in the community with other businesses/services, based in the region. Most of the source of livelihood in the Township is employment of factory. Services and facilities available include:

- post office
- beauticians
- butcher
- hairdressers
- furniture and electrical store
- restaurants
- cafes
- shoe and clothing shops
- industrial services
- pharmacy

- veterinarian
- bus service
- gift stores
- music store
- pubs and bars
- florist

4.5.4. Public Infrastructure and Access

4.5.4.1. Communication and Transportation

Major transportation route in Mingaladon Township are railway, port, and car road as presented in Table 4-11. [1]

Table 4-11 Transportation Route

Categories	Township		Miles
	From	to	
Railway (City Train)	Mingaladon	Golf Course	4.78
YBS-37	Mingaladon	Downtown	

Source: Department of Administrative Mingaladon Township, Regional data (www.gad.gov.mm.com)

4.5.4.2. Electricity

The electricity demand of Mingaladon Township is higher and higher due to the normally increased in population and infrastructure. [1]

4.5.4.3. Education

Location of major schools were situated i.e. basic education primary school (B.E.P.S.), basic education middle school (B.E.M.S), basic education high school (B.E.H.S) and university, in the Mingaladon Township. The name and the located village tract/ ward of schools are described in Table 4-12. [1]

Table 4-12 List of major school in Mingaladon Township

No.	Name of School	Location
1	BEHS (1)	Pyi Taw Thar Ward
2	BEHS (2)	Mingaladon Zay Ward
3	BEHS (3)	Bago Lan Ward
4	BEHS (4)	Shwe Nantthar Village Tract
5	BEHS (5)	Mingaladon Zay Ward
6	BEHS (6)	Kone Talapoung Village Tract
7	BEHS (7)	Thingankyun Gyi Village Tract

No.	Name of School	Location
8	BEHS (8)	Shwe Nantthar Village Tract
9	BEHS (9)	Pyin Ma Pin Village Tract
10	BEHS (Branch) M (12)	Htauk Kyant Toe Chae Ward
11	BEHS (Branch) M (9)	Southern Htauk Kyant Ward
12	BEHS (Branch) M (5)	Pyi Taw Thar Ward
13	BEMS (1)	2 (B) Ward
14	BEMS (3)	3/B Ward
15	BEMS (4)	Mingaladon Zay Ward
16	BEMS (6)	Kha Ma Ya (646)
17	BEMS (10)	Htauk Kyant Zay Ward
18	BEMS (11)	Pyi Taw Thar Ward
19	BEMS (13)	Thingankyun Gyi Village Tract
20	BEMS (Branch) P (26)	Karya Ward
21	BEMS (Branch) P (15)	Paung Ngu Ward
22	BEMS (Branch) P (12)	Mya Thida Ward
23	BEMS (Branch) P (14)	Nwal Khway Village Tract
24	BEMS (Branch) P (27)	Southern Ward
25	BEMS (Branch) P (30)	Northern Ward

Source: Department of Administrative Mingaladon Township, Regional data (www.gad.gov.mm.com)

4.5.4.4. Health Status

The diseases of high prevalence reported in 2019 are Tuberculosis (TB), followed by Acute Respiratory Infection (ARI), Diarrhea, TB and snakebites. With reference to the Township Health Profile 2019 of Mingaladon Township, no accidental work injuries reported to the township hospital in 2013. The common diseases are shown in Table 4-13.

Table 4-13 Common Diseases in the Mingaladon Township

Disease	Mingaladon Township	
	Morbidity	Mortality
Diarrhea	907	-
Dysentery	393	-
HIV/AIDS	35	-

Table 4-14 Lists of hospital in the Mingaladon Township

Hospital Name	Beds/Services	Responsible
ပုလဲဆေးရုံ	50	Government

ကူးစက်ဆေးရုံ	100	Government
တပ်မတော်ဆေးရုံ	1000	Government
တပ်မတော်သားဖွားဆေးရုံ	500	Government
တပ်မတော်အရိုးကုဆေးရုံ	500	Government

Source: Department of Administrative Mingaladon, Regional data (www.gad.gov.mm.com)

4.6. CULTURAL AND VISUAL COMPONEMTS

Mingaladon Township is growing into a busy and vibrant community. The population fluctuates; however, there has been steady growth over the last decade. It tends to be a stopover on a journey rather than a destination. It has a number of sites that are interesting; however, there is no main attraction. Visitors to the town are generally visiting for work, investment or family reasons.

5. ENVIRONMENTAL IMPACT AND MITIGATION MEASURES

5.1. IMPACT IDENTIFICATION

The development of infrastructure for the proposed project likely to happen changes in the local environment in terms of physical, biological and socio-economic aspects along with the perspective on both positive and negative impacts. The potential environmental impacts brought by various activities of proposed factory project will be identified and judged by site surveying with checklist, meeting with client team, including plant manager and supervisor, representatives from the factory operators and assessing the environmental baseline information for operation and decommissioning phases along with its mitigation measure.

5.1.1. **Positive Impact**

During the project implementation, local people can get job opportunities in administrative sectors, office works, transportation sectors, skill and unskilled workers, etc. Due to the implementation of the project, there will be employment opportunities especially for workers from the local community. Employees will also improve more in their professional knowledge and skills. The net effect of job creation is the improvement of the livelihoods and living standards of the beneficiaries and poverty reduction, development of local people's livelihood. Cause of the proposed project is located in Mingaladon Industrial Park of Mingaladon Township, there may have business opportunities to local people. Local people can have a market by selling foods, snacks and drinks nearby the factory.

5.1.2. **Negative Impact**

The following Figure 5-1 briefly described the potential negative impacts of the proposed project. There are four main types of impacts; impact on environmental resources, impact on ecological resource, impact on human and impact of waste generation.

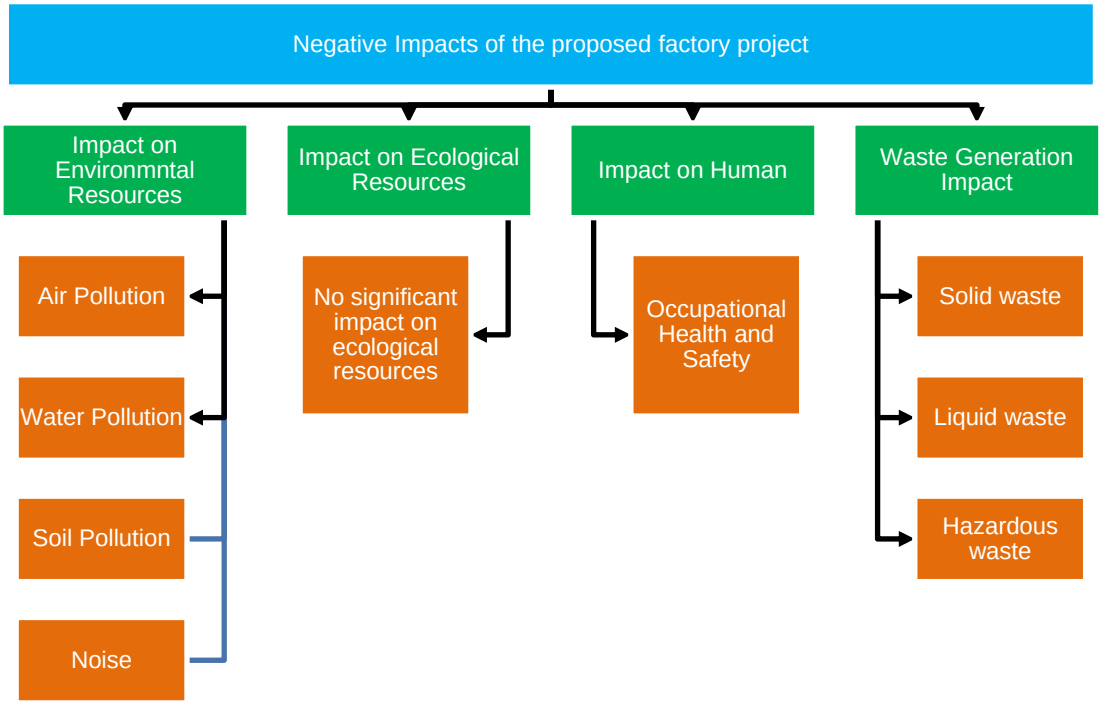


Figure 5-1 Potential negative impact affect from proposed factory project

5.2. METHODOLOGY FOR THE ASSESSMENTS

The assessment of each impact is based on consideration of the magnitude, duration, spatial and frequency of activities, which are going to be carried out during three phases and characteristics of the project site. The assessment is qualitative and the significance of each impact is classified into 5 categories in overall.

The following methodology has been applied to assess the environmental impacts of the factory mainly on air, water, land, biodiversity, including human beings. Each source of impact has been assessed by four parameters, magnitude, duration, extent and probability and each assess point have 5 scales as mentioned in Table 5-1.

Table 5-1 Impact assessment parameters and its scale

Assessment	Scale				
	1	2	3	4	5
Magnitude (M)	Insignificant	small and will have no effect on working environment	Moderate and will result in minor changes on working environment	High and will result in significant changes on working environment	Very high and will result in permanent changes on working environment
Duration (D)	0 - 1 year	2 - 5 year	6 - 15 year	Life of operation	Post Closure

Extent (E)	Limited to the site	Limited to the local area	Limited to the region	National	International
Probability (P)	Very improbable	Improbable	Probable	Highly probable	Definite

Then, the Significant Point (SP) calculated by following formula.

Significant Point (SP) = (Magnitude + Duration + Extent) * Probability

Impact Significance: Based on calculated significant point, impact significance can categorize as follows:

Significant Point (SP)	Impact Significance
<15	Very Low
15-29	Low
30-44	Moderate
45-59	High
60	Very high

5.3. POTENTIAL ENVIRONMENTAL IMPACT DURING CONSTRUCTION AND DECOMMISSIONING PHASE

Construction phase: The project factory is already constructed during environmental assessment study and site visit. Therefore, the proposed project is located in industrial park and already finished the construction, the potential impact on environment is not assessed and affected must be caused the construction period.

Decommissioning phase: The proposed duration of the investment shall be 10 years and extendable thereafter. The term of the Lease shall be initial 34 years commencing from the date of signing of the Lease Agreement between Local owner and Matsuya R&D (Myanmar) Company Limited for proposed project site for 1.975 acres of land. The project of land and building will be restitution to land owner after close the operation. Therefore, the assessment study cannot be need for environmental impact assessment during decommission phase.

These two phases of operation shall be represented by land owner. If the owner will be demolished their factory, they will need mitigation and monitoring plan for environmental impact. Therefore, environmental assessment team presented for monitoring plan during decommissioning phase.

5.4. SIGNIFICANT IMPACTS OF PROJECT ACTIVITY AND MITIGATION MEASURE

The project activities, their impacts and significance of impact are provided in Table 5-2 and Table 5-3.

Table 5-2 Evaluation and Perdition of Significant Impacts and Mitigation Measures on Operation phase

Categories	Source of Impact	Significant of Potential Impacts					Impact Significance	Reason	Mitigation Measure
		M	D	E	P	SP			
Impact on Environmental Resource									
Air	• Dust and GHGs emission from vehicles used for transporting raw materials and final products • Emission from emergency diesel generator and vehicle movement	3	5	2	4	40	Moderate	• Air pollution in atmosphere. • Inhaling them can increase the chance you'll have health problems. • People with heart or lung disease, older adults and children are at greater risk from air pollution.	• To control air pollution, the vehicles, generators and machineries have to check and maintain regularly. • The factory has planted trees to reduce carbon emission and minimize air pollution
Water	• Production process	1	4	1	1	6	Insignificant	• The factory not generated wastewater from production process	• No Mitigation Measure
Soil	• Engine oil leaks, spills at diesel storage and during fuel refueling.	1	4	1	1	6	Insignificant	• The factory compound area was paved with concrete and hence, contamination due to the oil spillage at	• No Mitigation Measure

Categories	Source of Impact	Significant of Potential Impacts					Impact Significance	Reason	Mitigation Measure
		M	D	E	P	SP			
								this area is insignificant.	
Noise and Vibration	• Generating noise from the respective production machines such as sewing • Generating noise from operating the generator	3	4	1	3	24	Low	• Repeated exposures to loud noise can lead to permanent tinnitus or hearing loss. • Loud noise can create physical and psychological stress, reduce productivity, interfere with communication and concentration, and contribute to workplace accidents and injuries by making it difficult to hear warning signals.	• Enclose and isolate the noise source • To use Low noise tools and machinery • Maintain and lubricate machinery and equipment • To facilities PPE like earmuffs and earpieces for the employees
Impact on Ecological Resources									
Flora and fauna on terrestrial and aquatic life	Operation of the factory	1	4	1	1	6	Insignificant	Water, noise and soil contamination due to factory operation	• No Mitigation Measure because the impact caused by factory operation is insignificant
Impact on Human									

Categories	Source of Impact	Significant of Potential Impacts					Impact Significance	Reason	Mitigation Measure
		M	D	E	P	SP			
Fire	• Electrical installations • Faulty equipment and machinery • Waste disposed area, raw materials and chemical/fuel storage area	3	4	2	4	36	Moderate	• The effect of a fire in the workplace can be devastating in terms of lives lost, injuries, significant damage to property and the environment.	• To control all ignition sources • To provide fire extinguishers, hose reels and hydrants and install the emergency fire alarms for alerting the workers on the walls of the factory for fire emergency cases • To do the regular inspection for existing firefighting equipment and water storage tank for fire frightening • To have the clear main entrances and route of the factory in order not to be blocked with materials or machines for fire emergency cases
Occupational Health and Safety	• Accidental cases during factory operation • Unloading, mixing, cutting, pressing and packaging activities. • Noise from the generating of the	3	4	1	4	32	Moderate	• The effect of occupational accident can be devastating in terms of lives lost, injuries, significant damage to property and the environment. • Change in demographic structure, new	• To provide first aid training, safety training, firefighting training or other essential training for machinery handling for emergency cases of workers • To provide Personal Protective Equipment (PPEs) like earmuffs, safety gloves, helmets and goggles • To prevent electric shock hazards, electrical maintenance

Categories	Source of Impact	Significant of Potential Impacts					Impact Significance	Reason	Mitigation Measure
		M	D	E	P	SP			
	emergency generators • Influx of people							diseases form immigrant workers • To cause a range of health problems ranging from stress, poor concentration, productivity losses in the workplace, and communication difficulties and fatigue from lack of sleep, to more serious issues	staff (handyman) is to be assigned to do regular inspections and take preventive measures. • To report and address hazards immediately and educate the employees about potential hazards • To avoid any direct skin contact with the diesel oil and chemicals • To manage the drainage system, maximum allowable noise and light intensity values for safe working • According to the observed light intensity values, the proponent provides sufficient lighting for workers for safe working and reducing optical problems of the workers.
Natural Disaster (Earthquakes, Floods, landsides and cyclone)	• Natural disaster due to heavy raining, flooding from river	3	4	1	3	24	Low	Accident in workplace (physical injuries or even death) can occur during operation.	Preserve relevant records and equipment for the subsequent inquiry into the cause and circumstances of the emergency
Waste Generation Impact									

Categories	Source of Impact	Significant of Potential Impacts					Impact Significance	Reason	Mitigation Measure
		M	D	E	P	SP			
Solid Waste	• Reusable waste like residual pieces of fabric scraps from the production lines and packaging materials • Non-reusable waste from kitchen, dormitory and office.	3	4	1	4	32	Moderate	• Surrounding environmental pollution and soil contamination	• All of the solid wastes will be collected separately in garbage based on their types and stored in relevant separated waste storage area • To improve cutting efficiency and reduce cut fabric wastage by using automated cutting machines • To sell the reusable waste to the local waste buyers • Final wastes should be disposed by using YCDC's service.
Liquid Waste	• Septic system and sewage. • Domestic liquid waste disposal from office, kitchen and dormitory.	2	4	2	3	24	Low	• Contamination of soil, surface water, ground water	• Regular inspection and cleaning, oil traps, septic tank and adequate covers for all storage and waste disposal areas can decrease these contaminations.
Hazardous Waste	• Hazardous waste of chemical in production process • Used oil and lubricant discharged from	2	4	2	3	24	Low	• Water pollution and soil contamination • Physical injuries can be caused	• Proper inspection and maintenance in storage of hazardous waste. • Dispose of hazardous chemicals and containers in accordance with occupational

Categories	Source of Impact	Significant of Potential Impacts					Impact Significance	Reason	Mitigation Measure
		M	D	E	P	SP			
	the maintenance of vehicles and machines. • Small amounts of hazardous waste such as fluorescent tube lights, batteries, machine oil containers, etc.								health, safety and environmental requirements. • The empty chemical containers will hand over to suppliers for recycle or appropriate disposal • The hazardous wastes are transported by specially licensed carriers and disposed in a licensed faculty (YCDC)

Table 5-3 Evaluation and Perdition of Significant Impacts and Mitigation Measures on Decommissioning phase

Categories	Source of Impact	Significant of Potential Impacts					Impact Significance	Reason	Mitigation Measure
		M	D	E	P	S			
Air	• Demolish of buildings and related materials • Transportation of demolished materials	3	1	2	3	18	Low	Emissions of particulate matters and carbon dioxide gases into the air	• Spray water twice a day • Cover mesh trap around the decommission area • Install shading net about 2 meters above temporary fence of decommission area • Carry broken material with cover by canvas.

Categories	Source of Impact	Significant of Potential Impacts					Impact Significance	Reason	Mitigation Measure
		M	D	E	P	S			
Water pollution	• Sewage form decommissioning workers • Demolition machinery equipment	2	1	1	3	12	Very Low	Contamination of surface water and ground water	Systematically demolish the septic tanks.
Soil	• Demolish of buildings and related materials • Transportation of demolished materials	2	1	1	2	8	Very Low	Contamination of soil	Manage the spillage of oil and diesel and sewage.
Noise and Vibration	• Decommission activities • Transportation of demolished materials	3	1	2	3	18	Low	Noise pollution to the surrounding	• Carry out the activities during day time. • Maintain the machines and vehicles to reduce noise pollution. • Provide the ear plugs to the workers.
Solid Waste	Demolished debris such as bricks, concrete materials	3	1	2	4	24	Low	Dumping to the surrounding environment	Recyclable materials and dispose to the define areas.
Hazardous waste	Fuel Containers	3	1	2	3	18	Low	Spillage of lubricant	Recyclable the diesel containers and manage the disposal way of

Categories	Source of Impact	Significant of Potential Impacts					Impact Significance	Reason	Mitigation Measure
		M	D	E	P	S			
									hazardous waste by connecting with YCDC
Occupational Health and Safety	• Decommissioning activities • Transportation of demolished materials	3	1	1	3	15	Low	Injuries and accidents	• Provide protective fencing or demarcation with tape at the boundaries of dangerous / hazardous zone and the appropriate warning signs, marking and safety signs and installation of the lost time injury notice board. • Clean up excessive waste debris and liquid spills regularly. • Use the third-party expert assisted by trained personnel to identify and remove hazardous materials.

6. ENVIRONMENTAL MANAGEMENT PLAN

6.1. OBJECTIVE OF ENVIRONMENTAL MANAGEMENT PLAN

An Environment Management System (EMS) is a framework that helps an organization achieves its environmental goals through consistent review, evaluation, and improvement of its environmental performance. The assumption is that this consistent review and evaluation will identify opportunities for improving and implementing the environmental performance of the organization. The EMS itself does not dictate a level of environmental performance that must be achieved; each organization's EMS is tailored to its own individual objectives and targets.

An EMS encourages an organization to continuously improve its environmental performance. The system follows a repeating cycle the organization first commits to an environmental policy, then uses its policy as a basis for establishing a plan, which sets objectives and targets for improving environmental performance. The next step is implementation. After that, the organization evaluates its environmental performance to see whether the objectives and targets are being met. If targets are not being met, corrective action is taken. The results of this evaluation are then reviewed by top management to see if the EMS is working. Management revisits the environmental policy and sets new targets in a revised plan. The company then implements the revised plan. The cycle repeats, and continuous improvement occurs.

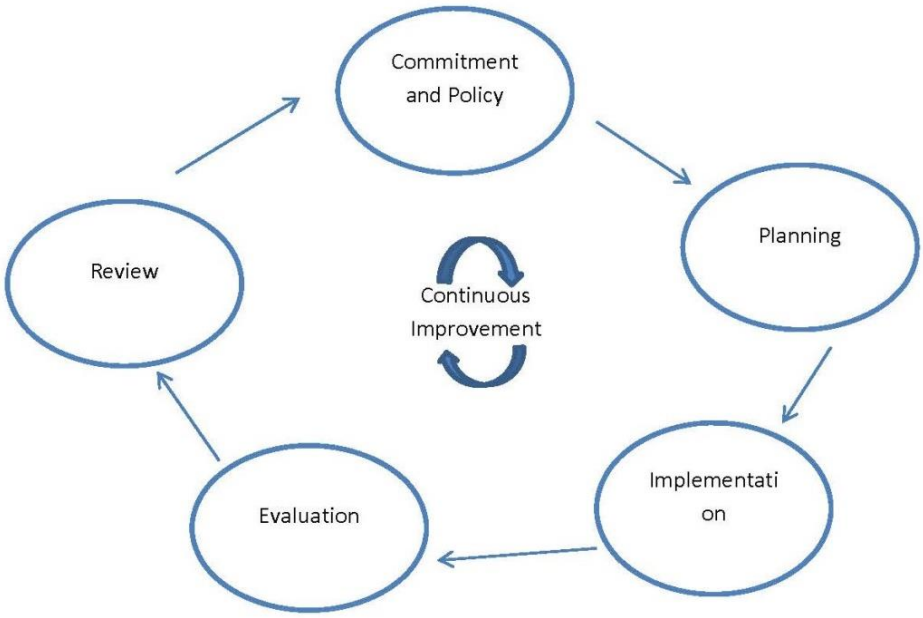


Figure 6-1 Continuous Improvement Circle

- **Commitment and Policy** – Top management commits to environmental improvement and establishes the organization's environmental policy. The policy is the foundation of the EMS.
- **Planning** – An organization first identifies environmental aspects of its operations. Environmental aspects are those items, such as air pollutants or hazardous waste that can have negative impacts on people and the environment. An organization then determines which aspects are significant by choosing criteria considered most important by the organization. For example, an organization may choose worker health and safety, environmental compliance, and cost as its criteria. Once significant environmental aspects are determined, an organization sets objectives and targets. An objective is an overall environmental goal (e.g., minimize use of chemical X). A target is a detailed, quantified requirement that arises from the objectives (e.g., reduce use of chemical X by 25% by September 1998). The final part of the planning stage is devising an action plan for meeting the targets. This includes designating responsibilities, establishing a schedule, and outlining clearly defined steps to meet the targets.
- **Implementation** – An organization follows through with the action plan using the necessary resources (human, financial, etc.). An important component is employee training and awareness for all employees. Other steps in the implementation stage include documentation, following operating procedures, and setting up internal and external communication lines.
- **Evaluation** – A company monitors its operations to evaluate whether targets are being met. If not, the company takes corrective action.
- **Review** – Top management reviews the results of the evaluation to see if the EMS is working. Management determines whether the original environmental policy is consistent with the organization's values. The plan is then revised to optimize the effectiveness of the EMS. The review stage creates a loop of continuous improvement for a company.

6.1.1. Institutional Requirement

Matsuya R&D (Myanmar) Co., Ltd. will manage the development of the proposed project. The project proponent should appoint Health, Safety and Environment (HSE) issues throughout the duration

of the project phases. HSE team is responsible for implementation and monitoring of EMP and Environmental Monitoring Plan (EMP) as well as coordination with local authorities and the nearby communities. The HSE Team also makes regular review of EMP to cover all potential impacts, amendments and modifications.

6.1.2. Responsibilities of the EMP

In order to ensure the sound development and effective implementation of the EMP, it will be necessary to identify and define the responsibilities. The environmental management practices, procedures, and responsibilities are defined herein to get full compliance with the existing environmental policy, laws, rules and regulations of the Republic of the Union of Myanmar. The following entities should be involved in the implementation of this EMP:

Matsuya R&D (Myanmar) Co., Ltd.: The proponent will be charged with the responsibility for ensuring that the proposed development has been accomplished in an environmentally sound manner. This can be achieved by inclusion of environmental specifications in the tender specifications, selection of environmentally conscious contractors, and supervision to ensure that the objectives of this EMP are met. The implementation of Environmental Management Plan (EMP) process will prepare and follow up by appointed persons for health, safety, and environmental management under the instruction of management team of Matsuya R&D (Myanmar) Co., Ltd. for EMP implementation facilities.

ECD (Yangon Region): The responsibility of ECD is to exercise general supervision and coordinating over all matters relating to the environment and to be instrumental in providing guidance for recognized regulatory frameworks.

6.1.3. Structure and Responsibilities for the EMP Development and Implementation

The HSE officer is responsible to the HSE components of the project and on matters relating to the implementation of the EMP throughout operation life. The S&E officer will have responsibilities that include:

- Ensure a monitoring system is in place to track and report all health, safety and environmental incidents;
- Carry out a thorough initial site inspection of environmental controls prior to work commencement;

- Record and provide a written report to the General Manager and production team of non-conformances with the EMP and require the HR supervisor to undertake mitigation measures to avoid or minimize any adverse impacts on environment or report required changes to the EMP.

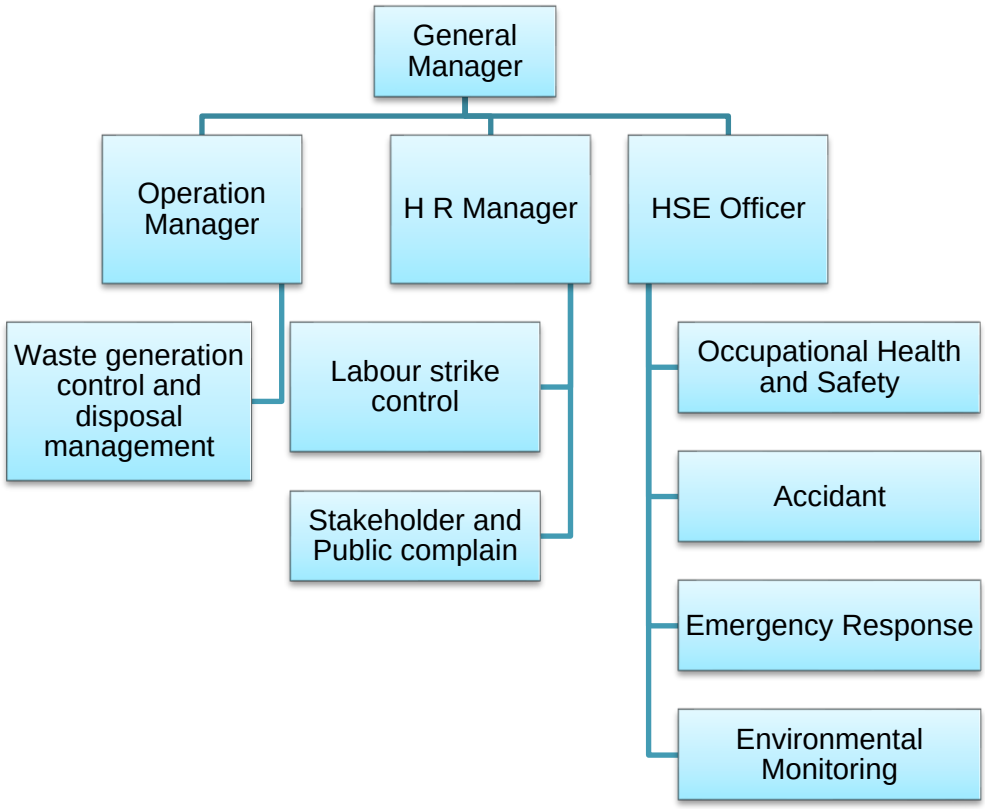


Figure 6-2 Organization Structure of EMP Implementation

Table 6-1 Responsibilities of HSE members

Roles	Responsibilities
General Manager	The General Manager will be assisted by the Operations Manager and also the HR and HSE Officer. In terms of environmental protection commitments, the Operation Manager will be the key driving force and will be responsible for: • Establishing overall environmental direction and policy • Ensuring the implementation of the EMP • Ensuring investigation of all environmental incidents are reviewed and that reports are submitted on time • Ensuring an effective system of internal and external communication is in place • Providing advice regarding the environmental program

Roles	Responsibilities
Operation Manager	The Operation Manager will assist the General Manager in looking into the overall environmental matters during the operational phase of the Project. The Operation Engineer will also be responsible for: • Adherence to the overall environmental direction and policy • Ensuring the implementation of the recommended actions in the investigation of all environmental incidents • Managing resources for operation wastes
HR Manager	The HR Manager will carry out the day-to-day management of workers and social issues in the factory. The HR Manager will be responsible for: • Assisting the management in publicising and implementing corporate and local policies, objectives and programs • Maintaining key environmental-related documents and information • Communicating/ liaising with the local authorities on environmental issues
HSE Officer	The HSE Officer will be the key person in charge of all environmental matters pertaining to the site. The HSE Officer will be responsible for: • Coordinating the implementation of environmental programs, including monitoring of the project site environmental performance • Performing periodic internal environmental audits and inspections to ensure compliance with the legal environmental requirements • Ensure a monitoring system is in place to track and report all health, safety and environmental incidents; • Carry out a thorough initial site inspection of environmental controls prior to work commencement; • Record and provide a written report to the General Manager and production team of non-conformances with the IEE and require the HR Manager to undertake mitigation measures to avoid or minimize any adverse impacts on environment or report required changes to the EMP.

6.2. ENVIRONMENTAL MANAGEMENT PROCESS

The EMP for Matsuya R&D (Myanmar) Company Limited has been prepared to added potential issues based upon discussion with factory management, workers, local community view, stakeholder consultation and the site visit. The EMP is additional to and compliments the factory's safety management system. The following environmental impact issues which require environmental

management plans based upon the potential impacts activities of Matsuya R&D (Myanmar) Company Limited are as follows:

6.2.1. Air Pollution/ Dust Management Plan

Objective	➢ To minimize the adverse impact to air quality caused by stack gas emission from generator and also dust management generated from vehicular movement. ➢ To comply with relevant government rules	
Relevant Government Law and Rule	➢ National Environmental Quality (Emission) Guideline 2015, ➢ Automobile Safety and Automobile Management Act (2020)	
Time Frame	➢ Entire life spans of proposed project operation	
Management Action	➢ Must be plant around the proposed project to reduce carbon emission ➢ Should be prohibited burning of waste material at the proposed project site ➢ Must be control air pollution, the vehicles, generators and machineries have to check and maintain regularly. ➢ The factory should use chimney for generator through which the flue gas is emitted for reducing the impact of stack emission on environment. ➢ Must be ensuring vehicles, compressor and generator are well maintained. ➢ Must be provide sufficient personal protective equipment (PPE) like eye protection, eye wash, mask. This factory workers wear the N-95 masks in carrying the raw materials and products. ➢ Factory have to follow up the covering the materials lead to dust formation. ➢ To mitigate spreading the dust of loading and unloading raw materials such as fabrics, interlining tape, wellon and cord, workers have to follow the working procedures and cleaning methods. ➢ The factory has to clean the dust of the production area regularly.	
Monitoring and Reporting	Frequency	Biannually
	Monitoring Point	Outdoor Area Point: 16°56'30.48"N, 96° 9'13.54"E (Beside the portico-2)
	Parameters	PM $_{2.5}$, PM $_{10}$, SO_2, NO_2, O_3, CO, CO_2, O_3, TSP, VOC
Estimated Cost	1,600,000 Kyats per year	
Responsible Person	Management of the proposed factory; Head of maintenance: Total implementation of above of air pollution management plan Production manager: Air quality in the production area is good enough Manager: To hire organization/ independent third-party testing air quality EHS officer: Monitor the hygiene of ambient air quality in surrounding of the factory	

6.2.2. **Noise Management Plan**

Objective	➢ To maintain low noise exposures, such that human health and well-being are protected. The specific objectives of noise management are to develop criteria for the maximum safe noise exposure levels, and to promote noise assessment and control as part of environmental health programmes.	
Relevant Government Law and Rule	➢ National Environmental Quality (Emission) Guideline 2015	
Time Frame	➢ Throughout the project life	
Management Action	➢ Building noise insulated generator room and ensure satisfactory maintenance of relevant equipment ➢ Impose speed limit to track and vehicles at the transportation route. ➢ Provide sufficient personal protective equipment (PPE) at the work place ➢ All the related personnel will be provided proper training about the relevant issues and ensure PPE wear during working in noisy area.	
Monitoring and Reporting	Frequency	Biannually
	Monitoring Point	Outdoor Area Point: 16°56'30.50"N, 96° 9'13.54"E (Beside the portico-2) Indoor Area Point: 16°56'31.99"N, 96° 9'14.09"E (sewing area)
	Parameters	Sound Decibel
Estimated Cost	800,000 Kyats per year	
Responsible Person	HSE Manager or Environmental Management Team of Matsuya R&D (Myanmar) Company Limited	

6.2.3. **Fire Management Plan**

Objective	➢ To ensure that fire control practices are implemented on site to minimise the risk of fire from site operations and bush fires
Relevant Government Law and Rule	➢ Myanmar Fire Brigade Law 2015
Time Frame	➢ Entire life spans of proposed project operation
Management Action	➢ Must be provide fire extinguishers, fire hose reels and fire hydrants on the walls of the factory for fire emergency cases. ➢ Must be indicated the emergency exit and assembly point in public area. ➢ Regular inspection for existing firefighting equipment must be done. In case of fire emergency, water storage tank for fire frightening. ➢ The emergency fire alarms are installed at the factory for alerting the workers in case of fire. ➢ The main entrances and route for emergency cases of the factory must not be blocked with materials or machines for fire emergency cases.
Monitoring and Reporting	To check monthly Visual inspection, Firefighting equipment (fire extinguish, firefighting hose, portable fire pumps, fire hose reels, fire monitor and firefighting nozzles)
Monitoring Point	16°56'30.83"N, 96° 9'13.51"E (At the whole factory)

Estimated Cost	1,200,000 Kyats per year
Responsible Person	HSE Manager, Operation Manager or Environmental Management Team of Matsuya R&D (Myanmar) Company Limited

6.2.4. **Occupational Safety and Health Management Plan**

Objective	➢ To provide a broad framework for improving standards of workplace health and safety to reduce work-related injury and illness.
Relevant Government Law and Rule	➢ Public Health Law (1972), Prevention and Control of Communicable Diseases Law 1995 (Amendment 2011), Occupational Safety and Health Law (2019)
Time Frame	➢ Entire life spans of proposed project
Management Action	➢ First aid training, safety training, firefighting training or other essential training for machinery handling must be provided for emergency cases of workers. ➢ According to the observed light intensity values, the proponent provides sufficient lighting for workers for safe working and reducing optical problems of the workers. ➢ Personal Protective Equipment (PPE) like earmuffs, safety gloves, helmets and goggles are provided for each department. ➢ To prevent electric shock hazards, electrical maintenance staff (handyman) is to be assigned to do regular inspections and take preventive measures. ➢ Manage the drainage systems of the factory to prevent health risk of the workers. ➢ The maximum allowable noise level for workers is 90dB(A) for 8hours exposure a day. Thus, adequate protective noise impact measures in the form of ear muffs/ear plugs to the workers working in high noise areas.
Monitoring and Reporting	Weekly check fire extinguishers and water hydrant in position Daily inspect that all fire exist are open Servicing fire extinguisher and records accidents
Monitoring Point	16°56'31.40"N, 96° 9'13.92"E (At the whole factory)
Estimated Cost	1,000,000 Kyats per year
Responsible Person	HSE Manager, Operation Manager or Environmental Management Team of Matsuya R&D (Myanmar) Company Limited

6.2.5. **Solid Waste Management Plan**

Objective	➢ To assess the activities involved for the proposed and determine the type, nature and estimated volumes of waste to be generated ➢ To identify any potential environmental impacts from the generation of waste at the site
Relevant Government Law and Rule	➢ Yangon City Development Committee Law (2018), National Waste Management Strategy and Master Plan (2018-2030)
Time Frame	➢ Entire life spans of proposed project
Management Action	➢ Must be provides separate garbage bins at each building. ➢ All of the solid wastes will be collected separately in garbage based on their types and stored in relevant separated waste storage area ➢ Final wastes should be disposed by using YCDC's service.

Monitoring and Reporting	Daily waste has to be collected and handover to YCDC waste collector The inventory record of waste disposal will be maintained as proof for proper management as designed
Monitoring Point	16°56'31.22"N, 96° 9'13.29"E Garbage bins of the factory
Estimated Cost	50,000 Kyats per month
Responsible Person	Manager (HR) Responsible for overall site cleanliness and waste management Regular waste collection to minimize excessive waste storage

6.2.6. **Liquid Waste Management Plan (Wastewater)**

Objective	➢ To implementation plan for the management of liquid waste from collection, through treatment and resource recovery, to residual disposal	
Relevant Government Law and Rule	➢ Yangon City Development Committee Law (2018), National Environmental Quality (Emission) Guidelines (2015), Underground Water Act (1930)	
Time Frame	➢ Entire life spans of proposed project	
Management Action	➢ Regular inspection and cleaning, oil traps, septic tank and adequate covers for all storage and waste disposal areas can decrease these contaminations.	
Monitoring and Reporting	Frequency	Biannually
	Parameters	pH, Turbidity, Total Solids, Hardness, Chloride, Free Cyanide, Arsenic
	Proper maintenance of drainage and sewerage system will be conducted periodically	
Monitoring Point	16°56'30.42"N, 96° 9'13.61"E (at the factory drainage and septic tank)	
Estimated Cost	600,000 Kyats per year	
Responsible Person	Manager: To hire organization/ Independent third-party testing wastewater quality EHS officer: Monitor the condition of factory's drainage and sewerage system	

6.2.7. **Hazardous Waste Management Plan**

Objective	➢ To avoid environmental pollution and adverse health effects due to its improper handing & disposal.
Relevant Government Law and Rule	➢ Yangon City Development Committee Law (2018), Explosive Ordnance Disposal Law (2018)
Time Frame	➢ Entire life spans of proposed project
Management Action	➢ Proper inspection and maintenance in storage of hazardous waste. ➢ Dispose of hazardous chemicals and containers in accordance with occupational health, safety and environmental requirements. ➢ The empty chemical containers will hand over to suppliers for recycle or appropriate disposal ➢ The hazardous wastes are transported by specially licensed carriers and disposed in a licensed faculty (YCDC)

Monitoring and Reporting	Monthly
Monitoring Point	16°56'31.26"N, 96° 9'13.29"E (At hazardous waste storage area)
Estimated Cost	1,000,000 Kyats per year
Responsible Person	HSE Manager or Environmental Management Team of Matsuya R&D (Myanmar) Company Limited

6.2.8. **Energy Management Plan**

Objectives:	➢ To improve energy efficiency, reduce cost, optimize capital investment, reduce environmental and greenhouse gas emissions, and conserve natural resources
Relevant government law and rule	➢ National Energy Management Committee (Myanmar Energy Master Plan 2015)
Time Frame	➢ Once in a year throughout the factory life
Management Action	➢ Installation of timers and thermostats to control heating and cooling ➢ Energy saving light installed in different area of the factory for saving energy ➢ Used of energy saving devices must be installed ➢ Ensure that good housekeeping measures such as turning off equipment and lights when not in use
Monitoring & Reporting	Conduct annual energy efficiency of adult to find out the scope for energy saving
Estimated cost	600,000 Kyats per year
Responsibility	Manager To arrange energy, audit technical personnel To monitor and record electricity consumption, other related energy issues and take necessary actions if any problem arises

6.2.9. **Water Consumption Management Plan**

Objectives:	• The water consumption management is aimed at minimizing ground water use
Performance Indicator:	• Prohibitions on accessing and using underground water without a license • Water consumption saving of general water use from groundwater
Relevant government law and rule	• The Underground Water Act (1930)
Management Plan	• Install water meter for internal control of water consumption • All staff trains and makes aware conservation practices and proper methods of water use must be place in toilets and other areas of water consumption • The contamination of water is avoided by suitable management of oil and fuel used in machineries and vehicles • All staff are aware unnecessary water consumption due to such problems including leaks, broken or missing valves.

Monitoring & Reporting	• Daily visual inspections
Time Frame	• Once in a year throughout the factory life
Estimated cost	• 500000 Kyats per year
Responsibility	Manager • Arrange audit on water usage controls environmental officer

6.2.10. **Emergency Response and Disaster Management Plan**

Objectives:	➢ To reduce the harmful effects of all hazards, including disasters. The World Health Organization defines an emergency as the state in which normal procedures are interrupted, and immediate measures (management) need to be taken to prevent it from becoming a disaster, which is even harder to recover from.
Relevant government law and rule	➢ The Employment and Skill Development Law (August 2013), ILO guide to Myanmar Labour Law (2017)
Time Frame	➢ Entire life spans of the factory operation
Management Action	➢ The factory management has taken proper measures to handle fire emergency situation ➢ Provision and inspection of firefighting equipment and fire hydrant system in all the sections ➢ A detail evaluation plan (fire exist, emergency exit door, etc.) is established and communicated with workers ➢ Periodic inspection of safety relief valve provided with pressure vessels and equipment, preventive maintenance; aware the workers about electric shock by necessary training. ➢ Biannual fire drill operation is conducted. The fire safety committee of the factory consists of 35 members and the natural disaster committee consists of 9 members. The responsibilities of these committee members can be seen in **Appendix G**. The committee arrange a meeting every month to discuss about safety management ➢ Workers are informed about what to do in earthquake like stay in a safe place such as under table of desk, not to try move outside during earthquake, workers who will be outside during earthquake shall remain stay out of the building, trees, lump post, etc. Other relevant safety instruction of emergency situation it informed to workers by training ➢ Workers are aware of dangers from physical hazards such as obstacles covered by floodwater (storm debris, drainage opening, ground erosion) and from displaced reptiles (Snake) or other animals. ➢ A medical team has been prepared for primary treatment (First Aid) ➢ Prepare an emergency contact directory consisting contact numbers of nearest fire service, local police station, hospitals, etc. and display it in a place that everybody can see it easy. ➢ Ensure proper training of the employees about the disaster management, fire safety as well as occupational health and safety
Monitoring & Reporting	Weekly check fire extinguishers and water hydrant in position Daily inspect that all fire exist are open Servicing fire extinguisher and records accidents,
Estimated cost	Approximately 1,500,000 Kyats per year

Responsibility	Manager and EHS officer Arrange firefighting training after every 3 months Responsible for fire control and response Monitoring daily danger warning and bans

6.3. ENVIRONMENTAL MONITORING SCHEDULE AND REPORTING

The EMoP cell members responsible may conduct daily, weekly or monthly general inspections of the project area and facilities. The objectives are to identify non-compliances to EMoP. Table 6-2 is provided the environmental monitoring schedule for Matsuya R&D (Myanmar) Company Limited. The factory submits monitoring report to the Ministry not less frequently than every six (6) months, as provided in a schedule in the EMP,

Table 6-2 Environmental monitoring process

Issues	Parameter	Frequency	Area to be monitored	Monitoring Cost	Responsible Organization
Operation Phase					
Air quality	PM $_{2.5}$, PM $_{10}$, SO_2, NO_2, O_3	Biannually	16°56'30.48"N, 96°9'13.54"E (Beside the portico-2)	1,600,000/year	Matsuya R&D (Myanmar) Company Limited's Environmental Management Team
Noise Quality	Noise level in decibel (dBA)	Biannually	Outdoor Area 16°56'30.50"N, 96° 9'13.54"E (Beside the portico-2) Indoor Area 16°56'31.99"N, 96° 9'14.09"E (sewing area)	800,000/year	Matsuya R&D (Myanmar) Company Limited's Environmental Management Team
Light intensity	Illuminance	Biannually	Warehouse, Cutting, Sewing, Printing, Quality Inspection Area	400,000/year	Matsuya R&D (Myanmar) Company Limited's Environmental Management Team
Solid waste	• Residual pieces from the production lines and packaging materials • Waste from kitchen, dormitory and office	weekly	16°56'31.22"N, 96° 9'13.29"E Garbage bins of the factory	500,00 kyats per month	Matsuya R&D (Myanmar) Company Limited's Environmental Management Team
Liquid waste		Biannually	16°56'30.42"N, 96° 9'13.61"E (at the factory drainage)	600000 Kyats per year	Matsuya R&D (Myanmar) Company Limited's Environmental Management Team
Hazardous Waste	Type of waste and method of disposal	Monthly	16°56'31.26"N, 96° 9'13.29"E	1,000,000 Kyats per year	Matsuya R&D (Myanmar) Company Limited's

Issues	Parameter	Frequency	Area to be monitored	Monitoring Cost	Responsible Organization
			(At hazardous waste storage area)		Environmental Management Team
Fire Hazardous	Visual inspection, firefighting equipment	Monthly	16°56'30.83"N, 96° 9'13.51"E (At the whole factory)	1,200,000 Kyats per year	Matsuya R&D (Myanmar) Company Limited's Environmental Management Team
Occupational Safety and Health	Incident/accident records	weekly	16°56'31.40"N, 96° 9'13.92"E (At the whole factory)	1,000,000 Kyats per year	Matsuya R&D (Myanmar) Company Limited's Environmental Management Team
Decommissioning Phase					
Air quality	PM $_{2.5}$, PM $_{10}$, SO_2, NO_2, O_3	One time during this phase	A suitable point of project site	1,600,000/year	Project Proponent
Noise	Noise level in decibel (dBA)	One time during this phase	A suitable point of project site	800,000/year	Project Proponent
Occupation Health and Safety	Incident/accident records	during this phase	At the factory	1,000,000 Kyats per year	Project Proponent
Rehabilitation	Recovering and Revegetation	after the decommissioning phase	All decommissioning area	1000000/year	Project Proponent

Note: If the amount described above is not enough at the time of implementation, it will be used up to a sufficient amount.

6.4. BUDGET PLAN FOR ENVIRONMENTAL MANAGEMENT AND MONITORING

This section describes the budget plans for the environmental management and environmental monitoring by the project proponent. On the other hand, Matsuya R&D (Myanmar) Co., Ltd. will take necessary environmental mitigation measures and its expenses for the environmental management not only at the construction and operation phases but also at the closing phase in accordance with their responsibility for the studies of recommendation.

The following table shows the expenditures for the implementation of Environmental Management Plan for operation phase annually. Estimation cost for EMP implementation is presented in Table 6-3.

Table 6-3 Cost estimation for EMP implementation

No	Item	Frequency/Times	Cost (MMK)
Mitigation Plan			
1	Air Quality	biannually	1,600,000 per year

No	Item	Frequency/Times	Cost (MMK)
2	Noise Quality	biannually	800,000 per year
3	Fire Management	monthly	1,200,000 per year
4	Occupational Health and Safety	weekly	1,000,000 per year
5	Solid Waste	weekly	50,000 per month
6	Liquid Waste	biannually	600,000 per year
7	Hazardous Waste	monthly	1,000,000 per year
8	Energy Management	annually	600,000 per year
9	Water Consumption	daily	500,000 per year
10	Emergency response and disaster management	weekly	1,500,000 per year
Emergency Preparedness			
1	Fire extinguisher	Once per month	400,000 per month
2	Fire alarm system	Once per month	
3	First Aid Fits	Once per month	
Monitoring Plan			
1	Air Quality	biannually	1,600,000 per year
2	Noise level	biannually	800,000 per year
3	Light Intensity	biannually	400,000 per year
4	Solid Waste	weekly	50,000 per month
5	Liquid Waste	biannually	600,000 per year
6	Hazardous Waste	monthly	1,000,000 per year
7	Occupational Health and Safety	weekly	1,000,000 per year
8	Fire Hazardous	monthly	1,200,000 per year

Note: If the amount described above is not enough at the time of implementation, it will be used up to a sufficient amount.

6.5. CAPACITY BUILDING AND TRAINING PLAN

The emergency preparedness is vital, as quick and correct response is necessary in case of emergency to reduce injuries, harm and other damage. Care should be given for during processing activities in order to prevent synthetic errors and accidental cases (e.g., electricity shock and fire hazards).

The emergency response plans should be established for handling all foreseeable emergencies in the workplace and must provide the following;

6.5.1. Assignment of responsibilities

All senior staff such as a line/production manager or safety officer should be assigned to lead the emergency response team and charged with the duties of (1) assessing the emergency and taking necessary

actions (2) overseeing the implementation of the emergency response plan (3) organizing regular drill (4) ensuring all emergency equipment is well maintained.

6.5.2. Emergency procedures

Emergency procedures are operating instructions for employees to follow in emergency case

About work safety in the concerned processing, the management team should

a) Identify and list out all possible emergency situations in the workplace
b) Assess the effects and impacts of the emergency situations
c) Establish emergency response plans
d) Provide and maintain emergency equipment and other necessary resources
e) Ensure that staff are familiarized with the arrangements in case of emergencies by providing procedural instructions and employee training and organizing drills

6.5.3. Training for Emergencies

The type, amount and frequency of training varies, depending upon the task's employees are expected to perform. Although training must be provided to employees at least annually, safety meetings and drills should be conducted at more frequent intervals.

Regardless of the specific type of facility, training should include, though not be limited to the following;

- Hazard recognition and prevention (fire, explosion, etc.)
- Proper use of fire extinguishers
- Emergency reporting procedures
- Preventive maintenance
- Hazardous materials spill response
- First Aid

6.5.4. Fire Prevention and Protection

The fire prevention and protection program must address the following topics:

Prevention; policies, practices and procedures designed to keep the conditions necessary for a fire from coming together

- Hot work permits
- Lockout/tag out policies
- Design specifications for storage of flammable materials

Severity reduction; policies, practices and procedures designed to reduce the spared of fire and end the fire.

- Emergency plans
- Alarm systems

- Portable fire extinguishers
- Fire Protection Equipment

Cleanup; policies, practices and procedures designed to return the affected area to an operational level and reduce other losses created by improper cleanup

- First aid
- Removal of debris to an appropriate waste site
- Equipment and facility repair

6.5.5. Fire Protection Equipment

1. Explosion Suppression Systems: Explosion suppression systems should be used in unusually hazardous areas such as elevator legs, boots and head, or in areas such as bins, distributors and tanks.

2. Portable Fire Extinguishers: All buildings within a facility must have fully charged and operable portable fire extinguishers. If employees are expected to use portable extinguishers or other firefighting equipment against incipient fires, they must be trained to use the equipment. Training must include the following:
   - Correct type of extinguisher to use on different classes of fire
   - Proper techniques for use of the equipment to extinguish a fire
3. Standpipes and Hoses: All areas within a facility that are above 75 feet from ground level and in which combustible materials other than grain are stored should have wet or dry standpipes and hoses installed.

4. Automatic Sprinkler Systems: Automatic sprinkler systems are recommended in areas containing combustible materials.

5. Fire Hydrants: All grain and feed mill facilities should have adequate public or private fire hydrants on site. Each fire hydrant should have an adequate water supply.

6.5.6. Fire Safety and Evacuation Plan

Fire Evacuation plans should include the following information

- Emergency escape routes must be clearly shown on floor plans and workplace maps
- Employers must know that their employees know the emergency escape routes
- Procedures for employees who must remain to operate critical equipment before evacuating
- Identification and assignment of personnel responsible for rescue or emergency medical aid

Fire Safety Plans should include the following information:

1. Procedure for reporting a fire or other emergency
2. Site plans indicating the following
   - The Occupancy assembly point
   - The locations of fire hydrants
   - The normal routes of fire department vehicles access
3. Floor Plans identifying the locations of the following
   - Exits
   - Primary evacuation routes
   - Secondary evacuation routes
   - Accessible egress routes
   - Areas of refuge
   - Exterior area for assisted rescue
   - Manual fire alarm boxes
   - Portable fire extinguishers
   - Occupant-use hose stations
   - Fire alarm annunciators and controls

The following American National Fire Fighting Association (NFFA) Standards must be following.

Table 6-4 American National Fire Fighting Association (NFFA) Standards

No.	Parameters	Proposed Capacity	Remark
1	Fire water flow	14 bars	
2	Deluging rate	12.0 liters/m2/min	
3	Foam rate	10.0 liters/m2/min	
4	Maximum water pressure	190 liters/min	For storage area

Emergency evacuation Drill: An exercise performed to train staff and occupants and to evaluate their efficiency and effectiveness in carrying out emergency excavation procedures

Employee Training and Response Procedures: Employee shall be trained in the fire emergency procedure described in their fire evacuation and fire safety plans and training should be based on these plans;

Frequency: Employee shall receive training in the contents of fire safety and evacuation plans and their duties as part of new employee orientation and at least annually thereafter. Records shall be kept and made available to the fire code official upon request.

Employee Training Program: Employee shall be trained in fire prevention, evacuation and fire safety in accordance with the following sections.

Fire Prevention Training - Employee shall be apprised of the fire hazards of the materials and processes to which they are exposed. Each employee shall be instructed in the proper procedures for preventing fires in the conduct of their assigned duties

Evacuation Training – Employees shall be familiarized with the fire alarm and evacuation signals, their assigned duties in the event of an alarm or emergency, evacuation routes, areas of refuge, exterior assembly areas and procedures for evacuation

Fire Safety Training – Employee assigned fire-fighting duties shall be train Toiled to know the locations and proper use of portable fire extinguishers or other manual fire-fighting equipment and the protective clothing or equipment required for its safe and proper use.

6.5.7. Site Fire Control

1. Alert other people through fire alarm
2. If small, control using an extinguisher
3. Contact fire brigade if not under immediate control
4. Attend to human life in immediate danger
5. For electrical fires turn off power before fighting
6. Once out of the building, stay out. Do not allow people to go back into the burning building to collect valuables. While evacuating the building, close doors (but do not lock) to slow down the spread of fire
7. Obey all instructions
8. Proceed to an emergency evacuation area (Muster Point)

6.5.8. Employee Information and Training

Employees must be informed about any operations in their work area where hazardous chemicals or materials are present. They must also be informed about the locations and availability of the hazard communication program, list of chemicals and SDSs. Employees must receive training on the following:

- Methods for detecting the presence or release of a hazardous chemical, such as monitoring devices and the visual
- appearance or odor of the chemical
- Physical and health hazards of chemicals in their work area

- How to protect themselves using work practices, emergency procedures and personal protective equipment
- How to interpret the information on the labels and MSDSs

6.5.9. Health and Safety Training Plan for Worker

Health and Safety Training plan currently used and provided in Matsuya R&D (Myanmar) Co., Ltd. to all employees and workers by trainings internally and externally. Specific trainings are recommended and conducted according to the health and safety guidelines to enhance worker's health and to prevent all potential risks and hazards might occur in the factory. All required trainings related to health and the respective departments propose safety or operational parts, top management makes decision and HR organizes and conducts the trainings.

Table 6-5 Training Plan in Matsuya R&D (Myanmar) Co., Ltd.

No.	Health and Safety Guidelines	Training needs
1.	Management	General fire and emergency response plan, evacuation. All training materials and procedures covering health and safety for workers and employees
2.	Machine safety and noise management	Training for machine operations to all operators Use of PPE and proper use of any necessary protection Maintenance and Emergency procedures
3.	Environment safety	Understanding and training on recognition and maintenance not to affect environment
4.	Material storage and safety	Safety use of related devices and machines Use of necessary protections in working areas Sanitation work
5.	Fire Safety	Firefighting and evacuating training and practices Firefighting materials/ devices use
6.	First Aid	first aid / CPR/ AED training from providers (Outsource) training on hazard of pathogens

6.6. EMERGENCY CONTACT NUMBERS OF PROPOSED PROJECT

Matsuya R&D (Myanmar) Company Limited located at Mingaladon Township. The emergency contact numbers of Mingaladon Township are described at the following Table 6-6.

Table 6-6 Emergency Contact Numbers of Mingaladon Township

Department	Location	Phone Number

Mingalardon General Hospital	Yangon-Mandalay Highway Road	01635299
Mingalardon Myoma Police Station	Yangon-Mandalay Highway Road (Near Khayae Pin Road)	01635074
Mingalardon Fire Station	Yangon-Mandalay Highway Road	019437178

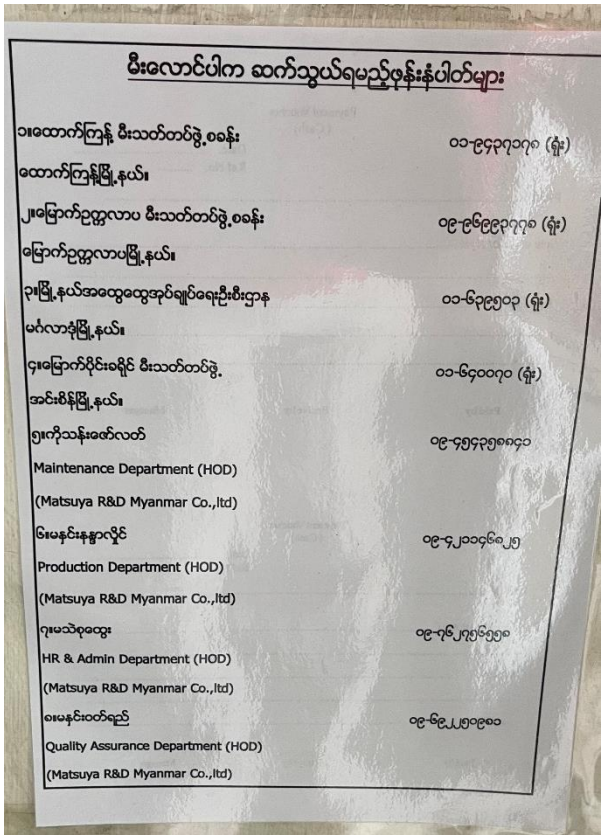


Figure 6-3 Emergency Contact Numbers of Matsuya R&D (Myanmar) Company Limited

6.7. GRIEVANCE REDRESS MECHANISM (GRM)

People who live near the project affected area or stakeholders can complain about the problems and impacts that they suffer; they can complain though Grievance Committee, which includes the responsible persons of Matsuya R&D (Myanmar) Co., Ltd. representative from Mingaladon Industrial Park, Mingaladon Township and representative from General Administration Department (Mingaladon Township). Small issues will be solved at the Grievance Committee stage and other unsolved problems will be submitted to higher responsible authorities and finally the responsible person decided by the court in legal terms. The following diagram (Figure 6-4) show steps of Grievance Redress Mechanism of Proposed Factory Project.

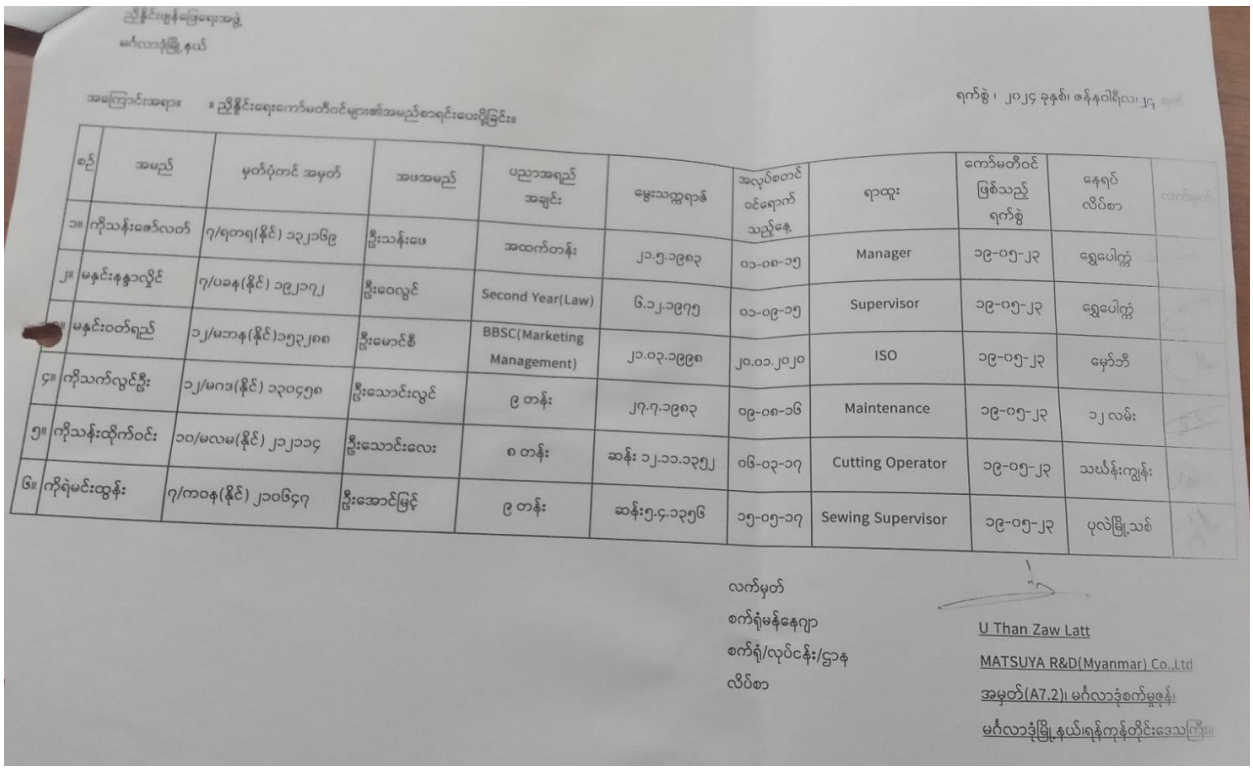


Figure 6-4 Grievance Redress Mechanism of Matsuya R&D (Myanmar) Company Limited

6.8. CORPORATE SOCIAL RESPONSIBILITY (CSR) PLAN

The CSR activities have the objective to uplift quality of life and gain favorable relations from all communities in the operation area. The CSR program for Matsuya R&D (Myanmar)'s factory consists of three main sectors; Health, Education and Communities Development Sector. CSR activities are conducted in compliance with MIC's guideline for implementation of CSR program.

Matsuya R&D (Myanmar) Company Limited has a plan to implement and donate 2% of the profit per year for Corporate Social Responsibility (CSR) and Employee Welfare Arrangement (Table 6-7).

Table 6-7 CSR plan at Matsuya R&D (Myanmar) Company Limited

No	Particle	Contribution
1	Public school	0.5%
2	Non-profit training	1
3	Employees healthcare	0.5%

6.8.1. Public School

We will contribute 0.5% of our net profit to the public school near the factory to be a part of creating the better community. We will also work together with the school to understand more about the needs and we will also ensure that our contributions will be used in the most effective and efficient way for the society.

6.8.2. **Non-profit Training**

We will contribute 1% of our net profit for the trainings of our Employees. Our trainings include job-related trainings, language trainings and safety trainings. The main objective of our trainings is that we want our manufacturing of bags with their work but also improving their other skills such as language and promoting knowledge about safety measures and occupational health employees to be not only become more productive and more qualified.

6.8.3. **Healthcare**

One of our main concerns is the well-being of our employees. We will contribute 0.5% of our net profit for the healthcare, which includes medical checkup for the employees and providing health education to our workers.

7. CONCLUSION AND RECOMMENDATION

Environmental Management Plan (EMP) has been prepared for Matsuya R&D (Myanmar) Company Limited which is located at Plot No (A7-2), Mingaladon Industrial Park, Mingaladon Township, Yangon Region. The main objective of the study is focused specially on the required environmental management measures or creating environmentally friendly workplace. An EMP has been carried out for the factory according to the requirement of the proponent as it has been made for bags manufacturing factory.

Matsuya R&D (Myanmar) Company Limited is using ground water for both industrial and household (drinking and sanitation) purpose, which is supplied by deep tube well. The factory also has generators for electricity generation. The fuel used in the industry is Diesel and Purchased electricity. The sanitary liquid waste of the factory is stored in septic tank.

The major pollution caused by the factory's operation are water pollution by discharging liquid waste generated from domestic use, air pollution by generator's effluent gas emission, noise pollution created during the operation of generator and other machines.

Solid waste such as sludge, broken machine parts is hand over to local waste buyer or YCDC. Although the factory causes some pollution but also has a positive side and that is the factory has created employment for many people, due to this factory local community has built up daily.

Thus, the factory management can take proper mitigation steps against adverse environmental impacts by following this EMP. The necessary measure to mitigate impact regarding different environmental parameter such as air, water, waste, noise has been proposed in this EMP.

However, all necessary implementation measures to mitigate adverse environmental, health and safety impacts have already been taken to meet National Environmental Quality (Emission) Guideline (2015). On the other hand, the factory has a positive impact in terms of environmental management in the operation phase. Further, this will indirectly help in boosting up the national economic condition through foreign investment. An outline of EMP has been given in the present report to mitigate/enhance the impacts, which occurs during operation phase of the factory.

It is recommended that;

- All appropriate environmental management measures detailed in this report, together with any other environmental management commitments should be implemented throughout the entire life of the factory
- Solid wastes and liquid wastes need to be disposed according to Yangon City Development Committee (YCDC) rules and regulations
- Workers should be provided proper training and it should be ensured that workers use PPE during factory operation area.
- Daily, monthly and annual action plans shall be formulated based on this EMP and practiced at operation level.
- Keep full records of environmental management activities and present to annual independent third party environment audit.
- Abide environmental policies, laws, rules and instructions of the Republic of the Union of Myanmar.

Finally, the proponent should follow the comments and suggestions made by ECD after reviewing this EMP report. Once concerned authorities approve EMP, effective implementation of EMP by the project proponent is essential. The Project Proponent shall submit monitoring report to the Ministry every six (6) months, as provided in a schedule in the EMP. The proponent should abide environmental policy, laws, rules and instructions of the Republic of the Union of Myanmar.

8. REFERENCE

[1] General Administrative Department (Mingaladon Township), Mingaladon Township Data (2019).

[2] Hla Hla Aung, Potential Seismicity of Yangon Region (Geological Approach), “Yangon Surface Displacement as Detected by Insar Time Series Analyisi” July 2011.

[3] Ministry of Natural Resources and Environmental Conservation (MONREC), “Environmental Impact Assessment Procedure” December 2015.

[4] Ministry of Natural Resources and Environmental Conservation (MONREC), “National Environmental Quality (Emission) Guidelines” December 2015.

[5] Specifications for accident prevention signs and tags, regulations (standards 29-CFR), Occupational Safety and Health Administration.

[6] https;//weatherspark.com/y/112503/Average-Weather-in-Yangon-Myanmar-(Burma)-Year-Round

APPENDIX A
Endorsement of Matsuya R&D (Myanmar) Company Limited

ပြည်ထောင်စုသမ္မတမြန်မာနိုင်ငံတော်
မြန်မာနိုင်ငံ ရင်းနှီးမြှုပ်နှံမှု ဒေကာ်မရှင်
ခွင့်ပြုဝိန်

ခွင့်ပြုဝိန်အမှတ် ၉၀၅/၂၀၁၅ ၂၀၁၅ ခုနှစ် ဖေဖော်ဝါရီလ ၁၃ ရက်

ပြည်ထောင်စုသမ္မတ မြန်မာနိုင်ငံတော်နိုင်ငံခြားရင်းနှီးမြှုပ်နှံမှု ဥပဒေပုဒ်မ-၁၃၊ ပုဒ်မခွဲ(ခ) အရ ဤခွင့်ပြုဝိန်ကို မြန်မာနိုင်ငံ ရင်းနှီးမြှုပ်နှံမှု ကော်မရှင်က ထုတ်ပေးလိုက်သည် -

(က) ရင်းနှီးမြှုပ်နှံသူ/ကမကထပြုသူအမည် MR. KENJI SUGIMOTO

(ခ) နိုင်ငံသား JAPANESE

(ဂ) နေရပ်လိပ်စာ 60-12-2 SHINOOCHO, FUKUI CITY, FUKUI, JAPAN

(ဃ) ပင်မအဖွဲ့အစည်းအမည်နှင့် လိပ်စာ MATSUYA R & D COMPANY LIMITED, 3-19, MOTOMACHI, ONO CITY, FUKUI, JAPAN

(င) ဖွဲ့စည်းရာအရပ် JAPAN

(စ) ရင်းနှီးမြှုပ်နှံသည့်လုပ်ငန်းအမျိုးအစား CMP စနစ်ဖြင့် သွေးဖိအားတိုင်းကိရိယာပါ လက်ပတ်အပြား ထုတ်လုပ်ခြင်းလုပ်ငန်း

(ဆ) ရင်းနှီးမြှုပ်နှံသည့်အရပ်ဒေသ(များ) မြေကွက်အမှတ် A7-2၊ မင်္ဂလာဒုံစက်မှုဇုန်၊ မင်္ဂလာဒုံမြို့နယ်၊ ရန်ကုန်တိုင်းဒေသကြီး

(ဇ) နိုင်ငံခြားမတည်ငွေရင်း ပမာဏ အမေရိကန်ဒေါ်လာ ၁.၅၀ သန်း

(ဈ) နိုင်ငံခြားမတည်ငွေရင်းယူဆောင်လာရမည့်ကာလ ခွင့်ပြုဝိန်ရရှိသည့်နေ့မှ (၁) နှစ် အတွင်း

(ည) စုစုပေါင်း မတည်ငွေရင်းပမာဏ(ကျပ်) အမေရိကန်ဒေါ်လာ ၁.၅၀ သန်း နှင့် ညီမျှသော မြန်မာကျပ်ငွေ

(ဋ) တည်ဆောက်မှုကာလ ၄ လ

(ဌ) ရင်းနှီးမြှုပ်နှံမှုခွင့်ပြုသည့် သက်တမ်း ၁၀ နှစ်

(ဍ) ရင်းနှီးမြှုပ်နှံမှုပုံစံ ရာ ၁၀၀ ရာခိုင်နှုန်းပြည့်နိုင်ငံခြားရင်းနှီးမြှုပ်နှံမှု

(ဎ) မြန်မာနိုင်ငံတွင် ဖွဲ့စည်းမည့် ကုမ္ပဏီအမည် MATSUYA R & D (MYANMAR) COMPANY LIMITED

ဒေါက်တာ
မြန်မာနိုင်ငံရင်းနှီးမြှုပ်နှံမှုကော်မရှင်

THE REPUBLIC OF THE UNION OF MYANMAR
MYANMAR INVESTMENT COMMISSION
No.1, Thitsar Road, Yankin Township, Yangon

Our ref : DICA-3/FI-1117/2015(256-C) Tel: 01- 658128
Date : 13th February 2015 Fax: 01-658141

Subject: Decision of the Myanmar Investment Commission on the Proposal for "Manufacturing of Cuffs for Sphygmomanometers on CMP Basis" under the name of "Matsuya R & D (Myanmar) Company Limited".

Reference: Matsuya R & D (Myanmar) Company Limited, Letter dated (18-11-2014).

1. The Myanmar Investment Commission, at its meeting (2/2015) held on (31-1-2015), had approved the proposal for investment in "Manufacturing of Cuffs for Sphygmomanometers on CMP Basis" under the name of "Matsuya R & D (Myanmar) Company Limited" submitted by Matsuya R & D Company Limited (85 %) and Mr. Hidetaka Goto (15 %) from Japan as a wholly foreign owned investment.

2. Hence, the "Permit" is herewith issued in accordance with Chapter VII, section 13(b) of Foreign Investment Law and Chapter VIII, Rule 49 of the Foreign Investment Rules relating to Foreign Investment Law. Terms and conditions to the "Permit" are stated in the following paragraphs.

3. The permitted duration of the project shall be initial 10 (Ten) years. The Land Lease Period shall be 34 years commencing from the issuing date of Physical Delivery Receipt and ending on the date 7th February, 2048 pursuant to Sub-Lease Agreement Chapter 1.1. At the end of the Lease period, the lessee shall transfer the land to lessor within 3 (three) months in good condition, ground damages having been refilled or repaired.

4. Matsuya R & D (Myanmar) Company Limited shall provide the land use premium to the amount of US$ 463,594 (United States Dollar four hundred and sixty-three thousand, five hundred and ninety-four only) in favour of Mingaladon Industrial Park Company Limited in three installments as follows:-

(a) the first installment of 10 % (Ten) percent of the Land Use Premium amounting to US$ 46,359.40 (United States Dollar forty-six thousand, three hundred and fifty-nine and forty cent only) shall be paid on the date of signing of Sub-Lease Agreement.

16. In order to evaluate foreign capital and for the purpose of its registration in accordance with the provisions under Chapter XV, section 37 of Foreign Investment Law, it is compulsory to report as early as possible in the following manner:-

(a) the amount of foreign currency brought into Myanmar, attached with the necessary documents issued by the respective bank where the account is opened and defined under Chapter XVI, Rule 134 and 135 of the Foreign Investment Rules;

(b) the detailed lists of the type and value of foreign capital defined under Chapter I, section 2(i) of Foreign Investment Law, other than foreign currency.

17. Whenever Matsuya R & D (Myanmar) Company Limited brings in foreign capital defined under Chapter I, section 2(i) of Foreign Investment Law, other than foreign currency in the manner stated on paragraph 15(b) mentioned above, the Inspection Certificate endorsed and issued by an internationally recognized Inspection Firm with regard to quantity, quality and price of imported materials shall have to be attached.

18. Matsuya R & D (Myanmar) Company Limited has the right to make account transfer and expend the foreign currency from his bank account in accordance with Chapter XVI, Rule 136 of the Foreign Investment Rules and for account transfer of local currency generated from the business to the local currency account opened at the bank by a citizen or a citizen-owned business in the Union and right to transfer back the equivalent amount of foreign currency from the foreign currency bank account of a citizen or citizen-owned business by submitting the sufficient document in accordance with Chapter XVII, Rule 145 of the Foreign Investment Rules.

19. Matsuya R & D (Myanmar) Company Limited shall report to the Commission for any alteration in the physical and financial plan of the project. Cost overrun, over and above the investment amount pledged in both local and foreign currency shall have to be reported as early as possible.

20. Matsuya R & D (Myanmar) Company Limited shall be responsible for the preservation of the environment at and around the area of the project site. In addition to this, it shall carry out as per instructions made by Ministry of Environmental Conservation and Forestry in which to conduct an Environmental Management Plan (EMP) which describe the measure to be

taken for preventing, mitigation and monitoring significant environmental impacts resulting from the implementation and operation of proposed project or business or activity. It has to prepare and submit and perform activities in accordance with this EMP and abide by the environmental policy, Environmental Conservation Law and other environmental related rules and procedures.

21. After getting permit from Myanmar Investment Commission, Matsuya R & D (Myanmar) Company Limited shall have to be registered at the Directorate of Industrial Supervision and Inspection.

22. Matsuya R & D (Myanmar) Company Limited shall have to abide by the Fire Services Department's rules, regulations, directives and instructions. Moreover, fire prevention measures shall have to undertake such as water storage tank, fire extinguishers and provide training to use the fire fighting equipments and also to appoint fire safety officer.

23. Payment of principal and interest of the loan (if any) as well as payment for import of raw materials and spare parts etc., shall only be made from export earning (CMP charges) of Matsuya R & D (Myanmar) Company Limited.

24. Matsuya R & D (Myanmar) Company Limited in consultation with Myanma Insurance shall effect such types of insurance defined under Chapter XII, Rule 79 and 80 of the Foreign Investment Rules.

(Zay Yar Aung)
Chairman

Matsuya R & D (Myanmar) Company Limited

cc: 1. Office of the Union Government of the Republic of the Union of Myanmar

2. Ministry of Home Affairs

3. Ministry of Foreign Affairs

4. Ministry of Environmental Conservation and Forestry

5. Ministry of Electric Power

6. Ministry of Immigration and Population

APPENDIX B
Licenses of Matsuya R&D (Myanmar) Company Limited

Electricity Safety Certificate

စက်မှုဝန်ကြီးဌာန

ရန်ကုန်တိုင်းဒေသကြီး စက်မှုကြီးကြပ်ရေးနှင့်စစ်ဆေးရေးဦးစီးဌာန

လျှပ်စစ် – စစ်ဆေးရေးဌာန

အမှတ် – ၁၉၂၂ ၊ ကမ္ဘာအေးဘုရားလမ်း၊ ဗဟန်းမြို့နယ်၊ ရန်ကုန်မြို့

လျှပ်စစ်ဓာတ်အားအသုံးပြုခြင်းဆိုင်ရာ အန္တရာယ်ကင်းရှင်းကြောင်းလက်မှတ်

လက်မှတ်အမှတ်စဉ် EI/YD- 642 / 9 – 2023

၂၀၁၄ ခုနှစ် လျှပ်စစ်ဥပဒေ ပုဒ်မ ၃၂(ဃ) တွင် ပြဋ္ဌာန်းချက်အရ လျှပ်စစ်ဓာတ်အား အသုံးပြုခြင်း လုပ်ငန်းကို စစ်ဆေးရာတွင် လျှပ်စစ်ဥပဒေဆိုင်ရာ လုပ်ထုံးလုပ်နည်းများနှင့် ကိုက်ညီကြောင်း စစ်ဆေးတွေ့ရှိရသဖြင့် အောက်ဖော်ပြပါ နေရာဒေသ၌ လျှပ်စစ်ဓာတ်အားအသုံးပြုခြင်း လုပ်ငန်းကို အန္တရာယ်ကင်းရှင်းကြောင်း လက်မှတ် ထုတ်ပေးလိုက်သည်။

၁။ လျှပ်စစ်ဓာတ်အားအသုံးပြုခြင်း

(က) သတ်မှတ်ဗို့အား ၄၀၀ / ၂၃၀ ဗို့

(ခ) လုပ်ငန်းအမျိုးအမည် သွေးဖိအားတိုင်းကိရိယာပါ လက်ပတ်အပြားထုတ်လုပ်ငန်း

Matsuya R & D (Myanmar) Co.,Ltd

(ဂ) ခွင့်ပြုဝန်အား 1073 HP + 500 kVA (Generator)

၂။ နေရာဒေသ Mr Masayuki Mizoi

အမှတ် (A / 7 – 2)၊ အမှတ် (၃) လမ်းနှင့် ခရေပင်လမ်း

ထောင့်၊ မင်္ဂလာဒုံစက်မှုဇုန် ၊ မင်္ဂလာဒုံမြို့နယ်။

၃။ လက်မှတ်ထုတ်ပေးသည့်ရက် ၁၉ . ၉ . ၂၀၂၃

၄။ လက်မှတ်ကုန်ဆုံးသည့်ရက် ၁၈ . ၉ . ၂၀၂၄

(ကျောဘက်တွင် ဖော်ပြထားသော စည်းကမ်းချက်များကို လိုက်နာရပါမည်။)

မှတ်ချက်။ .....

.....

စစ်ဆေးရေးမှူး

ရန်ကုန်တိုင်းဒေသကြီး လျှပ်စစ်စစ်ဆေးရေးဌာန

ပြည်ထောင်စုသမ္မတမြန်မာနိုင်ငံတော်
စက်မှုဝန်ကြီးဌာန
ရန်ကုန်တိုင်းဒေသကြီးစက်မှုကြီးကြပ်ရေးနှင့်စစ်ဆေးရေးဦးစီးဌာန
လျှပ်စစ်စစ်ဆေးရေးဌာန
အမှတ်-၁၉၂၊ ကမ္ဘာအေးဘုရားလမ်း၊ ဗဟန်းမြို့နယ်၊ ရန်ကုန်မြို့

အကြောင်းအရာ။ **ဒီဇယ်အင်ဂျင်လျှပ်ထုတ်စက် နှစ်ပတ်လည်စစ်ဆေးခြင်း**

၁။ အထက်အကြောင်းအရာပါကိစ္စနှင့်စပ်လျဉ်း၍ အောက်ဖော်ပြပါ ဒီဇယ်အင်ဂျင်လျှပ်ထုတ်စက်ကို (၂၀၂၃-၂၀၂၄) ခု ဘဏ္ဍာရေးနှစ်အတွက် ဤတိုင်းလျှပ်စစ်စစ်ဆေးရေးဌာနမှ (၁၅.၉.၂၀၂၃) ရက်နေ့တွင် စစ်ဆေးခဲ့ပြီးဖြစ်ပါသည်။

၂။ လျှပ်ထုတ်စက် စစ်ဆေးခအတွက် ပေးသွင်းလာသော (၁၉ . ၉ . ၂၀၂၃) ရက်စွဲပါ ချုလန်အမှတ် (၃၆) ကိုလည်းလက်ခံရရှိပြီးကြောင်းပြန်ကြားအပ်ပါသည်။

(က)	လျှပ်ထုတ်စက်ကေဗွီအေ	500 kVA
(ခ)	သတ်မှတ်ဗို့အား	400 V
(ဂ)	လျှပ်ထုတ်စက်အမျိုးအစား	DF-5500F / DCA500PP2 (Denyo)
(ဃ)	လျှပ်ထုတ်စက်နံပါတ်	3903665
(င)	လျှပ်ထုတ်စက်တည်နေရာ	အမှတ် (A/7-2)၊ အမှတ် (၃) လမ်းနှင့် ခရေပင်လမ်းထောင့်၊ မင်္ဂလာဒုံစက်မှုဇုန် ၊ မင်္ဂလာဒုံမြို့နယ်။

တိုင်းလျှပ်စစ်စစ်ဆေးရေးမှူး
(ရန်ကုန်တိုင်းဒေသကြီး)

Mr Masayuki Mizoi

သွေးဖိအားတိုင်းကိရိယာပါလက်ပတ်အပြားထုတ်လုပ်ငန်း(Matsuya R & D (Myanmar) Co.,Ltd)၊

အမှတ် (A / 7 – 2)၊ အမှတ် (၃) လမ်းနှင့် ခရေပင်လမ်းထောင့်၊

မင်္ဂလာဒုံစက်မှုဇုန် ၊ မင်္ဂလာဒုံမြို့နယ်။

ပြည်ထောင်စုသမ္မတမြန်မာနိုင်ငံတော်
စီမံကိန်း၊ ဘဏ္ဍာရေး နှင့် စက်မှုဝန်ကြီးဌာန
စက်မှုကြီးကြပ်ရေးနှင့်စစ်ဆေးရေးဦးစီးဌာန
လျှပ်စစ်စစ်ဆေးရေး
လျှပ်စစ်ဓာတ်အား ထုတ်လုပ်ခြင်း နှင့် အသုံးပြုခြင်းဆိုင်ရာ မှတ်ပုံတင်လက်မှတ်

ခွင့်ပြုမိန့် အမှတ်စဉ် - YD-G (N) ၂၆၃ /၂၀၂၀

၁။ ၂၀၁၄ ခုနှစ် လျှပ်စစ်ဥပဒေပုဒ်မ ၃၂ (c) နှင့် တည်ဆဲလျှပ်စစ်ဥပဒေဆိုင်ရာ လုပ်ထုံးလုပ်နည်းများ အရ Matsuya R & D (Myanmar) Co., Ltd ၏ သွေးဖိအားတိုင်း ကိရိယာပါ လက်ပတ်အပြားများ ထုတ်လုပ်ခြင်းလုပ်ငန်း အတွက် တပ်ဆင်အသုံးပြုလျက်ရှိသော ဒီဇယ်အင်ဂျင် လျှပ်ထုတ်စက် အား အောက်ဖော်ပြပါ နယ်မြေဒေသ အတွင်း မှတ်ပုံတင်လက်မှတ် တွင် ပါရှိသော စည်းကမ်းချက်များ နှင့်အညီ ၂၀၂၀ ပြည့်နှစ် ဧပြီ လ (၃) ရက်နေ့မှစတင်၍ လျှပ်စစ်ဓာတ်အား ထုတ်လုပ်ခြင်းနှင့်အသုံးပြုခြင်းဆိုင်ရာမှတ်ပုံတင်လက်မှတ် ကို သက်တမ်းတိုးမြှင့် ထုတ်ပေးလိုက်သည်-

(က) ခွင့်ပြုသည့်နယ်မြေဒေသ - အမှတ် (A7-2)၊ မင်္ဂလာဒုံစက်မှုဇုန်၊
မြို့နယ် - မင်္ဂလာဒုံမြို့နယ်
တိုင်း - ရန်ကုန်တိုင်းဒေသကြီး
(ခ) အများဆုံးထုတ်လုပ်သည့် ဓာတ်အားပမာဏ - 500kVA
(ဂ) သတ်မှတ်ဗို့အား - 400 V
(ဃ) လျှပ်ထုတ်စက်အမျိုးအစား - DF-5500F/ DCA500PP2 (DENYO)
(c) လျှပ်ထုတ်စက်နံပါတ် - 3903665
(စ) အင်ဂျင်အမျိုးအစား - 2506A-E15TAG2 (DENYO)
(ဆ) အင်ဂျင်မြင်းကောင်ရေ - 583 HP
(ဇ) အင်ဂျင်နံပါတ် - -

၂။ ဓာတ်အားထုတ်လုပ်ခြင်း နှင့် အသုံးပြုခြင်းတို့အတွက် အသုံးပြုသော လျှပ်စစ်ပစ္စည်းကိရိယာ တည်ဆောက်မှုဆိုင်ရာ နည်းစနစ်များသည် လျှပ်စစ်ဥပဒေဆိုင်ရာ လုပ်ထုံးလုပ်နည်းများပါ ပြဋ္ဌာန်းချက်များ အရမည့်အပြင် စစ်ဆေးရေးမှူး ၏ စစ်ဆေးစမ်းသပ်ခြင်းကို ခံယူရပါမည်။

၃။ လျှပ်စစ်ဥပဒေဆိုင်ရာ လုပ်ထုံးလုပ်နည်းပါ ပြဋ္ဌာန်းချက်များကို တိကျစွာ လိုက်နာ ဆောင်ရွက်ရမည်။

၄။ လျှပ်စစ်ဥပဒေဆိုင်ရာလုပ်ထုံးလုပ်နည်းများနှင့် ဤလက်မှတ်တွင်ပါရှိသော အကြောင်းအရာများ ကို လိုက်နာခြင်း မရှိပါက ထုတ်ပေးထားသော လက်မှတ်ကို ပြန်လည်ရုတ်သိမ်းမည်။

၅။ ဤမှတ်ပုံတင်လက်မှတ် သက်တမ်းသည် ခွင့်ပြုသည့်နေ့မှစ၍ (၄) နှစ် အချိန်ကာလ အတွင်းသာ အကျိုးသက်ရောက် စေရမည်။

စတင်ခွင့်ပြုသည့်နေ့ - ၂ . ၄ .၂၀၂၀
ကုန်ဆုံးသည့်နေ့ - ၃ . ၄ .၂၀၂၄

လျှပ်စစ်စစ်ဆေးရေးမှူးချုပ် (
ရန်ကုန်တိုင်းဒေသကြီး လျှပ်စစ်စစ်ဆေးရေးမှူး

Private Industrial Work Registration Certificate

ပြည်ထောင်စုသမ္မတမြန်မာနိုင်ငံတော်အစိုးရ

စက်မှုဝန်ကြီးဌာန

စက်မှုကြီးကြပ်ရေးနှင့်စစ်ဆေးရေးဦးစီးဌာန

ပုဂ္ဂလိကစက်မှုလုပ်ငန်းမှတ်ပုံတင်လက်မှတ်

စက်မှုမှတ်ပုံတင်အမှတ် ရက/ကြီး/၄၂၆၀ ရက်စွဲ ၁၉ . ၅. ၂၀၁၆

လုပ်ငန်းအရွယ်အစား အကြီးစား ပြည်ထောင်စုနယ်မြေ/တိုင်းဒေသကြီး/ပြည်နယ် ရန်ကုန်

အောက်ပါလုပ်ငန်းသည် ပုဂ္ဂလိကစက်မှုလုပ်ငန်း ဥပဒေ ပုဒ်မ ၇ ပုဒ်မခွဲ (ဂ)အရ မှတ်ပုံတင်ပြီး ဖြစ်ပါသည်။

Matsuya R & D (Myanmar) Co., Ltd. CMP စနစ် သွေးဖိအားတိုင်းကိရိယာပါ

၁။ လုပ်ငန်းအမည် လက်ပတ်အပြားထုတ်လုပ်ခြင်းလုပ်ငန်း

၂။ လုပ်ငန်းအမျိုးအမည် လူသုံးပစ္စည်းလုပ်ငန်း

၃။ အဓိကကုန်ချောပစ္စည်းအမျိုးအမည် CR 24 သွေးဖိအားတိုင်းလက်ပတ်အပြား

၄။ တည်နေရာလိပ်စာ အမှတ်(A7-2)၊ (၃)လမ်း၊ မင်္ဂလာဒုံစက်မူဇုန်၊ မင်္ဂလာဒုံမြို့နယ်၊ မြောက်ပိုင်းခရိုင်

၅။ ပိုင်ဆိုင်မှုအမျိုးအစား ကုမ္ပဏီပိုင်

၆။ လုပ်ငန်းရှင်အမည် Mr.Masayuki Mizoi (G.M)

၇။ ကိုင်ဆောင်သည့်မှတ်ပုံတင်အမှတ် PP No.TZ-0640416

၈။ ရင်းနှီးမြှုပ်နှံမှုတန်ဖိုး(ကျပ်) ၂၀. ၁၁၁သန်း+USD ၀. ၈၁၂သန်း တည်ထောင်သည့်ခုနှစ် ၂၀၁၆

၉။ အသုံးပြုသည့်အားအမျိုးအစား ထရန်စဖော်မာ/လျှပ်ထုတ်စက် မြင်းကောင်ရေ ၉၇. ၃၂ HP/ ၆၆ ဦး ၅၀၀ KVA

၁၀။ အလုပ်သမားဦးရေ

၁၁။ မှတ်ပုံတင်သက်တမ်းကုန်ဆုံးသည့်နေ့ရက် ၃၁. ၅. ၂၀၁၇

အေးအေးဝင်း

ညွှန်ကြားရေးမှူးချုပ်

လုပ်ငန်းရှင်များလိုက်နာရန်စည်းကမ်းချက်များ

၁။ ဤမှတ်ပုံတင်လက်မှတ်ကို အများမြင်သာသည့်နေရာတွင် ချိတ်ဆွဲထားရမည်။

၂။ ဤမှတ်ပုံတင်လက်မှတ်ကို မသက်ဆိုင်သူအား လွှဲအပ်ခြင်း သို့မဟုတ် လွှဲပြောင်းပေးခြင်းမပြုရ။

၃။ ဤမှတ်ပုံတင်လက်မှတ်ပါ အချက်အလက်များကို ပြင်ဆင်ခြင်း သို့မဟုတ် ဖြည့်စွက်ခြင်းမပြုရ။

၄။ ဤမှတ်ပုံတင်လက်မှတ် ပျောက်ဆုံးလျှင် မှတ်ပုံတင်လက်မှတ်မိတ္တူကို ထုတ်ပေးရန် ပြည်ထောင်စုနယ်မြေ သို့မဟုတ် တိုင်းဒေသကြီး သို့မဟုတ် ပြည်နယ်ဦးစီးဌာနမှူးထံ ခိုင်လုံသော အထောက်အထားနှင့်အတူ လျှောက်ထားရမည်။

၅။ မှတ်ပုံတင်လက်မှတ်ပျက်စီးလျှင် သို့မဟုတ် မထင်မရှားဖြစ်လျှင် သို့မဟုတ် မှတ်ပုံတင်လက်မှတ် ပါ အချက်အလက်များ ပြောင်းလဲရန်လိုအပ်လျှင် ပြည်ထောင်စုနယ်မြေ သို့မဟုတ် တိုင်းဒေသကြီး သို့မဟုတ် ပြည်နယ်ဦးစီးဌာနမှူးထံ မှတ်ပုံတင်လက်မှတ်နှင့် ပူးတွဲတင်ပြလျှောက်ထားရမည်။

၆။ ဤမှတ်ပုံတင်လက်မှတ်ကို စက်မှုလုပ်ငန်းနှင့်စပ်လျဉ်းသည့်ကိစ္စမှအပ မည်သည့်ကိစ္စတွင်မျှ အသုံးမပြုရ။

၇။ မှတ်ပုံတင်သက်တမ်းမကုန်ဆုံးမီ သက်တမ်းတိုးမြှင့်ပေးရန် လျှောက်ထားရာတွင် ဤမှတ်ပုံတင်လက်မှတ်ကို ပူးတွဲတင်ပြရမည်။

၈။ သက်တမ်းကုန်ဆုံးပြီး ရက်ပေါင်း (၆၀)အတွင်း သက်တမ်းတိုးမြှင့်လျှောက်ထားပါက သတ်မှတ်သည့် ဒဏ်ကြေးကို ပေးဆောင်ရမည်။

၉။ သက်တမ်းတိုးမြှင့်ရန် လျှောက်ထားခြင်းမရှိပါက မှတ်ပုံတင်ပျက်ပြယ်ပြီးဖြစ်သည်။

မှတ်ပုံတင်သက်တမ်းတိုးမြှင့်ခြင်း

စဉ်	ချုပ်နှံအမှတ်/ရက်စွဲ	မှတ်ပုံတင်သက်တမ်းကုန်ဆုံးမည့်နေ့ရက်	ခွင့်ပြုသူလက်မှတ်
၁	၁၁၁/၁၆.၅.၁၇	၃၁.၅.၁၈ ဒုတိုင်းဒေသကြီး/ပြည်နယ်ဦးစီးဌာနမှူး	
၂	၈/၁၅၅.၅.၁၈	၃၁.၅.၂၀၁၉	
၃	၃၈၊ ၁၁.၅.၁၉	၃၁.၅.၂၀၂၀	
၄	၁၈၅၊ ၁၅.၅.၂၀	၃၁.၅.၂၀၂၁	
၅	၁၂/၁၉.၅.၂၁	၃၁.၅.၂၀၂၂	
၆	၆၉၂/၄.၅.၂၂	၃၁.၅.၂၀၂၃	
၇	၁/၂၆၁၁၇.၅.၂၃	၃၁.၅.၂၀၂၄	

Business License

ပြည်ထောင်စုသမ္မတမြန်မာနိုင်ငံတော်
ရန်ကုန်တိုင်းဒေသကြီးအစိုးရ
ရန်ကုန်မြို့တော်စည်ပင်သာယာရေးကော်မတီ
စီမံရေးရာဌာန

၃၁၃၉၂၀၁၀၈

(၂၀၂၃/၂၀၂၄) ဘဏ္ဍာနှစ်
လုပ်ငန်းလိုင်စင်

(စက်ရုံ၊ အလုပ်ရုံ၊ သိုလှောင်ရုံသုံးစွဲရန် အထောက်အကူပစ္စည်းထုတ်လုပ်ခြင်း၊ ရောင်းချခြင်း၊ တည်ခင်းခြင်း၊ ဖြန့်ဖြူးခြင်း၊ ဝန်ဆောင်မှုလုပ်ငန်း၊ အခြားလုပ်ငန်း)

ရန်ကုန်မြို့တော်စည်ပင်သာယာရေးကော်မတီ၊ စီမံခန့်ခွဲရေးဆိုင်ရာ နည်းဥပဒေ၊ အခန်း (၂) နည်းဥပဒေ ၃(စ)အရ အောက်အမည်ပါသူတို့အား လိုင်စင်နှုန်း **၁၀၀၀၀၀၀/- ကျပ်** (စာဖြင့်၊ ကျပ် **တစ်ဆယ်သိန်းတိတိ**) ပေးသွင်းစေပြီး **မင်္ဂလာဒုံ** မြို့နယ်၊ **မင်္ဂလာဒုံစက်မှုဇုန်**ရပ်ကွက် ၊ **အမှတ်(၃)** လမ်း ၊ အမှတ် **A/7-2**၊ အခန်းအမှတ် - တွင် **Matsuya R & D Myanmar Co.,Ltd** အမည်ပါ **CMP စနစ်ဖြင့်သွေးဖိအားတိုင်းကိရိယာပါလက်ပတ်ပြားထုတ်လုပ်ခြင်း** ဆိုင်/လုပ်ငန်းအား လုပ်ကိုင်ခွင့်ပြု၍ ဤလုပ်ငန်းလိုင်စင်ကို ထုတ်ပေးလိုက်သည်။

စဉ်	အမည်	နိုင်ငံသားစိစစ်ရေး ကတ်ပြားအမှတ်	လိပ်စာ
၁။	Mr.Masayuki Mizoi	TZ1317387	A/7-2၊ အမှတ်(၃)လမ်း၊ မင်္ဂလာဒုံစက်မှုဇုန်၊ မင်္ဂလာဒုံမြို့နယ်

ဤလုပ်ငန်းလိုင်စင်သည် **၂၀၂၄ခုနှစ် မတ်လ ၃၁** ရက်နေ့တွင် သက်တမ်းကုန်ဆုံးသည်။

ဤလုပ်ငန်းလိုင်စင်အား မြင်သာသောနေရာတွင် မှန်ဘောင်ဖြင့် ချိတ်ဆွဲထားရမည်။

ဌာနမှူး (ကိုယ်စား)

*ပူးတွဲပါလိုင်စင်စည်းကမ်းများအား လိုက်နာဆောင်ရွက်ရမည်။

လုပ်ငန်းလုပ်ကိုင်ခွင့်ရရှိသူလိုက်နာရန် စည်းကမ်းချက် ညွှန်ကြားချက်များ

၁။ လုပ်ငန်းလုပ်ကိုင်ခွင့်ရရှိသူသည် လုပ်ငန်းတည်နေရာ ပတ်ဝန်းကျင်ရှိ အများပြည်သူအား လုပ်ငန်းနှင့် ပတ်သက်၍ အနှောင့်အယှက်တစ်စုံတစ်ရာ မဖြစ်ပေါ်စေရ။ လုပ်ငန်းကို ခွင့်ပြုသည့် ဥပစာအတွင်း၌သာ ဆောင်ရွက်ရမည်။

၂။ လုပ်ငန်းလိုင်စင်သည် ပိုင်ဆိုင်မှု အရှုပ်အရှင်း ပုဂ္ဂိုလ်ရေးအရ ကန့်ကွက်မှုများနှင့် မသက်ဆိုင်စေရ။

၃။ လုပ်ငန်းလုပ်ကိုင်ခွင့်ရရှိသူသည် ပြဋ္ဌာန်းထားသော တည်ဆဲဥပဒေ၊ နည်းဥပဒေ၊ အမိန့်ညွှန်ကြားချက်များ အုပ်ချုပ်ရေးအဖွဲ့အစည်းများ၏ အခါအားလျော်စွာ ထုတ်ပြန်သည့် အမိန့်ညွှန်ကြားချက်များနှင့် ဝန်ကြီးဌာန အသီးသီးက ထုတ်ပြန်သည့် အမိန့်ညွှန်ကြားချက်များ၊ စည်းမျဉ်းစည်းကမ်း လုပ်ထုံးလုပ်နည်းများကို တိကျစွာ လိုက်နာရမည်။

၄။ ဝန်ကြီးဌာနနှင့် အုပ်ချုပ်ရေးအဖွဲ့အစည်းအသီးသီး၏ ဥပဒေပြဋ္ဌာန်းချက်များနှင့် အကျုံးဝင်သည့် လုပ်ငန်းများ လုပ်ကိုင်ခြင်းအတွက် ယင်းဌာနနှင့် အဖွဲ့အစည်းများ၏ မှတ်ပုံတင်/ ခွင့်ပြုချက်ကို လက်ဝယ်ရယူထားရမည်။

၅။ လုပ်ငန်းလုပ်ကိုင်ခွင့်ရရှိသူသည် ကော်မတီက ညွှန်ကြားသည့် သောက်/သုံးရေထားရှိမှု အစီအမံများ၊ သန့်ရှင်းရေးဆောင်ရွက်ရန်အတွက် အစီအမံများ၊ အညစ်အကြေးစွန့်ပစ်မှုနှင့် ပတ်ဝန်းကျင်ထိခိုက်မှုမဖြစ်စေရေး အစီအမံများ၊ မြို့တော်သာယာလှပရေးနှင့် လုံခြုံရေးအတွက် အစီအမံများ အလုပ်သမားများ/လာရောက် ရောင်းဝယ်သူများအတွက် ကျန်းမာမှုနှင့် ဘေးအန္တရာယ်ကင်းရှင်းရေး အစီအမံများ၊ ယာဉ်/လူသွားလမ်းပိတ်ဆို့မှု မရှိစေရေးအစီ အမံများ၊ မီးဘေးကြိုတင်ကာကွယ်ရေး အစီအမံများကို ထားရှိ၍ တိကျစွာလိုက်နာရမည်။

၆။ ကုန်ကြမ်းအဖြစ်အသုံးပြုသော ထုတ်လုပ်သော၊ သိုလှောင်သော၊ တည်ခင်းဖြန့်ဖြူးသော၊ ပစ္စည်းသည် သက်ဆိုင်ရာ ဝန်ကြီးဌာန/အဖွဲ့အစည်းများက သတ်မှတ်ထားသည့် စံချိန် စံညွှန်းနှင့် ကိုက်ညီသည့် ပစ္စည်းများဖြစ်ရမည့်အပြင် ကိုင်တွယ်အသုံးပြု စားသုံးသူများအတွက် ကျန်းမာရေးနှင့်ညီညွတ်ရမည့် သို့မဟုတ် ဘေးအန္တရာယ်ကင်းရှင်းရေး အစီအမံများဖြင့် စီစဉ် ဆောင်ရွက်ပြီးဖြစ်ရမည်။

၇။ လိုင်စင်ခွင့်ပြုထားသော လုပ်ငန်းကို လိုအပ်သည့်အခါ အချိန်နှင့်တစ်ပြေးညီဝင်ရောက် စစ်ဆေးခြင်းကို လက်ခံရမည်။ ယင်းအပြင် လုပ်ငန်းတာဝန်ခံကိုယ်တိုင်က လုပ်ငန်း ဆောင်ရွက်ထားရှိမှုကို ရှင်းပြရမည်။

၈။ လိုင်စင်ခွင့်ပြုထားသော လုပ်ငန်းအား လိုအပ်ချက်အရ ပြောင်းရွှေ့ဖယ်ရှားပေးရန် ညွှန်ကြားပါက သတ်မှတ် ညွှန်ကြားချက်အတိုင်း တိကျစွာလိုက်နာရမည်။

၉။ လုပ်ငန်းများ ပိတ်သိမ်းခြင်း၊ ယာယီပိတ်သိမ်းခြင်း၊ အမြဲတမ်းပိတ်သိမ်း ဆောင်ရွက်မည်ဆိုပါက သက်ဆိုင်ရာ မြို့နယ်စည်ပင်သာယာအုပ်ချုပ်ရေးမှူးရုံးသို့ ကြိုတင်၍ မပျက်မကွက်စာဖြင့် အကြောင်းကြားသွားရမည်။

၁၀။ အထက်ပါ သတ်မှတ်ချက်တစ်စုံတစ်ရာကို ဖောက်ဖျက်ကျူးလွန်ပါက သို့မဟုတ် လိုက်နာရန် ပျက်ကွက်ပါက ဒဏ်ကြေးငွေတပ်ရိုက်ခြင်း၊ လုပ်ငန်းလိုင်စင်အား ကာလအကန့် အသတ်ဖြင့် ရုပ်သိမ်းခြင်း၊ ပိတ်သိမ်းခြင်း၊ ပယ်ဖျက်ခြင်းစသည့် စီမံခန့်ခွဲမှုပြစ်ဒဏ်ကို ခံရမည်။ လိုအပ်ပါက ဥပဒေအရ အရေးယူခြင်းခံရမည်။ လုပ်ငန်း ပိတ်သိမ်းသည့် ပြစ်ဒဏ်ခံယူစဉ် ကာလအတွင်း အလုပ်သမားများအတွက် ကိစ္စအဝဝသည် လုပ်ငန်းလုပ်ကိုင်ခွင့် ရရှိသူနှင့်သာ သက်ဆိုင်စေရမည်။

Fire Safety Certificate

ပြည်ထောင်စုသမ္မတမြန်မာနိုင်ငံတော်အစိုးရ

ပြည်ထဲရေးဝန်ကြီးဌာန

မီးသတ်ဦးစီးဌာန

မီးဘေးလုံခြုံရေးစစ်ဆေးထောက်ခံချက်

အမှတ်စဉ်(၁၅၃)

ရက် ၆၊ ၂၀၂၃ ခုနှစ်၊ မတ်လ ၂၄ ရက်

၁။ ရန်ကုန် တိုင်းဒေသကြီး/ပြည်နယ်၊ မင်္ဂလာဒုံ မြို့နယ်၊ မင်္ဂလာဒုံစက်မှုဇုန် ရပ်ကွက်/ကျေးရွာ၊ (-) လမ်း၊ အမှတ် (အေ-၇-၂) ရှိ ပိုင်ရှင် ဦး/ဒေါ် Matsuya R & D (Myanmar) Co.,Ltd. ၏ Steel Structure (၁) ထပ် (သွေးပေါင်ချိန်စက်လက်ပတ်စက်ရုံ) အဆောက်အဦအတွက် ဤဌာန၏ (၁၇-၅-၂၀၁၅) ရက်စွဲပါစာအမှတ်၊ ၄၅၇ / ၁၀၀ / ၅၂ / ဦး ၁ ဖြင့် သတ်မှတ်ပေးထားသည့် မီးဘေးလုံခြုံရေးဆိုင်ရာပြဋ္ဌာန်းချက်များအား (၂၁-၁-၂၀၂၃) ရက်နေ့တွင်စစ်ဆေးသည့်အခါ ပြည့်စုံစွာ ဆောင်ရွက်ထားကြောင်း စစ်ဆေးတွေ့ရှိရသည်။

၂။ ဤထောက်ခံချက်သည် စစ်ဆေးသည့်နေ့မှစ၍ (၃)နှစ်အထိသာ အကျုံးဝင်သည်။

၃။ ထို့ပြင် မီးသတ်ဦးစီးဌာနမှ အခါအားလျော်စွာ ထပ်မံစစ်ဆေးချိန်တွင် မီးဘေးလုံခြုံရေးဆိုင်ရာ ပြဋ္ဌာန်းချက်များကို လိုက်နာဆောင်ရွက်ခြင်းမရှိပါက ဤထောက်ခံချက်ကို ပြန်လည်ရုတ်သိမ်းသွားမည်ဖြစ်ပြီး အဆောက်အဦအား အသုံးပြုသူ(သို့မဟုတ်)ပိုင်ရှင်သည် မြန်မာနိုင်ငံမီးသတ်တပ်ဖွဲ့ဥပဒေအရအရေးယူခြင်းခံရမည်။

မှတ်ချက်။ ဤထောက်ခံချက်အား လွှဲပြောင်းသုံးစွဲခြင်းမပြုရ။ အဆောက်အဦအား မူလရည်ရွယ်ချက်မှ ပြောင်းလဲအသုံးပြုပါက ထောက်ခံချက်အသစ် ထပ်မံလျှောက်ထားရမည်။

RENEWAL

ဗိုလ်မှူးချုပ်(ကိုယ်စား)

(သိန်းထွန်းဦး၊ ညွှန်ကြားရေးမှူး)

FSC(Way Lin)

APPENDIX C
Environmental Monitoring Result

Noise Results for Outdoor and Indoor Area

MYANWEI
ENVIRONMENTAL SOLUTIONS
No. (28), Myay Nu Street, Sanchaung Township, Yangon Region, The Republic of the Union of Myanmar.
Office: (+95) 9777922169, (+95) 9777929885 Mobile: (+95) 9421137569; Website: www.myanweiconsulting.com

Project Name:	Matsuya R&D (Myanmar) Company Limited
Project Location:	Plot No. A 7-2, Mingalardon Industrial Park, Mingalardon Township, Yangon Region.
Sampling Date:	22nd December,2023
Sampling Time:	24 hrs
Sampling Condition:	Good
Sampling By:	Environmental Team Represented by Myanwei Environmental Solutions Company Limited

Instrument	Type	Sampling Rate	Location
Digital Sound Level Meter	GM 1356 USB	30 -130 dB	(1) 16°56'30.50"N, 96° 9'13.54"E (Beside the portico-2) (2) 16°56'31.99"N, 96°9'14.09"E (sewing area)

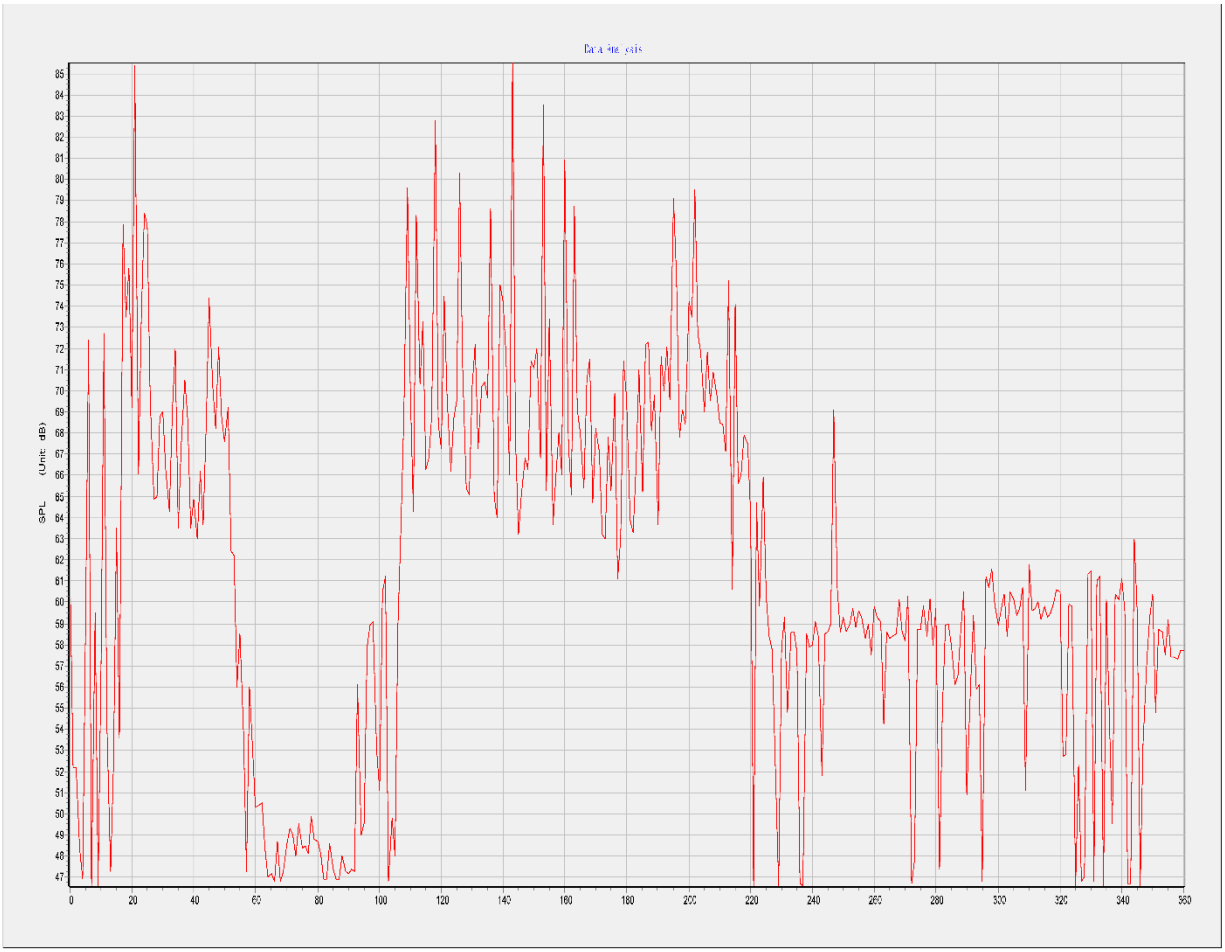
No	Place	Unit	Result	Standard	Remark
1	Outdoor Area	dBA	61.2	70 dBA	Under
2	Operation Area (Sewing Line)	dBA	58.04	70 dBA	Under

National Environmental Quality (Emission) Guideline

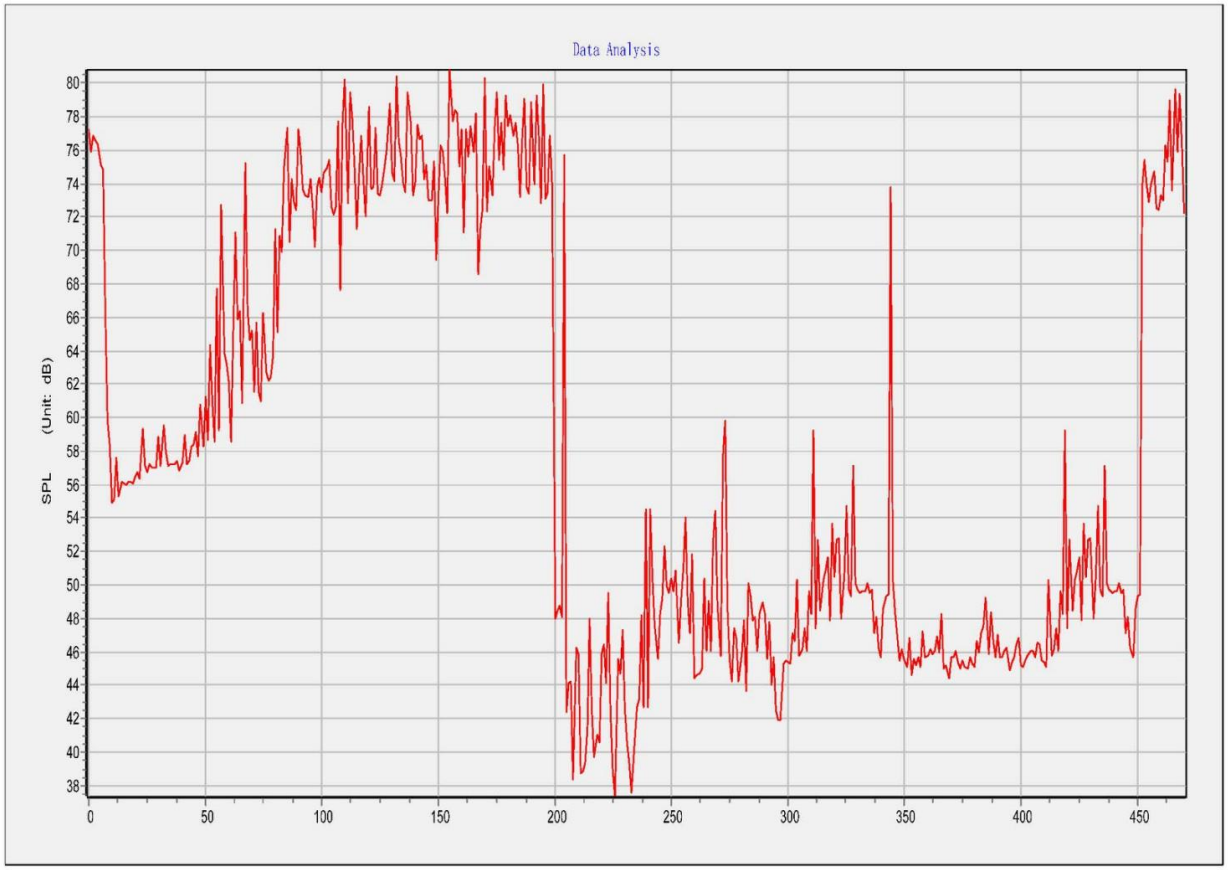
Receptor	One Hour Laeq (dBA)	Guideline value
	Daytime	Nighttime
	7:00 – 22:00 (10:00 – 22:00 for Public holidays)	22:00 – 07:00 (22:00 – 10:00 for Public holidays)
Residential, Institutional, Educational	55	45
Industrial, Commercial	70	70

LIN HTET SEIN
DIRECTOR
MYANWEI ENVIRONMENTAL SOLUTIONS COMPANY LIMITED.

Noise Monitoring Graph for Outdoor Area



Noise Monitoring Graph for Indoor Area (Sewing Line)



Outdoor Air Quality Result

MYANWEI ENVIRONMENTAL SOLUTIONS
No. (28), Myay Nu Street, Sanchaung Township, Yangon Region, The Republic of the Union of Myanmar.
Office: (+95) 9777922169, (+95) 9777929885 Mobile: (+95) 9421137569; Website: www.myanweiconsulting .com

Project Name:	Matsuya R&D (Myanmar) Company Limited
Project Location:	Plot No. A 7-2, Mingalardon Industrial Park, Mingalardon Township, Yangon Region.
Sampling Date:	22nd December, 2023
Sampling Time:	11:00 am to 11:00 am
Sampling Condition:	Good
Sampling By:	Environmental Team Represented by Myanwei Environmental Solutions Company Limited

Instrument	Type	Sampling Rate	Location
OCEANUS-AQM-09	PM, O_3, NO_2, SO_2, CO Detector	0-999.9 (µg/M^3)	Outdoor Area 16°56'30.48"N, 96° 9'13.54"E

National Environmental Quality (Emission) Guideline

Parameter	Averaging period	Guideline value	Unit
PM 10[a]	1-year 24-hour	20 50	(µg/M^3)
PM 2.5[a]	1-year 24-hour	10 25	(µg/M^3)
O_3[a]	8-hour	100	(µg/M^3)
NO_2[a]	1-year 1-hour	40 200	(µg/M^3)
SO_2[a]	24-hour 10-min	20 500	(µg/M^3)
CO[b]	15-min 30-min 1-hour 8-hour	100 60 30 10	(µg/M^3)

a. Values from air quality guidelines-global update 2005: particulate matter, ozone, nitrogen dioxide and sulfur dioxide.
b. Values from air quality guidelines for Europe, 2nd edition.

Monitoring Result

Parameters	Observed value	Guideline value	Unit	Organization	Period
Air Quality Measurement					
PM_{10}	16.1	50	µg/m^3	NEQEGs	24 hours
$PM_{2.5}$	10.8	25	µg/m^3	NEQEGs	24 hours

SO_2	1.31	500	$\mu g/m^3$	NEQEGs	10 mins
NO_2	19.06	200	$\mu g/m^3$	NEQEGs	1 hours
CO	0.34	10	$\mu g/m^3$	NEQEGs	8 hours
CO_2	1	NG	ppm	-	-
O_3	3.26	100	$\mu g/m^3$	NEQEGs	8 hours
TSP	20.36	NG	$\mu g/m^3$	-	-
VOC	49.3	NG	$\mu g/m^3$	-	-

NG- No Guideline

LIN HTET SEIN
DIRECTOR
MYANWEI ENVIRONMENTAL SOLUTIONS
COMPANY LIMITED.

Light Result

MYANWEI
ENVIRONMENTAL SOLUTIONS
No. (28), Myay Nu Street, Sanchaung Township, Yangon Region, The Republic of the Union of Myanmar.
Office: (+95) 9777922169, (+95) 9777929885 Mobile: (+95) 9421137569; Website: www.myanweiconsulting.com

Project Name:	Matsuya R&D (Myanmar) Company Limited
Project Location:	Plot No. A 7-2, Mingalardon Industrial Park, Mingalardon Township, Yangon Region.
Sampling Date:	22nd December,2023
Sampling Time:	11:00 am to 5:00 pm
Sampling Condition:	Normal
Sampling By:	Environmental Team Represented by Myanwei Environmental Solutions Company Limited

Instrument	Type	Sampling Rate	Location
Uni-T (Luminometer)	UT380 Series	100 times/second	16°56'31.59"N, 96°09'13.82"E

No	Measure area	Unit	Result	Standard	Remark
1	Warehouse	Lux	119.5	300	Below
2	Cutting Area	Lux	346	1000	Below
3	Printing Area	Lux	916	300	Above
4	Sewing Area	Lux	634	400	Above
5	Quality Control	Lux	1170	900-1500	Normal

IESNA Lighting Handbook

Department	Type of Light	Wattage of Light	Lux Level
Fabric store	Fluorescent tube light	40 W	300
Sewing floor	LED tube light	20 W (T8)	400
Cutting floor	LED tube light	22 W (T8)	1000
Finishing	LED tube light	28 W (T8)	600
Inspection points	LED tube light	28 W (T8)	900 (except 1500 at audit tables)
Sampling	LED tube light	22 W (T8)	500
Office areas	Fluorescent tube light	36 W (T)	300

LIN HTET SEIN
DIRECTOR
MYANWEI ENVIRONMENTAL SOLUTIONS
COMPANY LIMITED.

Water Quality (Drinking Water Quality)

SciSpec Testing Services

SCI SPEC Testing Services Company Limited
No.545, 1st Floor, Lower KyeeMyinDaing Road,
Ahlone Township, Yangon. Tel: +951 822 8025
Help Line: +959 421 212 123
Email: contact@scispec.com.mm

Certificate of Analysis

Customer's name : Jasmine Purified Drinking Water Contact No. : 09- 765491751

Address : No.526, Myo Shaung Street, Hmaw Di, Yangon.

Brand name : Jasmine Report No. : SSL/M/393/2023

Type of Sample : Purified Drinking Water Lab sample code : SCN/2023/501

Lot No. : Received Date : 23.08.2023

Manufacture Date : Analysis Date : 23.08.2023

Expire Date : 19.08.24 16:02 Report Date : 28.08.2023

Physical finding : 1 Liter clear color liquid in PET bottle.

No.	Test Parameter	Result	Method
1	Heterotrophic Plate Count	<10 CFU/ml	AQHC Method Equivalent to ISO 6222
2	Total Coliforms	0 CFU/100 ml	ISO 9308-1:2014

Analyst

28.8.2023

Phu Pwint Htun

Analyst

Approved by

28.8.23

Dr. Khin Nyein Aye

Laboratory Manager

ပြည်ထောင်စုသမ္မတမြန်မာနိုင်ငံတော်
မြန်မာနိုင်ငံလုံးဆိုင်ရာမော်လဝီအဖွဲ့ချုပ် (ဗဟို)

Established 1935

جماعة علماء الحق (المكتب الرئيسي) يانغون جمهورية اتحاد ميانمار

ALL MYANMAR MOULVI ORGANIZATION (ULAMA AL HAQE) (H.Q) REPUBLIC OF THE UNION OF MYANMAR

HALAL

حلال

(HALAL) CERTIFICATE OF RECOMMENDATION THAT MUSLIMS ARE ABLE TO EAT

Produced with the liability and responsibility of **DAW PHYU PHYU SHAIN** ,The holder of N.R.C No.-9/ MaHtaLa(Naing)201615. The person director of "Jasmine Myanmar Manufacturing Co.,Ltd" Which is located at No.(526),Myo Shaung Road, Ye Su Taung Ward,Mingalardone Township, Yangon Division, Myanmar.

Jasmine

Purified Drinking Water

Accoding to the scruntinization and discovery of finding to the place or location where the mentioned items are produced, having gone on a field trips by All Myanmar Moulvi Organization (Ulama Al Haque)(H.Q) Republic of the Union of Myamar, Accredited by the government."(HALAL) Certificate of recommendation that Musims are able to eat " has been issued by this Organization (Central);As the Mentioned items (Halal) are the ones that the muslims are able to eat.

Remark : This certificate of recommendation lasts from (31 - 3 - 2022) to (30 - 3 - 2023). In case the tenure expires, it must be re-examined and applied for the extention of the tenure.

Letter No :	005/22/Halal(MaLaWa-BaHa)
Date	: (1 - 4 - 2022)

General Secretary
Haji U Chit Swe
(B.A(History))

President
Alhaj Mufti Saeedullah @ U Sein Hla
(Mazaheri)

Water Quality (Domestic Wastewater Quality Test)

ALARM Ecological Laboratory

Water Testing Result Report

Report Number: EL-WR-23-02283 Date: December 29, 2023

Client Information

Client Name	:	Matsuya R&D (Myanmar) Company Limited
Organization	:	Myanwei
Client ID	:	–
Registration Date & Time	:	22.12.2023; 2.40 PM
Contact	:	09-68883113
Email	:	env@myanweiconsulting.com
Testing Purpose	:	–

Sample Information

Sample ID	:	10454
Sample Name	:	Domestic Waste Water
Sample Type / Source	:	Drainage
Sampling Date & Time	:	22.12.2023; 10.20 AM
Sample Location	:	Mingaladon Tsp
Latitude	:	–
Longitude	:	–

Testing Results

This laboratory analysis report is based solely on the sample submitted by the client unless client took our sampling service.

This report shall not be reproduced except in full, without written approval of the laboratory

Sr.	Quality Parameters	Results	Units	Emission Standard	Remarks
1	pH[1]	7	S.U	6.0 – 9.0[d]	Normal
2	Temperature[2]	29.6	°C	±3*[d]	-
3	Colour[3]	11	HU	-	-
4	TSS[3]	14	mg/L	≤50[d]	Normal
5	BOD_5[6]	7	mg/L	≤ 50[d]	Normal
6	COD[3]	34	mg/L	≤ 250[d]	Normal
7	Oil & Grease[9]	5	mg/L	≤ 10[d]	Normal

"ND" = Not Detected "LOD" = Lower limit of detection " – " = No Reference Standard

Tested by	Checked by	Approved by
Daw May Myat Khine Lab. Technician II Ecological Laboratory ALARM	Daw Lin Myat Myat Aung Lab. Technician I Ecological Laboratory ALARM	Dr. Aye Aye Win Laboratory In Charge Ecological Laboratory (ALARM)

No.237,Corner of Shu Khin Thar Street & 7 Street, (3) Block, South Oakkalapa Township,Yangon.
Tel: 09-407496078, Email: aelab.2022@gmail.com

APPENDIX D
Material Safety Data Sheet of Chemicals

QC Ink Black

File No. TPQC302 Creation Date : November 22,2017

SAFETY DATA SHEET

1.CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME	: QC INK BLACK
COMPANY	: TSUKINEKO CO., LTD.
ADDRESS	: 5F SUEHIRO JF BLDG., 5-1-5, SOTOKANDA, CHIYODA-KU, TOKYO, 101-0021 JAPAN
TELEPHONE NO.	: +81-3-3834-1080

2.HAZARDS IDENTIFICATION

GHS Classification

Physical hazards

Flammable liquid	: Category 3

Health hazards

Acute toxicity (Oral)	: Category 5
Acute toxicity (Dermal)	: Category 5
Acute toxicity (Inhalation)	: Category 4
Skin corrosion/irritation	: Category 2
Serious eye damage/eye irritation	: Category 1
Reproductive toxicity	: Category 1B
Specific target organ toxicity-single exposure	: Category 1(liver, kidney, central nervous system, testis) Category 3(respiratory tract irritation, narcotic effects)
Specific target organ toxicity-repeated exposure	: Category 1(hematopoietic system, central nervous system, auditory system, testis)

Environmental hazards

Acute toxicity to the aquatic environment	: Category 2
Chronic toxicity to the aquatic environment	: Category 2

Label

Signal word	: Danger
Hazard pictogram	
Hazard statement	: Flammable liquid and vapor. : May be harmful if swallowed. : May be harmful in contact with skin.

	: Harmful if inhaled.
	: Causes skin irritation.
	: Causes serious eye damage.
	: May damage fertility or the unborn child.
	: Causes damages to organs: liver, kidney, central nervous system, testis.
	: May cause respiratory irritation.
	: May cause drowsiness or dizziness.
	: Causes damages to organs through prolonged or exposure: hematopoietic system, central nervous system, auditory system, testis.
	: Toxic to aquatic life.
	: Toxic to aquatic life with long lasting effects.
Precautionary statement	
Prevention	: Do not handle until all safety precautions have been read and understood.
	: Keep away from heat/sparks/open flames/hot surfaces.-No smoking.
	: Keep container tightly closed.
	: Use explosion-proof electrical/ventilation/lighting equipment. Take precautionary measures against ignition by the static discharge and the spark.
	: Do not breathe.
	: Use only outdoors or in a well-ventilated area.
	: Do not eat, drink or smoke when using this product.
	: Wash hands thoroughly after handling.
	: Wear protective gloves/eye protection/face protection.
Response	: If inhaled: Remove victim to fresh air and keep at rest in a position comfortable for breathing. Call a poison center or doctor/physician if you feel unwell.
	: If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
	: If eye irritation persists: Get medical advice/attention.
	: If on skin (or hair): Remove/take off immediately all contaminated clothing. Rinse skin with water/shower.
	: If skin irritation occurs: Get medical advice/attention.
	: If exposed or concerned: Get medical advice/attention.
Storage	: Store in a well-ventilated place. Keep cool.
	: Store locked up.

Disposal	: Dispose of contest/container through a waste management company authorized by the local government.
Other hazards which do not result in classification	: May form explosive peroxides.

3.COMPOSITION/INFORMATION ON INGREDIENTS

Ingredients	CAS No.	Wt%	Other Limit
Ethylene glycol monoethyl ether	110-80-5	50-60	
1-Butanol	71-36-3	10-15	
Synthetic resin	Registered	10-15	
Dye	Registered	10-15	
Alcohols	Registered	7.0-15	
2-Ethylhexan-1-yl diphenyl phosphate	1241-94-7	1.0-40	
Diphenyl amine	122-39-4	<0.1	

4.FIRST-AID MEASURES

Skin contact:

Wash skin with soap and water for at least 15 minutes while removing contaminated clothing and shoes. Cover the irritated skin with an emollient. Cold water may be used. Get medical attention immediately.

Eye contact:

Check for and remove any contact lenses. Immediately hold eyelids open and rinse with a stream of water for at least 15 minutes. Cold water may be used. Get medical attention.

Ingestion:

Do not induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. Loosen tight clothing such as a collar, tie, belt or waistband. Get medical attention if symptoms appear.

Inhalation:

If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention.

Serious Inhalation:

Evacuate the victim to a safe area as soon as possible. Loosen tight clothing such as a collar, tie, belt or waistband. If breathing is difficult, administer oxygen. If the victim is not breathing, perform mouth-to-mouth resuscitation. It may be hazardous to the person providing aid to give mouth-to-mouth resuscitation when the inhaled material is toxic, infectious or corrosive. Seek medical attention.

5.FIRE FIGHTING MEASURES

Firefighting media and instructions: Flammable liquid, soluble or dispersed in water.

Small fire: Use dry chemical, foam, carbon dioxide.

Large fire: Use dry chemical, foam, carbon dioxide. Cool containing vessels with water jet in order to prevent

pressure build-up, auto-ignition or explosion.

Special firefighting procedures: Not available.

Unusual fire and explosion hazards: Not available.

6.ACCIDENTAL RELEASE MEASURES

Small spill: Dilute with water and mop up, or absorb with an inert dry material and place in an appropriate waste disposal container.

Large spill: Flammable liquid. Keep away from heat. Keep away from sources of ignition. Stop leak if without risk. Absorb with dry earth, sand or other non-combustible material. Do not touch spilled material. Prevent entry into sewers, basements or confined areas; dike if needed. Be careful that the product is not present at a concentration level above TLV.

7.HANDLING AND STORAGE

Handling	: Handle in well-ventilated areas.
	: Wear suitable protective clothing.
	: Avoid contact with eyes and skin.
	: Do not inhale fume and mist.
	: In case of insufficient ventilation, wear suitable respiratory equipment.
	: If ingested, seek medical advice immediately and show the container or the label.
Storage	: Keep away from heat sources.
	: Keep container tightly closed.
	: Store in a dark and well-ventilated place.

8.EXPOSURE CONTROL/PERSONAL PROTECTION

ACGIH	: TLV 5ppm(TWA) skin (Ethylene glycol monoethyl ether)
	: TLV 20ppm(TWA) (1-butanol)
OSHA	: PEL 200ppm(TWA) skin(Ethylene glycol monoethyl ether)
	: PEL 100ppm(TWA) (1-butanol)
Ventilation	: Use local exhaust ventilation.
Protective measures	: Wear impervious protective clothing, including boots, gloves, lab cost, apron or
Skin protection	coveralls, as appropriate, to prevent skin contact.
	: Use chemical safety goggles and/or a full face shield where splashing is possible.
Eye protection	Maintain eye wash fountain and quick-drench facilities in work area.

9.PHYSICAL AND CHEMICAL PROPERTIES

Appearance and odor	: Colored liquid, specific odor
Boiling point	: 118°C
Melting point	: Not available
Vapor density	: Not available

Vapor pressure	: Not available
Solubility in water	: Insoluble
pH	: Not applicable
Specific gravity	: Not available
Flash point	: 38℃
Auto-ignition point	: Not available

10.STABILITY AND REACTIVITY

Stability	: Stable under ordinary conditions of use and storage.
Hazardous reaction	: Carbon dioxide and carbon monoxide may form when heated to decomposition.
Polymerization	: Will not occur
Conditions to avoid	: Avoid heat, flames, sparks and other sources of ignition.

11.TOXICOLOGICAL INFORMATION

Acute toxicity	
Oral rat LD50	: 2230mg/kg
Dermal rat LD50	: 2293mg/kg
Inhalation rat LC50	: 14.5mg/L/4H
Skin corrosion/irritation	: skn-rbt 20mg/24H MOD (1-butanol)
Serious eye damage/irritation	: eye rbt 2mg/24H SEV (1-butanol)
Reproductive toxicity	: May damage fertility or the unborn child.
Specific target organ toxicity-single exposure	: Causes damages to organs: liver, kidney, central nervous system, testis
Specific target organ toxicity-repeated exposure	: May causes damages to organs through prolonged or exposure: hematopoietic system, central nervous system, auditory system, testis

12.ECOLOGICAL INFORMATION

Toxic to aquatic life.
Toxic to aquatic life with long lasting effects.

13.DISPOSAL CONSIDERATIONS

Dispose of waste in accordance with national, state and local regulations.

14.TRANSPORT INFORMATION

Follow all regulations in your country or region.

Precautions	: Pack, label and transport according to regulation.
	: Ensure containers without breakage or leakage.

	: Ensure containers tightly fixed.
Proper shipping name	: Printing ink
Hazard class	: 3 Flammable liquid
UN No.	: 1210
Packing group	: Ⅲ

15.REGULATORY INFORMATION

Follow all regulations in your country or region.

16.OTHER INFORMATION

This information is furnished without warranty, express or implied, except that it is accurate to the best knowledge of Tsukineko Co., Ltd. It relates only to the specific material designated herein, and does not relate to use in combination with any other material or in any process. Tsukineko Co., Ltd. assumes no legal responsibility for use of or reliance upon this information.

SG 740 Hardner

MATERIAL SAFETY DATA SHEET

(MIXTURE)

1. PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME : SG740 HARDENER

Manufacturer: Seiko Advance (Thailand) Ltd.

Address: Lat Krabang Industrial Estate Phase 3 Telephone No. : (0)2 739-4747

147,147/1 Soi Chalong Krung 31, Lumpratiew, Fax No. : (0)2 739-4363

Lat Krabang, Bangkok 10520 Date Printed : December 7, 2021

2. COMPOSITION/INFORMATION ON CHEMICAL INGREDIENTS

SUBSTANCE .MIXTURE: MIXTURE

PRODUCT NAME: SCREEN PRINTING INK

COMPONENTS	WEIGHT%	CHEMICAL FORMULA	CAS NO.
DIBUTLHYDROXYTOLUENE	LESS THAN 1	C15H24O	128-37-0
ETHYL ACETATE	20 – 30	C4H8O2	141-78-6
POLYISOCYANATE RESIN	70 – 80	NONDISCLOSURE	

3. HAZARDOUS IDENTIFICATION

HAZARD AND TOXICITY INFORMATION

TOXICITY INFORMATION: MAY HAVE A RISK OF ORGANIC SOLVENT POISONING

PHYSICAL AND CHEMICAL HAZARD: INFLAMMABLE LIQUID. REMAINING GAS MAY CAUSE EXPLOSION IN CONTACT WITH AIR. FLOWING OR STIRRING THE PRODUCT MAY PRODUCE A STATIC ELECTRICITY AND IT IS IN DANGER OF IGNITION AND BLOWUP.

CLASS NAME OF HAZARDOUS CHEMICAL: (BASED ON JAPANESE REGULATION): INFLAMMABLE LIQUID; ACUTE TOXIC SUBSTANCE

4. FIRST AID MEASURES

INHALATION: WRAP THE VICTIM IN A BLANKET, KEEP IN QUITE AND MOVE TO FRESH AIR.

IF BREATHING IS WEAK, IRREGULAR OR STOPPED, ADMINISTER ARTIFICIAL RESPIRATION AND ARRANGE THE MEDICAL TREATMENT BY A PHYSICIAN AS SOON AS FOSSIBLE.

SKIN : REMOVE ALL CONTAMINATED CLOTHS AND SHOES IMMEDIATELY. WASH THE AFFECTED AREA WITH PLENTY OF WATER. ARRANGE THE MEDICAL TREATMENT BY A PHYSICIAN ON INJURED SKIN OR PAINFUL PARTS.

EYE: WASH OFF WITH PLENTY OF WATER FOR AT LEAST 15MINUTES. ARRANGE THE MEDICAL TREATMENT.

INGESTION : DO NOT INDUCE VOMITTING, ARRANGE MEDICAL INSPECTION IMMEDIATELY.

5. FIRE FIGHTING MEASURES

EXTINGUISH MEDIA: POWDER, FOAM, CARBON DIOXIDE, DRY SAND, ENFORCED LIQUID SPRAY

EXTINGUISH MEDIA NOT TO BE USED: WATER

SPECIAL FIRE FIGHTING PROCEDURES: REMOVE THE CONTAINER TO A SAFE PLACE IMMEDIATELY.

IF DIFFICULT TO REMOVE, COOL DOWN THE CONTAINER AND SURROUNDING AREA WITH WATERING.

USE THE SPECIFIC EXTINGUISH MEDIA.

FIRE FIGHTER SHOULD WEAR PROPER PROTECTIVE EQUIPMENT. KEEP AWAY FROM UPWIND OF FIRE.

6. ACCIDENTAL RELEASE MEASURE

PERSONAL PRECAUTION : EVACUATE PERSONNEL NEAR FIRE. SEAL OFF THE AREA. SHUT OFF ALL SOURCES OF IGNITION IMMEDIATELY.

FIRE FIGHTER SHOULD WEAR PROPER PROTECTIVE EQUIPMENT. KEEP AWAY FROM UPWIND OF FIRE.

VENTILATE THE AREA UNTIL ALL WORK IS COMPLETED.

ENVIRONMENTAL PRECAUTIONS : PREVENT WASTEWATER FROM ENTERING WATER COURSES.

METHODS OF CLEANING UP: SOAK UP THE LEAKAGE WITH DRY SAND AND PACKAGE ALL MATERIALS IN A CLOSED CONTAINER. FLUSH THE AREA WITH PLENTY OF WATER USING MILD DETERGENT.

7. HANDLING AND STORAGE PRECAUTIONS

HANDLING:

TECHNICAL MEASURES : IMPLEMENT AND EQUIPMENT SHOULD BE GROUNDED PROPERLY FOR STATIC PROTECTION. WEAR CONDUCTIVE WORK CLOTHES AND SHOES.

USE EXPLOSION-PROOF TYPE OF ELECTRICAL EQUIPMENT AND NON-SPARKLING TOOLS.

HANDLING PRECAUTION: KEEP AWAY FROM FIRE, SPARK AND HEAT. USE IN THE WELL-VENTILATED AREA.

WEAR PROPER PROTECTIVE EQUIPMENT TO AVOID INHALATION AND PROTECT EYES AND SKIN.

KEEP CONTAINER TIGHTLY CLOSED. MINIMIZE VAPOR EXHALATION IN THE AIR AND KEEP CONTROL CONCENTRATION BELOW STANDARD.

STORAGE:

PUT IN A CLOSED CONTAINER AFTER USE. STORE IN COOL, DRY AND WELL-VENTILATED AREA.

KEEP AWAY FROM SOURCE OF HEAT SUCH AS BOILER. KEEP AWAY FROM FLAMMABLE SUBSTANCES.

SEPARATE FROM OXIDIZING AGENT AND ORGANIC PEROXIDE.

STORE IN A DANGEROUS OBJECT WAREHOUSE ACCORDING TO FIRE DEFENCE LAW.

8. EXPOSURE CONTROL AND PERSONAL PROTECTION

ENGINEERING MEASURES : USE ONLY WITH ADEQUATE VENTILATION IN CLOSED SYSTEM.

PROTECTIVE EQUIPMENT: USE GAS MASK, PROTECTIVE GLASSES, OIL RESISTANCE GLOVES, PROTECTIVE CLOTHES AND PROTECTIVE BOOTS.

SANITARY MEASURES : CHANGE THE MASK REGULARY OR ON AS CASE-BY-CASE BASIS.

EXPOSURE LIMIT:

CHEMICAL NAME	EXPOSURE LIMIT	ACGIH (YEAR 2008)

9. PHYSICAL AND CHEMICAL PROTECTION

PHYSICAL FORM: PASTE	COLOR: YELLOWISH CLEAR	ODOR: SOLVENT ODOR
PH: N/A	BOILING POINT: 77°C	FLASH POINT: -2.8°C
DENSITY: 1.13 – 1.17	SOLUBLE IN WATER: HARD	
EXPLOSION LIMIT (%): LOWER: 2.20	UPPER: 11.00	

10. REACTIVITY AND STABILITY

STABILITY: STABLE AT ROOM TEMPERATURE OR BELOW

CONDITION TO AVOID: HEAT

INCOMPATIBLE MATERIALS : DANGEROUS SUBSTANCES (CLASS 1, CLASS 6) AND HIGH-PRESSURE GAS

HAZADOUS DECOMPOSITION PRODUCTS : HYDROGEN CHLORIDE (HCL) , CARBON OXIDE (CO)

11. TOXICOLOGICAL INFORMATION

DIBUTLHYDROXYTOLUENE

ACUTE TOXIC SUBSTANCE (ORAL) LD50	> 1,700.00 MG/KG	RAT
ACUTE TOXICITY (DERMAL), LD50	>2,000.00 MG/KG	RAT
SKIN CORROSION . IRRITATION	CATEGORY 3 CAUSES MILD SKIN IRRITATION	
SERIOUS DAMAGE TO EYES , EYE IRRITATION	CATEGORY 2B CAUSES EYE IRRITATION	
REPRODUCTIVE TOXICITY	CATEGORY 2 SUSPECTED OF DAMAGE FERTILITY OR THE UNBORN CHILD	

ETHYL ACETATE

ACUTE TOXIC SUBSTANCE (ORAL) LD50	4,940.00 MG/KG	RAT
ACUTE TOXICITY (DERMAL	NOT CLASSIFIED	
ACUTE TOXICITY (INHALATION, VAPOUR) LC50	16,000 PPM	RAT
SKIN CORROSION . IRRITATION	NOT CLASSIFIED	
SERIOUS DAMAGE TO EYES , EYE IRRITATION	CATEGORY 2B CAUSES EYE IRRITATION	

SKIN SENSITIZATION	NOT CLASSIFIED
GERM CELL MUTAGENICITY	NOT CLASSIFIED

*NO INFORMATION ON ACUTE TOXICITY AND EFFECTS AVAILABLE EXCEPT BEING SPECIFIED AS ABOVE.

12. ECOLOGICAL INFORMATION

ETHYL ACETATE

ACUTE AQUATIC TOXICITY	NOT CLASSIFIED	
LC50	16400 MG/L48H	DAPHNIA MAGNA
CHRONIC AQUATIC TOXICITY	NOT CLASSIFIED	

*NO INFORMATION AVAILABLE EXCEPT BEING SPECIFIED AS ABOVE.

13. DISPOSAL CONSIDERATION

WASTE FROM RESIDUES:

INK WASTE AND WASTE CONTAINERS WILL BE CONSIGNED TO A LICENSED INDUSTRIAL WASTE TREATMENT COMPANY. DRAINAGE WAS WASHED CONTAINERS AND EQUIPMENT AND OTHER MACHINES CAN NOT SHED THE GROUND OR DRAINS DIRECTLY. GENERATED BY THE INCINERATION OF WASTE AND WASTEWATER TREATMENT WASTE DISPOSAL AND PUBLIC CLEANSING LAW TREATED ACCORDING TO RELEVANT LAWS AND REGULATIONS . OR PROCESSED BY THE COMPANY. WHEN INK AND WASTE INCINERATION, THE KINERATOR TO BURN SMALL AMOUNTS IN AN OPEN AND ADSORBED TO DIATOMACEOUS EARTH SPRAYED INTO THE COMBUSTION CHAMBER INCINERAOR OR FIRE. HOWEVER, IF THERE IS A RISK OF DIOXINS AND OTHER TOXIC GASES CAN NOT BE DELEGATED TO A LICENSED INDUSTRIAL WASTE DISPOSAL CONTRACTOR. SPECIALLY CONTROLLED INDUSTRIAL WASTE (OIL. SO APPROPRIATE TO THE PROCESS ENTRUSTED TO THE CONTRACTOR CONTAMINATED CONTAINERS AND PACKAGING.

AN EMPTY CONTAINER MUST BE DISPOSED OF TO ELIMINATE COMPLETELY FROM THE CONTENTS.

BE COMMISSIONED TO HANDLE INDUSTRIAL WASTE DISPOSAL LICENSE FROM THE GOVERNOR RECEIVED.

14. TRANSPORTATION INFORMATION

PRECAUTION: MAKE SURE THERE IS NO LEAKAGE FROM CONTAINER. LOAD ITS CARGO WITH CARE TO AVOID OVERTURNING, FALLING OR DAMAGES. THE CONTAINERS SHOULD NOT BE PILED UP OVER 3M HIGH.

DO NOT MIX AND LOAD WITH DANGERROUS SUBSTANCE (CLASS 1, CLASS 6 AND HIGH-PRESSURE GAS).

TRANSPORT WITH THE CONTAINER WHICH CORRELATING TO FIRE DEFENCE LAW (DANGER RATING III).

FOLLOW ALL REGULATIONS IN YOUR COUNTRY IN CASE OF EXCESS QUANTITY SHIPPED

EQUIP VEHICLE WITH APPROPRIATE FIRE EXTINGUISHER

UN CLASS : 3

PROPER SHIPPING NAME: RESIN SOLUTION, FLAMMABLE (ETHYLACETATE).

PACKING GROUP : II

U.N. NUMBER : 1866

15. REGULATORY INFORMATION

FIRE DEFENCE LAW (DANGEROUS SUBSTANCE CLASS 4-2 OIL INSOLUBLE IN WATER)

REGULATION ON TRANSPORTATION AND STORAGE OF DANGEROUS SUBSTANCE

(INFLAMMABLE LIQUID WITH A FLASH POINT HIGHER THAN 23°C)

SECONDARY ORGANIC SOLVENT, SPECIFIC CHEMICAL SUBSTANCES)

SPECIFIED CHEMICAL ORDINANCES (SPECIFIED GROOP-2 SUBSTANCES)

ROAD TRAFFIC LAW (REGULATION ON LONG AND MASSIVE TUNNEL, UNDERWATER TUNNEL, EXPRESS HIGHWAY)

LAW OF WASTE DISPOSAL AND CLEANING

PRTR LAW (SPECIFIC CHEMICAL SUBSTANCES G)

16. OTHER INFORMATION

BACKGROUND INFORMATION 1) NATIONAL INSTITUTE FOR ENVIRONMENTAL STUDIES:

DATA BASE: HTTP://W-CHEMDB.NIES.GO.JP/

2) JAPAN INDUSTRIAL SAFETY & HEALTH ASSOCIATION: DATA BASE: HTTP://WWW.JASH.OR.JP/

3) MSDS OF RAW MATERIALS

4) ICSC CARD HTTP://WWW.NIHS.GO.JP/ICSC/

5) JAPAN PRINTING INK MARKET ASSOCIATION : GUIDE BOOK (VER.2) MATERIALS AFETY DATA SHEET

INQUIRIES

SECTION CONCERNED: TECHNICAL DEPARTMENT

*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. IT'S THE USE'S OBLIGATION TO DETERMINE THE CONDITION OF SAFE USE OF THE PRODUCT.

THIS IS SAFETY DATA SHEET IS NOT TO BE CONSIDERED A WARRANTY OR QUALITY SPECIFICATION.

SG 740 Hardner T-0832 MAT001

MATERIAL SAFETY DATA SHEET

(MIXTURE)

1. PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME : SG740 T-0832 MAT001

Manufacturer: Seiko Advance (Thailand) Ltd.

Address: Lat Krabang Industrial Estate Phase 3 — Telephone No. : 66(0) 2 739-4747

147,147/1 Soi Chalong Krung 31 , Lumpantiew, — Fax No. : 66 (0) 2 7394363

Lat Krabang, Bangkok 10520 — Date Printed : August 3, 2022

2. COMPOSITION/INFORMATION ON CHEMICAL INGREDIENTS

SUBSTANCE MIXTURE : MIXTURE

PRODUCT NAME: SCREEN PRINTING INK

COMPONENTS	WEIGHT%	CHEMICAL FORMULA	CAS NO.
NAPHTHALENE	LESS THAN 1	C10H8	91-20-3
METHANOL	LESS THAN 1	CH4O	67-56-1
CYCLOHEXANONE	12~25	C6H10O	108-94-1
ISOPHORONE	10~23	C9H14O	78-59-1
ACETONE	LESS THAN 1	C3H6O	67-64-1
ETHANOL, 2-BUTOXY-	LESS THAN 5	C6H14O2	111-76-2
VINYL URETHANE RESIN	20~35	NON DISCLOSURE	
ESTER SOLVENT	5~11	NON DISCLOSURE	
PIGMENT	5~22	NON DISCLOSURE	

3. HAZARDOUS IDENTIFICATION

HAZARD AND TOXICITY INFORMATION

TOXICITY INFORMATION: MAY HAVE A RISK OF ORGANIC SOLVENT POISONING

PHYSICAL AND CHEMICAL HAZARD: INFLAMMABLE LIQUID. REMAINING GAS MAY CAUSE EXPLOSION IN CONTACT WITH AIR. FLOWING OR STIRRING THE PRODUCT MAY PRODUCE A STATIC ELECTRICITY AND IT IS IN DANGER OF IGNITION AND BLOWUP.

CLASS NAME OF HAZARDOUS CHEMICAL: (BASED ON JAPANESE REGULATION): INFLAMMABLE LIQUID, ACUTE TOXIC SUBSTANCE

4. FIRST AID MEASURES

INHALATION: WRAP THE VICTIM IN A BLANKET, KEEP IN QUITE AND MOVE TO FRESH AIR.
IF BREATHING IS WEAK, IRREGULAR OR STOPPED, ADMINISTER ARTIFICIAL RESPIRATION AND ARRANGE THE MEDICAL TREATMENT BY A PHYSICIAN AS SOON AS FOSSIBLE.

SKIN: REMOVE ALL CONTAMINATED CLOTHS AND SHOES IMMEDIATELY. WASH THE AFFECTED AREA WITH PLENTY OF WATER. ARRANGE THE MEDICAL TREATMENT BY A PHYSICIAN ON INJURED SKIN OR PAINFUL PARTS.

EYE: WASH OFF WITH PLENTY OF WATER FOR AT LEAST 15MINUTES. ARRANGE THE MEDICAL TREATMENT.

INGESTION: DO NOT INDUCE VOMITTING, ARRANGE MEDICAL INSPECTION IMMEDIATELY.

5. FIRE FIGHTING MEASURES

EXTINGUISH MEDIA : FOWDER, FOAM, CARBON DIOXIDE, DRY SAND, ENFORCED LIQUID SPRAY

EXTINGUISH MEDIA NOT TO BE USED: WATER

SPECIAL FIRE FIGHTING PROCEDURES: REMOVE THE CONTAINER TO A SAFE PLACE IMMEDIATELY.

IF DIFFICULT TO REMOVE, COOL DOWN THE CONTAINER AND SURROUNDING AREA WITH WATERING.

USE THE SPECIFIC EXTINGUISH MEDIA. FIRE FIGHTER SHOULD WEAR PROPER PROTECTIVE EQUIPMENT.

KEEP AWAY FROM UPWIND OF FIRE

6. ACCIDENTAL RELEASE MEASURE

PERSONAL PRECAUTION: EVACUATE PERSONNEL NEAR FIRE. SEAL OFF THE AREA. SHUT OFF ALL SOURCES OF IGNITION IMMEDIATELY.

FIRE FIGHTER SHOULD WEAR PROPER PROTECTIVE EQUIPMENT. KEEP AWAY FROM UPWIND OF FIRE.

VENTILATE THE AREA UNTIL ALL WORK IS COMPLETED.

ENVIRONMENTAL PRECAUTIONS : PREVENT WASTEWATER FROM ENTERING WATER COURSES.

METHODS OF CLEANING UP: SOAK UP THE LEAKAGE WITH DRY SAND AND PACKAGE ALL MATERIALS IN A CLOSED CONTAINER. FLUSH THE AREA WITH PLENTY OF WATER USING MILD DETERGENT.

7. HANDLING AND STORAGE PRECAUTIONS

HANDLING:

TECHNICAL MEASURES : IMPLEMENT AND EQUIPMENT SHOULD BE GROUNDED PROPERLY FOR STATIC PROTECTION. WEAR CONDUCTIVE WORK CLOTHES AND SHOES.

USE EXPLOSION-PROOF TYPE OF ELECTRICAL EQUIPMENT AND NON-SPARKLING TOOLS.

HANDLING PRECAUTION: KEEP AWAY FROM FIRE, SPARK AND HEAT. USE IN THE WELL-VENTILATED AREA. WEAR PROPER PROTECTIVE EQUIPMENT TO AVOID INHALATION AND PROTECT EYES AND SKIN.

KEEP CONTAINER TIGHTLY CLOSED. MINIMIZE VAPOR EXHALATION IN THE AIR AND KEEP CONTROL CONCENTRATION BELOW STANDARD.

STORAGE:

PUT IN A CLOSED CONTAINER AFTER USE. STORE IN COOL, DRY AND WELL-VENTILATED AREA.

KEEP AWAY FROM SOURCE OF HEAT SUCH AS BOILER. KEEP AWAY FROM FLAMMABLE SUBSTANCES.

SEPARATE FROM OXIDIZING AGENT AND ORGANIC PEROXIDE.

STORE IN A DANGEROUS OBJECT WAREHOUSE ACCORDING TO FIRE DEFENCE LOW.

8. EXPOSURE CONTROL AND PERSONAL PROTECTION

ENGINEERING MEASURES : USE ONLY WITH ADEQUATE VENTILATION IN CLOSED SYSTEM.

PROTECTIVE EQUIPMENT: USE GAS MASK. PROTECTIVE GLASSES, OIL RESISTANCE GLOVES, PROTECTIVE CLOTHES AND PROTECTIVE BOOTS.

SANITARY MEASURES : CHANGE THE MASK REGULARY OR ON AS CASE-BY-CASE BASE.

EXPOSURE LIMIT:

CHEMICAL NAME	EXPOSURE LIMIT	ACGIH (YEAR 2002)
ISOPHORONE	.00	5.00 PPM
METHANOL	200.00 PPM	200.00 PPM

9. PHYSICAL AND CHEMICAL PROTECTION

PHYSICAL FORM: PASTE — COLOR: MATCHING — ODOR: SOLVENT ODOR

PH: N/A — BOILING POINT: 155°C ~ 225°C — FLASH POINT: 58.0°C ~ 62.0°C

DENSITY: 1.04~1.60 — SOLUBLE IN WATER: HARD

EXPLOSION LIMIT (%): LOWER: .80 — UPPER: 9.40

10. REACTIVITY AND STABILITY

STABILITY: STABLE AT ROOM TEMPERATURE OR BELOW

CONDITION TO AVOID: HEAT

INCOMPATIBLE MATERIALS: DANGEROUS SUBSTANCES (CLASS 1, CLASS 6) AND HIGH-PRESSURE GAS

HAZADOUS DECOMPOSITION PRODUCTS : HYDROGEN CHLORIDE (HCL) , CARBON OXIDE (CO)

11. TOXICOLOGICAL INFORMATION

NAPHTHALELNE

ACUTE TOXIC (ORAL)	CATEGORY 4 HARMFUL IF SWALLOWED	
	LD50 1157.00 MG/KG	RAT
ACUTE TOXICITY(DEMAL)	NOT CLASSIFIED	

	LD50 1157.00 MG/KG	RAT
SKINCORROSION. IRRITATION	CATEGORY 3 CAUSES MILD SKIN IRRITATION	
SERIOUS DAMAGE TO EYES . EYE IRRITATION	CATEGORY 2B CAUSES EYE IRRITATION	
SKIN SENSITIZATION	CATEGORY 1 MAY CAUSE AN ALLERGIC SKIN REACTION	
GERM CELL MUTAGENICITY	NOT CLASSIFIED	
CACINOGENICITY	CATEGORY 2 SUSPECTED OF CAUSING CANCER.	
REPRODUCTIVE TOXICITY	NOT CLASSIFIED	

METHANOL

ACUTE TOXIC (ORAL)	CATEGORY 4 HARMFUL IF SWALLOWED	
	LD50 1400.00 MG/KG	RAT
ACUTE TOXICITY(DEMAL)	NOT CLASSIFIED	
	LD50 15800.00 MG/KG	RABBIT
ACUTE TOXICITY (INHALATION, VAPOUR)	NOT CLASSIFIED	
	LD50 >31.500.00 PPM/4H	RAT
SERIOUS DAMAGE TO EYES . EYE IRRITATION	CATEGORY 2 CAUSES SERIOUS EYE IRRITATION	
GERM CELL MUTAGENICITY	NOT CLASSIFIED	
REPRODUCTIVE TOXICITY	CATEGORY 1B MAY DAMAGE FERTILITY OR THE UNBORN CHILD	

CYCLOHEXANONE

ACUTE TOXIC (ORAL)	CATEGORY 4 HARMFUL IF SWALLOWED	
	LD50 1,544.00 MG/KG	RAT
ACUTE TOXICITY(DEMAL)	CATEGORY 3 TOXIC IN CACNTACT WITH SKIN	
	LD50 947.00 MG/KG	RABBIT
ACUTE TOXICITY(INHALATION, VAPOUR)	CATEGORY 3 TOXIC IF INHALED	
	LD50 2,450.00 MG/KG	RAT
ACUTE TOXICITY(INHALATION, MIST)	NOT CLASSIFIED	
	LD50 8,000.00 MG/KG	MOUSE
SKINCORROSION. IRRITATION	CATEGORY 2 CAUSES SKIN IRRITATION	
SERIOUS DAMAGE TO EYES . EYE IRRITATION	CATEGORY 2A INTENSE EYE IRRITATION	
SKIN SENSITIZATION	NOT CLASSIFIED	
GERM CELL MUTAGENICITY	CATEGORY 2 SUSPECTED OF CAUSING GENETIC DEFECTS .	
CACINOGENICITY	NOT CLASSIFIED	
REPRODUCTIVE TOXICITY	CATEGORY 2 SUSPECTED OF DAMAGING FERTILITY OR THE UNBORN CHILD	
ASPERATION HAZARD	CATEGORY 2 MAY BE HARMFUL IF SWALLOWED AND ENTERS AIRWAYS	

ISOPHORONE

ACUTE TOXIC (ORAL)	CATEGOR 4 HARMFUL IF SWALLOWED	
	LD50 1843.00 MG/KG	RAT
ACUTE TOXICITY (DEMAL)	CATEGORY 4 HARMFUL IN CONTACT WITH SKIN	
	LD50 1265.00 MG/KG	RABBIT
ACUTE TOXICITY (INHALATION, VAPOUR)	CATEGORY 3 MAY BE HARMFUL IF INHALED	
ACUTE TOXICITY (INHALATION, MIST)	CATEGORY 3 MAY BE HARMFUL IF INHALED	
SKINCORROSION. IRRITATION	CATEGORY 3 CAUSES MILD SKIN IRRITATION	
SERIOUS DAMAGE TO EYES . EYE IRRITATION	CATEGORY 2A INTENSE EYE IRRITATION	
SKIN SENSITIZATION	NOT CLASSIFIED	
GERM CELL MUTAGENICITY	NOT CLASSIFIED	
CACINOGENICITY	CATEGORY 2 SUSPECTED OF CAUSING CANCER	
REPRODUCTIVE TOXICITY	NOT CLASSIFIED	

ACETONE

ACUTE TOXIC (ORAL)	NOT CLASSIFIED	

	LD50 >5000.00 MG/KG	RAT
ACUTE TOXICITY(DEMAL)	NOT CLASSIFIED	
	LD50 >5000.00 MG/KG	RABBIT
ACUTE TOXICITY (INHALATION, VAPOUR)	NOT CLASSIFIED	
	LD50 20000.00 PPM/4H	RAT
SKINCORROSION. IRRITATION	NOT CLASSIFIED	
SERIOUS DAMAGE TO EYES . EYE IRRITATION	CATEGORY 2B CAUSE EYE IRRITATION	
SKIN SENSITIZATION	NOT CLASSIFIED	
GERM CELL MUTAGENICITY	NOT CLASSIFIED	
CACINOGENICITY	NOT CLASSIFIED	
REPRODUCTIVE TOXICITY	CATEGORY 2 SUSPECTED OF DAMAGING FERTILITY OR THE UNBORN CHILD	
ASPIRATION HAZARD	CATEGORY 2 MAY BE HARMFUL IF SWALLOWED AND ENTERS AIRWAYS	

ETHANOL, 2-BUTOXY-

ACUTE TOXIC (ORAL)	CATEGORY 4 HARMFUL IF SWALLOWED	
	LD50 1746.00 MG/KG	RAT
ACUTE TOXICITY(DEMAL)	CATEGORY 3 TOXIC IN CONTACT WITH SKIN	
	LD50 135.00 MG/KG	RABBIT
ACUTE TOXICITY (INHALATION, VAPOUR)	CATEGORY 2 FATAL IF INHALED	
	LD50 450.00 PPM/4H	RAT
SKINCORROSION. IRRITATION	CATEGORY 2 CAUSES SKIN IRRITATION	
SERIOUS DAMAGE TO EYES . EYE IRRITATION	CATEGORY 2A INTENSE EYE IRRITATION	
SKIN SENSITIZATION	NOT CLASSIFIED	
GERM CELL MUTAGENICITY	NOT CLASSIFIED	
CACINOGENICITY	NOT CLASSIFIED	
REPRODUCTIVE TOXICITY	CATEGORY 2 SUSPECTED OF DAMAGING FERTILITY OR THE UNBORN CHILD	

*NO INFORMATION ON ACUTE TOXICITY AND EFFECTS AVAILABLE EXCEPT BEING SPECIFIED AS ABOVE.

12. ECOLOGICAL INFORMATION

CYCLOHEXANONE

ACUTE AQUATIC TOXICITY	NOT CLASSIFIED	
	LC50 527.00 MG/L/96H	PIMEPHALES PROMELAS
CROMIC AQUATIC TOXICITY	NOT CLASSIFIED	

ISOPHORONE

ACUTE AQUATIC TOXICITY	NOT CLASSIFIED	
	LC50 12.90 MG/L/96H	MYSIDOPSIS BAHIA
CROMIC AQUATIC TOXICITY	NOT CLASSIFIED	

ETHANOL, 2-BUTOXY-

ACUTE AQUATIC TOXICITY	NOT CLASSIFIED	
	LC50 1160.00 MG/L/96H	CYPRINODON VARIEGATUS
CROMIC AQUATIC TOXICITY	NOT CLASSIFIED	

*NO INFORMATION AVAILABLE EXCEPT BEING SPECIFIED AS ABOVE.

13. DISPOSAL CONSIDERATION

WASTE FROM RESIDUES :

INK WASTE AND WASTE CONTAINERS WILL BE CONSIGNED TO A LICENSED INDUSTRIAL WASTE TREATMENT COMPANY. DRAINAGE WAS WASHED CONTAINERS AND EQUIPMENT AND OTHER MACHINES CAN NOT SHED THE GROUND OR DRAINS DIRECTLY. GENERATED BY THE INCINERATION OF WASTE AND WASTEWATER TREATMENT WASTE DISPOSAL AND PUBLIC CLEANSING LAW TREATED ACCORDING TO RELEVANT LAWS AND REGULATIONS. OR PROCESSED BY THE COMPANY. WHEN INK AND WASTE INCINERATION, THE ICINERATOR TO BURN SMALL

AMOUNTS IN AN OPEN AND ADSORBED TO DIATOMACEOUS EARTH. SPRAYED INTO THE COMBUSTION CHAMBER INCINERAOR OR FIRE. HOWEVER, IF THERE IS A RISK OF DIOXINS AND OTHER TOXIC GASES CAN NOT BE DELEGATED TO A LICENSED INDUSTRIAL WASTE DISPOSAL CONTRACTOR. SPECIALLY CONTROLLED INDUSTRIAL WASTE (OIL. SO APPROPRIATE TO THE PROCESS ENTRUSTED TO THE CONTRACTOR CONTAMINATED CONTAINERS AND PACKAGING.
AN EMPTY CONTAINER MUST BE DISPOSED OF TO ELIMINATE COMPLETELY FROM THE CONTENTS.
BE COMMISSIONED TO HANDLE INDUSTRIAL WASTE DISPOSAL LICENSE FROM THE GOVERNOR RECEIVED.

14. TRANSPORTATION INFORMATION

PRECAUTION : MAKE SURE THERE IS NO LEAKAGE FROM CONTAINER. LOAD ITS CARGO WITH CARE TO AVOID OVERTURNING, FALLING OR DAMAGES . THE CONTAINER SHOULD NOT BE PILED UP OVER 3M HIGH.
DO NOT MIX AND LOAD WITH DANGERROUS SUBSTANCE (CLASS 1, CLASS 6 AND HIGH-PRESSURE GAS).
TRANSPORT WITH THE CONTAINER WHICH CORRELATING TO FIRE DEFENCE LAW (DANGER RATING III).
FOLLOW ALL REGULATIONS IN YOUR COUNTRY IN CASE OF EXCESS QUANTITY SHIPPED
EQUIP VIHICLE WITH APPROPRIATE FIRE EXTINGUISHER
CLASS : 3
PROPER SHIPPING NAME: PRINTING INK, FLAMMABLE OR PRINING INK RELATED MATERIAL (INCLUDING PRINTING INK REDUCIG COMPOUND), FLAMMABLE
PACKING GROUP : III
U.N. NUMBER: 1210

15. REGULATORY INFORMATION

FIRE DEFENCE LAW (DANGEROUS SUBSTANCE CLASS 4-2 OIL INSOLUBLE IN WATER)
REGULATION ON TRANSPORTATION AND STORAGE OF DANGEROUS SUBSTANCE (INFLAMMABLE LIQUID WITH A FLASH POINT HIGHER THAN 23°C)
OCCUPATIONAL HEALTH & SAFETY LAW (ORDINANCE ON THE PREVENTION OF ORGANIC SOLVENT POISONING. SECONDARY ORGANIC SOLVENT, SPECIFIC CHEMICAL SUBSTANCES)
ROAD TRAFFIC LAW (REGULATION ON LONG AND MASSIVE TUNNEL, UNDERWATER TUNNEL, EXPRESS HIGHWAY)
LAW OF WASTE DISPOSAL AND CLEANING

16. OTHER INFORMATION

BACKGROUND INFORMATION 1) NATIONAL INSTITUTE FOR ENVIRONMENTAL STUDIES :
DATA BASE: HTTP://W-CHEMDB.NIES.GO.JP/
2) JAPAN INDUSTRIAL SAFETY & HEALTH ASSOCIATION : DATA BASE: HTTP://WWW.JASH.OR.JP/
3) MSDS OF RAW MATERIALS
4) ICSC CARD: HTTP://WWW.NIHS.GO.JP/ICSC/
5) JAPAN PRINTING INK MARKET ASSOCIATION: GUIDE BOOK (VER.2) MATERIAL SAFETY DATA SHEET
INQUIRIES
SECTION CONCERNED: TECHNICAL DEPARTMENT
*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. IT IS THE USE'S OBLIGATION TO DETERMINE THE CONDITION OF SAFE USE OF THE PRODUCT.
THIS SAFETY DATA SHEET IS NOT TO BE CONSIDERED A WARRANTY OR QUALITY SPECIFICATION.

T-15

MATERIAL SAFETY DATA SHEET

(MIXTURE)

1. PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME: T-15

Manufacturer: Seiko Advance (Thailand) Ltd.
Address: Lat Krabang Industrial Estate Phase 3 Telephone No.: +66 (0)2 739-4747
147,147/1 Soi Chalong Krung 31, Lumpatiew, Fax No.: +66 (0)2 739-4363
Lat Krabang, Bangkok 10520 Date Printed: March 16, 2021

2. COMPOSITION/INFORMATION ON CHEMICAL INGREDIENTS

SUBSTANCE /MIXTURE: MIXTURE
PRODUCT NAME: SOLVENT FOR SCREEN PRINTING INK

COMPONENTS	WEIGHT%	CHEMICAL FORMULA	CAS NO.
TOLUENE	76	C7H8	108-88-3
ACETONE	9 ~ 19	C3H6O	67-64-1
CYCLOHEXANONE	5 ~ 15	C6H10O	108-94-1

3. HAZARDOUS IDENTIFICATION

HAZARD AND TOXICITY INFORMATION
TOXICITY INFORMATION: MAY HAVE A RISK OF ORGANIC SOLVENT POISONING
PHYSICAL AND CHEMICAL HAZARD: INFLAMMABLE LIQUID. REMINING GAS MAY CAUSE EXPLOSION IN CONTACT WITH AIR. FLOWING OR STIRRING THE PRODUCT MAY PRODUCE A STATIC ELECTRICITY AND IT IS IN DANGER OF IGNITION AND BLOWUP.
CLASS NAME OF HAZARDOUS CHEMICAL : (BASED ON JAPANESE REGULATION) : INFLAMMABLE SOLID , ACUTE TOXIC SUBSTANCE.

4. FIRST AID MEASURES

INHALATION: WRAP THE VICTIM IN A BLANKET, KEEP IN QUITE AND MOVE TO FRESH AIR.
IF BREATHING IS WEAK, IRREGULAR OR STOPPED, ADMINISTER ARTIFICIAL RESPIRATION AND ARRANGE THE MEDICAL TREATMENT BY A PHYSICIAN AS SOON AS POSSIBLE.
SKIN : REMOVE ALL CONTAMINATED CLOTHS AND SHOES IMMEDIATELY. WASH THE AFFECTED AREA WITH PLENTY OF WATER. ARRANGE THE MEDICAL TREATMENT BY A PHYSICIAN ON INJURED SKIN OR PAINFUL PARTS.
EYE: WASH OFF WITH PLENTY OF WATER FOR AT LEAST 15MINUTES. ARRANGE THE MEDICAL TREATMENT.
INGESTION: DO NOT INDUCE VOMITTING, ARRANGE MEDICAL INSPECTION IMMEDIATELY.

5. FIRE FIGHTING MEASURES

EXTINGUISH MEDIA: POWDER, FOAM, CARBON DIOXIDE, DRY SAND, ENFORCED LIQUID SPRAY
EXTINGUISH MEDIA NOT TO BE USED: WATER
SPECIAL FIRE FIGHTING PROCEDURES: REMOVE THE CONTAINER TO A SAFE PLACE IMMEDIATELY.
IF DIFFICULT TO REMOVE, COOL DOWN THE CONTAINER AND SURROUNDING AREA WITH WATERING.
USE THE SPECIFIC EXTINGUISH MEDIA.
FIRE FIGHTER SHOULD WEAR PROPER PROTECTIVE EQUIPMENT. KEEP AWAY FROM UPWIND OF FIRE

6. ACCIDENTAL RELEASE MEASURE

PERSONAL PRECAUTION: EVACUATE PERSONNEL NEAR FIRE. SEAL OFF THE AREA. SHUT OFF ALL SOURCES OF IGNITION IMMEDIATELY.
FIRE FIGHTER SHOULD WEAR PROPER PROTECTIVE EQUIPMENT. KEEP AWAY FROM UPWIND OF FIRE.
VENTILATE THE AREA UNTIL ALL WORK IS COMPLETED.

ENVIRNMENTAL PRECAUTIONS : PREVENT WASTEWATER FROM ENTERING WATER COURSES.
METHODS OF CLEANING UP: SOAK UP THE LEAKAGE WITH DRY SAND AND PACKAGE ALL MATERIALS IN A CLOSED CONTAINER. FLUSH THE AREA WITH PLENTY OF WATER USING MILD DETERGENT.

7. HANDLING AND STORAGE PRECAUTIONS

HANDLING:
TECHNICAL MEASURES: IMPLEMENT AND EQUIPMENT SHOULD BE GROUNDED PROPERLY FOR STATIC PROTECTION. WEAR CONDUCTIVE WORK CLOTHES AND SHOES.
USE EXPLOSION-PROOF TYPE OF ELECTRICAL EQUIPMENT AND NON-SPARKLING TOOLS.
HANDLING PRECAUTION: KEEP AWAY FROM FIRE, SPARK AND HEAT. USE IN THE WELL-VENTILATED AREA.
WEAR PROPER PROTECTIVE EQUIPMENT TO AVOID INHALATION AND PROTECT EYES AND SKIN.
KEEP CONTAINER TIGHTLY CLOSED. MINIMIZE VAPOR EXHALATION IN THE AIR AND KEEP CONTROL CONCENTRATION BELOW STANDARD.
STORAGE:
PUT IN A CLOSED CONTAINER AFTER USE. STORE IN COOL, DRY AND WELL-VENTILATED AREA.
KEEP AWAY FROM SOURCE OF HEAT SUCH AS BOILER. KEEP AWAY FROM FLAMMABLE SUBSTANCES.
SEPARATE FROM OXIDIZING AGENT AND ORGANIC PEROXIDE.
STORE IN A DANGEROUS OBJECT WAREHOUSE ACCORDING TO FIRE DEFENCE LAW.

8. EXPOSURE CONTROL AND PERSONAL PROTECTION

ENGINEERING MEASURES : USE ONLY WITH ADEQUATE VENTILATION IN CLOSED SYSTEM.
PROTECTIVE EQUIPMENT: USE GAS MASK, PROTECTIVE GLASSES, OIL RESISTANCE GLOVES, PROTECTIVE CLOTHES AND PROTECTIVE BOOTS.
SANITARY MEASURES : CHANGE THE MASK REGULARY OR ON AS CASE-BY-CASE BASIS.

EXPOSURE LIMIT:

CHEMICAL NAME	EXPOSURE LIMIT	ACGIH (YEAR 2002)
TOLUENE	200 PPM	50.00 PPM
ACETONE	400.00 PPM	500.00 PPM
CYCLOHEXANONE	20.00 PPM	20.00 PPM

9. PHYSICAL AND CHEMICAL PROTECTION

PHYSICAL FORM: LIQUID COLOR: COLORLESS ODOR: SOLVENT ODOR
PH: N/A BOILING POINT: 56°C ~ 156°C FLASH POINT: -7.3 °C
DENSITY: 84 ~ 94 SOLUBLE IN WATER: HARD
EXPLOSION LIMIT (%): LOWER: 1.10 UPPER: 12.80

10. REACTIVITY AND STABILITY

STABILITY: STABLE AT ROOM TEMPERATURE OR BELOW
CONDITION TO AVOID: HEAT
INCOMPATIBLE MATERIALS : DANGEROUS SUBSTANCES (CLASS 1, CLASS 6) AND HIGH-PRESSURE GAS
HAZADOUS DECOMPOSITION PRODUCTS : CARBON OXIDE (CO)

11. TOXICOLOGICAL INFORMATION

TOLUENE

ACUTE TOXIC (ORAL) LD50	4,800.00 MG/KG	RAT
ACUTE TOXICITY (DERMAL) LD50	12,000.00 MG/KG	RAT
ACUTE TOXICITY (INHALATION, VAPOUR) LD50	12.50 MG/KG	RAT
SKIN CORROSION. IRRITATION	CATEGORY 2. CAUSES SKIN IRRITATION	
SERIOUS DAMAGE TO EYES . EYE IRRITATION	CATEGORY 2B CAUSE EYE IRRITATION	
SKIN SENSITIZATION	NOT CLASSIFIED	
GERM CELL MUTAGENICITY	NOT CLASSIFIED	
CACINOGENICITY	NOT CLASSIFIED	
REPRODUCTIVE TOXICITY	CATEGORY 1A MAY DAMAGE FERTILITY OR THE UNBORN CHILD	

ASPIRATION HAZARD	CATEGORY 1. MAY BE FATAL IF SWALLOWED AND ENTERS AIRWAYS	
CYCLOHEXANONE		
ACUTE TOXIC (ORAL) LD50	1,544.00 MG/KG	RAT
ACUTE TOXICITY (DERMAL) LD50	947.00 MG/KG	RABBIT
ACUTE TOXICITY (INHALATION, VAPOUR) LD50	2,450.00 MG/KG	RAT
ACUTE TOXICITY (INHALATION, MIST) LD50	8,000.00 MG/KG	MOUSE
SKIN CORROSION. IRRITATION	CATEGORY 2. CAUSES SKIN IRRITATION	
SERIOUS DAMAGE TO EYES . EYE IRRITATION	CATEGORY 2A INTENSE EYE IRRITATION	
SKIN SENSITIZATION	NOT CLASSIFIED	
GERM CELL MUTAGENICITY	CATEGORY 2 SUSPECTED OF CAUSING GENETIC DEFECTS.	
CACINOGENICITY	NOT CLASSIFIED	
REPRODUCTIVE TOXICITY	CATEGORY 2 SUSPECTED OF DAMAGING FERTILITY OR THE UNBORN CHILD	
ASPIRATION HAZARD	CATEGORY 2. MAY BE HARMFUL IF SWALLOWED AND ENTERS AIRWAYS	
ACETONE		
ACUTE TOXIC (ORAL) LD50	>5,000.00 MG/KG	RAT
ACUTE TOXICITY (DERMAL) LD50	>5,000.00 MG/KG	RABBIT
ACUTE TOXICITY (INHALATION, VAPOUR) LD50	32,000.00 MG/KG	RAT
SKIN CORROSION. IRRITATION	NOT CLASSIFIED	
SERIOUS DAMAGE TO EYES . EYE IRRITATION	CATEGORY 2B CAUSES EYE IRRITATION	
SKIN SENSITIZATION	NOT CLASSIFIED	
GERM CELL MUTAGENICITY	NOT CLASSIFIED	
CACINOGENICITY	NOT CLASSIFIED	
REPRODUCTIVE TOXICITY	CATEGORY 2 SUSPECTED OF DAMAGING FERTILITY OR THE UNBORN CHILD	
ASPIRATION HAZARD	CATEGORY 2. MAY BE HARMFUL IF SWALLOWED AND ENTERS AIRWAYS	

*NO INFORMATION ON ACUTE TOXICITY AND EFFECTS AVAILABLE EXCEPT BEING SPECIFIED AS ABOVE.

12. ECOLOGICAL INFORMATION

TOLUENE

ACUTE AQUATIC TOXICITY	CATEGORY 2. TOXIC TO AQUATIC LIFE	
	LC50 3.50 MG/L/96H	BROWN SHRIMP
CROMIC AQUATIC TOXICITY	NOT CLASSIFIED	
CYCLOHEXANONE		
ACUTE AQUATIC TOXICITY	CATEGORY 2. TOXIC TO AQUATIC LIFE	
	LC50 527.00 MG/L/96H	PIMEPHALES PROMELAS
CROMIC AQUATIC TOXICITY	NOT CLASSIFIED	
ACETONE		
ACUTE AQUATIC TOXICITY	NOT CLASSIFIED	
CROMIC AQUATIC TOXICITY	NOT CLASSIFIED	

*NO INFORMATION AVAILABLE EXCEPT BEING SPECIFIED AS ABOVE.

13. DISPOSAL CONSIDERATION

WASTE FROM RESIDUES :
INK WASTE AND WASTE CONTAINERS WILL BE CONSIGNED TO A LICENSED INDUSTRIAL WASTE TREATMENT COMPANY. DRAINAGE WAS WASHED CONTAINERS AND EQUIPMENT AND OTHER MACHINES CAN NOT SHED THE GROUND OR DRAINS DIRECTLY. GENERATED BY THE INCINERATION OF WASTE AND WASTEWATER TREATMENT WASTE DISPOSAL AND PUBLIC CLEANSING LAW TREATED ACCORDING TO RELEVANT LAWS AND REGULATIONS. OR PROCESSED BY THE COMPANY. WHEN INK AND WASTE INCINERATION, THE ICINERATOR TO BURN SMALL AMOUNTS IN AN OPEN AND ADSORBED TO DIATOMACEOUS EARTH. SPRAYED INTO THE COMBUSTION CHAMBER INCINERAOR OR FIRE. HOWEVER, IF THERE IS A RISK OF DIOXINS AND OTHER TOXIC GASES CAN NOT BE DELEGATED TO A LICENSED INDUSTRIAL WASTE DISPOSAL CONTRACTOR. SPECIALLY CONTROLLED INDUSTRIAL

WASTE (ODL. SO APPROPRIATE TO THE PROCESS ENTRUSTED TO THE CONTRACTOR CONTAMINATED CONTAINERS AND PACKAGING.
AN EMPTY CONTAINER MUST BE DISPOSED OF TO ELIMINATE COMPLETELY FROM THE CONTENTS.
BE COMMISSIONED TO HANDLE INDUSTRIAL WASTE DISPOSAL LICENSE FROM THE GOVERNOR.

14. TRANSPORTATION INFORMATION

PRECAUTION: MAKE SURE THERE IS NO LEAKAGE FROM CONTAINER. LOAD ITS CARGO WITH CARE TO AVOID OVERTURNING, FALLING OR DAMAGES. THE CONTAINER SHOULD NOT BE PILED UP OVER 3M HIGH.
DO NOT MIX AND LOAD WITH DANGEROUS SUBSTANCE (CLASS 1, CLASS 6 AND HIGH-PRESSURE GAS).
TRANSPORT WITH THE CONTAINER WHICH CORRELATING TO FIRE DEFENCE LAW (DANGER RATING III).
FOLLOW ALL REGULATIONS IN YOUR COUNTRY IN CASE OF EXCESS QUANTITY SHIPPED
EQUIP VEHICLE WITH APPROPRIATE FIRE EXTINGUISHER
UN CLASS : 3
PROPER SHIPPING NAME: FRAMMABLE LIQUIDS, N.O.S. (CONTAIN ACETONE AND TOLUENE)
PACKING GROUP : II
U.N. NUMBER : 1993

15. REGULATORY INFORMATION

FIRE DEFENCE LAW (DANGEROUS SUBSTANCE CLASS 4-2 OIL INSOLUBLE IN WATER)
OCCUPATIONAL HEALTH & SAFETY LAW (ORDINANCE ON THE PREVENTION OF ORGANIC SOLVENT POISONING.
SECONDARY ORGANIC SOLVENT, SPECIFIC CHEMICAL SUBSTANCES)
ROAD TRAFFIC LAW (REGULATION ON LONG AND MASSIVE TUNNEL, UNDERWATER TUNNEL, EXPRESS HIGHWAY)
LAW OF WASTE DISPOSAL AND CLEANING.

16. OTHER INFORMATION

BACKGROUND INFORMATION 1) NATIONAL INSTITUTE FOR ENVIRONMENTALS STUDIES:
DATA BASE: HTTP://WWW.CHEMDB.NIES.GO.JP/
2) JAPAN INDUSTRIAL SAFETY & HEALTH ASSOCIATION: DATA BASE: HTTP://WWW.JAISH.OR.JP/
3) MSDS OF RAW MATERIALS
4) ICSC CARD HTTP://WWW.NIHS.GO.JP/ICSC/
5) JAPAN PRINTING INK MARKET ASSOCIATION : GUIDE BOOK (VER.2) MATERIALS SAFETY DATA SHEET INQUIRIES
SECTION CONCERNED: TECHNICAL DEPARTMENT
*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. IT IS THE USE'S OBLIGATION TO DETERMINE THE CONDITION OF SAFE USE OF THE PRODUCT.
THIS IS SAFETY DATA SHEET IS NOT TO BE CONSIDERED A WARRANTY OR QUALITY SPECIFICATION.

T-980

MATERIAL SAFETY DATA SHEET

(MIXTURE)

1. PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME: T-980

Manufacturer : Seiko Advance (Thailand) Ltd.
Address : Lat Krabang Industrial Estate Phase 3 Telephone No. : 66(0) 2 739-4747
147,147/1 Soi Chalong Krung 31 , Lumpantaiw, Fax No. : 66 (0) 2 7394363
Lat Krabang, Bangkok 10520 Date Printed : January 20, 2022

2. COMPOSITION/INFORMATION ON CHEMICAL INGREDIENTS

SUBSTANCE MIXTURE MIXTURE
PRODUCT NAME: SOLVENT FOR SCREEN PRINTING INK

COMPONENTS	WEIGHT%	CHEMICAL FORMULA	CAS NO.
ISOPHORONE	OVER 90%	C9H14O	78-59-1

3. HAZARDOUS IDENTIFICATION

HAZARD AND TOXICITY INFORMATION
TOXICITY INFORMATION: MAY HAVE A RISK OF ORGANIC SOLVENT POISONING
PHYSICAL AND CHEMICAL HAZARD: INFLAMMABLE LIQUID. REMAINING GAS MAY CAUSE EXPLOSION IN CONTACT WITH AIR. FLOWING OR STIRRING THE PRODUCT MAY PRODUCE A STATIC ELECTRICITY AND IT IS IN DANGER OF IGNITION AND BLOWUP.
CLASS NAME OF HAZARDOUS CHEMICAL : (BASED ON JAPANESE REGULATION): INFLAMMABLE LIQUID,
ACUTE TOXIC SUBSTANCE

4. FIRST AID MEASURES

INHALATION : WRAP THE VICTIM IN A BLANKET, KEEP IN QUITE AND MOVE TO FRESH AIR.
IF BREATHING IS WEAK, IRREGULAR OR STOPPED, ADMINISTER ARTIFICIAL RESPIRATION AND ARRANGE THE MEDICAL TREATMENT BY A PHYSICIAN AS SOON AS POSSIBLE.
SKIN : REMOVE ALL CONTAMINATED CLOTHS AND SHOES IMMEDIATELY. WASH THE AFFECTED AREA WITH PLENTY OF WATER. ARRANGE THE MEDICAL TREATMENT BY A PHYSICIAN ON INJURED SKIN OR PAINFUL PARTS .
EYE : WASH OFF WITH PLENTY OF WATER FOR AT LEAST 15MINUTES . ARRANGE THE MEDICAL TREATMENT.
INGESTION : DO NOT INDUCE VOMITTING, ARRANGE MEDICAL INSPECTION IMMEDIATELY.

5. FIRE FIGHTING MEASURES

EXTINGUISH MEDIA : POWDER, FOAM, CARBON DIOXIDE, DRY SAND, ENFORCED LIQUIDS SPRAY
EXTINGUISH MEDIA NOT TO BE USED: WATER
SPECIAL FIRE FIGHTING PROCEDURES : REMOVE THE CONTAINER TO A SAFE PLACE IMMEDIATELY.
IF DIFFICULT TO REMOVE, COOL DOWN THE CONTAINER AND SURROUNDING AREA WITH WATERING.
USE THE SPECIFIC EXTINGUISH MEDIA. FIRE FIGHTER SHOULD WEAR PROPER PROTECTIVE EQUIPMENT.
KEEP AWAY FROM UPWIND OF FIRE.

6. ACCIDENTAL RELEASE MEASURE

PERSONAL PRECAUTION : EVACUATE PERSONNEL NEAR FIRE. SEAL OFF THE AREA. SHUT OFF ALL SOURCES OF IGNITION IMMEDIATELY.
FIRE FIGHTER SHOULD WEAR PROPER PROTECTIVE EQUIPMENT. KEEP AWAY FROM UPWIND OF FIRE.
VENTILATE THE AREA UNTIL ALL WORK IS COMPLETED.
ENVIRNMENTAL PRECAUTIONS : PREVENT WASTEWATER FROM ENTERING WATER COURSES.
METHODS OF CLEANING UP : SOAK UP THE LEAKAGE WITH DRY SAND AND PACKAGE ALL MATERIALS IN A CLOSED CONTAINER. FLUSH THE AREA WITH PLENTY OF WATER USING MILD DETERGENT.

7. HANDLING AND STORAGE PRECAUTIONS

HANDLING:
TECHNICAL MEASURES : IMPLEMENT AND EQUIPMENT SHOULD BE GROUNDED PROPERLY FOR STATIC PROTECTION. WEAR CONDUCTIVE WORK CLOTHES AND SHOES .
USE EXPLOSION-PROOF TYPE OF ELECTRICAL EQUIPMENT AND NON-SPARKLING TOOLS.
HANDLING PRECAUTION : KEEP AWAY FROM FIRE, SPARK AND HEAT. USE IN THE WELL-VENTILATED AREA.
WEAR PROPER PROTECTIVE EQUIPMENT TO AVOID INHALATION AND PROTECT EYES AND SKIN.
KEEP CONTAINER TIGHTLY CLOSED. MINIMIZE VAPOR EXHALATION IN THE AIR AND KEEP CONTROL CONCENTRATION BELOW STANDARD.
STORAGE:
PUT IN A CLOSED CONTAINER AFTER USE. STORE IN COOL, DRY AND WELL-VENTILLATED AREA.
KEEP AWAY FROM SOURCE OF HEAT SUCH AS BOILER. KEEP AWAY FROM FLAMMABLE SUBSTANCES.
SEPARATE FROM OXIDIZING AGENT AND ORGANIC PEROXIDE.
STORE IN A DANGEROUS OBJECT WAREHOUSE ACCORDING TO FIRE DEFENCE LAW.

8. EXPOSURE CONTROL AND PERSONAL PROTECTION

ENGINEERING MEASURES : USE ONLY WITH ADEQUATE VENTILATION IN CLOSED SYSTEM.
PROTECTIVE EQUIPMENT : USE GAS MASK. PROTECTIVE GLASSES, OIL RESISTANCE GLOVES, PROTECTIVE CLOTHES AND PROTECTIVE BOOTS .
SANITARY MEASURES : CHANGE THE MASK REGULARY OR ON AS CASE-BY-CASE BASE .

EXPOSURE LIMIT:

CHEMICAL NAME	EXPOSURE LIMIT	ACGIH (YEAR 2008)
ISOPHORONE	00	500 PPM

9. PHYSICAL AND CHEMICAL PROTECTION

PHYSICAL FORM: LIQUID	COLOR: COLORLESS	ODOR: SOLVENT ODOR
PH: N/A	BOILING POINT: 215°C	FLASH POINT: 95.0 °C
DENSITY: 93	SOLUBLE IN WATER: HARD	
EXPLOSION LIMIT (%): LOWER: 80	UPPER: 380	

10. REACTIVITY AND STABILITY

STABILITY: STABLE AT ROOM TEMPERATURE OR BELOW
CONDITION TO AVOID: HEAT
INCOMPATIBLE MATERIALS : DANGEROUS SUBSTANCES (CLASS 1, CLASS 6) AND HIGH-PRESSURE GAS
HAZADOUS DECOMPOSITION PRODUCTS : HYDROGEN CHLORIDE(HCL), CARBON OXIDE (CO)

11. TOXICOLOGICAL INFORMATION

ISOPHORONE

ACUTE TOXICIT (ORAL), LD50	1,843.00 MG/KG	RAT
ACUTE TOXICITY (DERMAL), LD50	1,265.00 MG/KG	RABBIT
ACUTE TOXICITY (INHALATION, DUST)	CATEGORY 5 MAY BE HARMFUL IF INHALED	
ACUTE TOXICITY (INHALATION, MIST)	CATEGORY 5 MAY BE HARMFUL IF INHALED	
SKIN CORROSION, IRRITATION	CATEGORY 3 CAUSES MILD SKIN IRRITATION	
SERIOUS DAMAGE TO EYES, EYE IRRITATION	CATEGORY 2A INTENSE EYE IRRITAION	
SKIN SENSITIZATION	NOT CLASSIFIED	
GERM CELL MUTAGENICITY	NOT CLASSIFIED	
CACINOGENICITY	CATEGORY 2 SUSPECTED OF CAUSING CANCER	
REPRODECTIVE TOXICITY	NOT CLASSIFIED	

*NO INFORMATION ON ACUTE TOXICITY AND EFFECTS AVAILABLE EXCEPT BEING SPECIFIED AS ABOVE.

12. ECOLOGICAL INFORMATION

ISOPHORONE

ACUTE AQUATIC TOXICITY	CATEGORY 3 HARMFUL TO AQUATIC LIFE	
LC50	12.90 MG/L/96H	MYSIDOPSIS BAHIA
CHRONIC AQUATIC TOXICITY	NOT CLASSIFIED	

*NO INFORMATION AVAILABLE EXCEPT BEING SPECIFIED AS ABOVE.

13. DISPOSAL CONSIDERATION

WASTE FROM RESIDUES :
INK WASTE AND WASTE CONTAINERS WILL BE CONSIGNED TO A LICENSED INDUSTRIAL WASTE TREATMENT COMPANY. DRAINAGE WAS WASHED CONTAINERS AND EQUIPMENT AND OTHER MACHINES CAN NOT SHED THE GROUND OR DRAINS DIRECTLY. GENERATED BY THE INCINERATION OF WASTE AND WASTEWATER TREATMENT WASTE DISPOSAL AND PUBLIC CLEANSING LAW. TREATED ACCORDING TO RELEVANT LAWS AND REGULATIONS . OR PROCESSED BY THE COMPANY. WHEN INK AND WASTE INCINERATION, THE ICINERATOR TO BURN SMALL AMOUNTS IN AN OPEN AND ADSORBED TO DIATOMACEOUS EARTH. SPRAYED INTO THE COMBUSTION CHAMBER INCINERAOR OR FIRE. HOWEVER, IF THERE IS A RISK OF DIOXINS AND OTHER TOXIC GASES CAN NOT BE DELEGATED TO A LICENSED INDUSTRIAL WASTE DISPOSAL CONTRACTOR. SPECIALLY CONTROLLED INDUSTRIAL WASTE (OIL. SO APPROPRIATE TO THE PROCESS ENTRUSTED TO THE CONTRACTOR. CONTAMINATED CONTAINERS AND PACKAGING.
AN EMPTY CONTAINER MUST BE DISPOSED OF TO ELIMINATE COMPLETELY FROM THE CONTENTS.
BE COMMISSIONED TO HANDLE INDUSTRIAL WASTE DISPOSAL LICENSE FROM THE GOVERNOR.

14. TRANSPORTATION INFORMATION

PRECAUTION : MAKE SURE THERE IS NO LEAKAGE FROM CONTAINER. LOAD ITS CARGO WITH CARE TO AVOID OVERTURNING, FALLING OR DAMAGES . THE CONTAINER SHOULD NOT BE PILED UP OVER 3M HIGH
DO NOT MIX AND LOAD WITH DANGERROUS SUBSTANCE (CLASS 1, CLASS 6 AND HIGH-PRESSURE GAS).
TRANSPORT WITH THE CONTAINER WHICH CORRELATING TO FIRE DEFENCE LAW (DANGER RATING III).
FOLLOW ALL REGULATIONS IN YOUR COUNTRY IN CASE OF EXCESS QUANTITY SHIPPED
EQUIP VEHICLE WITH APPROPRIATE FIRE EXTINGUISHER
U.N. HAZARD CLASSIFICATION : NOT APPLICABLE

15. REGULATORY INFORMATION

FIRE DEFENCE LAW (DANGEROUS SUBSTANCE CLASS 4-2 OIL INSOLUBLE IN WATER)
OCCUPATIONAL HEALTH & SAFETY LAW (ORDINANCE ON THE PREVENTION OF ORGANIC SOLVENT POISONING. SECONDARY ORGANIC SOLVENT, SPECIFIC CHEMICAL SUBSTANCES)
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LAW OF WASTE DISPOSAL AND CLEANING.

16. OTHER INFORMATION

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2) JAPAN INDUSTRIAL SAFETY & HEALTH ASSOCIATION : DATA BASE : HTTP://WWW.JAISH.GR.JP/
3) MSDS OF RAW MATERIALS
4) ICSC CARD: HTTP://WWW.NIES.GO.JP/ICSC/
5) JAPAN PRINTING INK MARKET ASSOCIATION : GUIDE BOOK (VER.3) MATERIALS SAFETY DATA SHEET
INQUIRIES
SECTION CONCERNED: TECHNICAL DEPARTMENT
*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.
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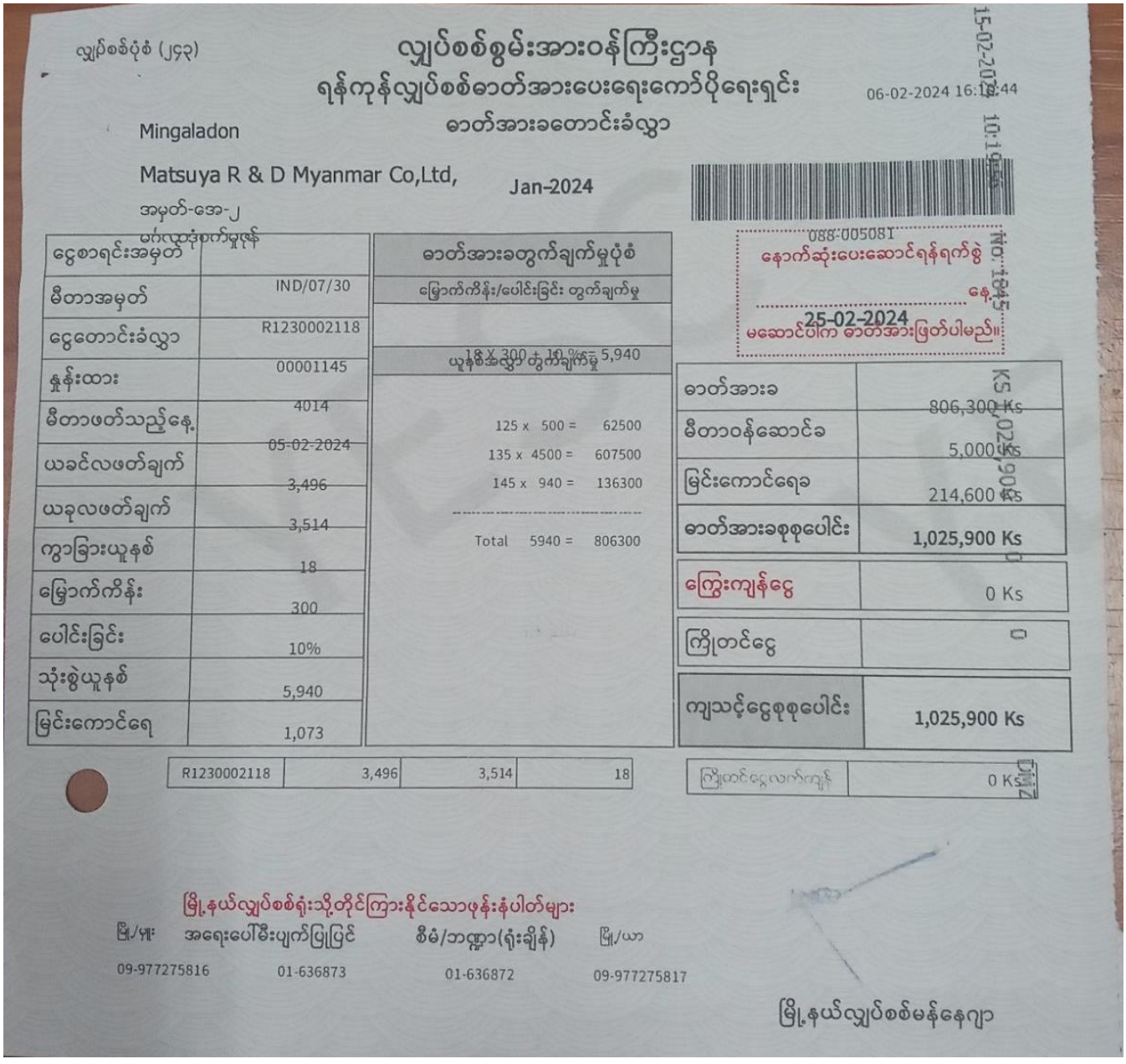
THIS IS SAFETY DATA SHEET IS NOT TO BE CONSIDERED A WARRANTY OR QUALITY SPECIFICATION.

APPENDIX E
Meter Bill



လျှပ်စစ်ပုံစံ (၂၄၃)

လျှပ်စစ်စွမ်းအားဝန်ကြီးဌာန

ရန်ကုန်လျှပ်စစ်ဓာတ်အားပေးရေးကော်ပိုရေးရှင်း

ဓာတ်အားခတောင်းခံလွှာ

06-02-2024 16:18:44

15-02-2024 10:10:55

Mingaladon

Matsuya R & D Myanmar Co,Ltd,

Jan-2024

အမှတ်-အေ-၂

မင်္ဂလာဒုံစက်မှုဇုန်

0888-005081

နောက်ဆုံးပေးဆောင်ရန်ရက်စွဲ

နေ့

25-02-2024

မဆောင်ပါက ဓာတ်အားဖြတ်ပါမည်။

ဌေစာရင်းအမှတ်	
မီတာအမှတ်	IND/07/30
ဌေတောင်းခံလွှာ	R1230002118
နှုန်းထား	00001145
မီတာဖတ်သည့်နေ့	4014
ယခင်လဖတ်ချက်	05-02-2024
ယခုလဖတ်ချက်	3,496
ကွာခြားယူနစ်	3,514
မြှောက်ကိန်း	18
ပေါင်းခြင်း	300
သုံးစွဲယူနစ်	10%
မြင်းကောင်ရေ	5,940
	1,073

ဓာတ်အားခတွက်ချက်မှုပုံစံ	
မြှောက်ကိန်း/ပေါင်းခြင်း တွက်ချက်မှု	
ယူနစ်အလွှာတွက်ချက်မှု	18 X 300 + 10 % = 5,940
125 x 500 =	62500
135 x 4500 =	607500
145 x 940 =	136300
Total 5940 =	806300

ဓာတ်အားခ	806,300 Ks
မီတာဝန်ဆောင်ခ	5,000 Ks
မြင်းကောင်ရေခ	214,600 Ks
ဓာတ်အားခစုစုပေါင်း	1,025,900 Ks
ကြွေးကျန်ငွေ	0 Ks
ကြိုတင်ငွေ	0
ကျသင့်ငွေစုစုပေါင်း	1,025,900 Ks

R1230002118	3,496	3,514	18

ကြိုတင်ငွေလက်ကျန်	0 Ks

မြို့နယ်လျှပ်စစ်ရုံးသို့တိုင်ကြားနိုင်သောဖုန်းနံပါတ်များ

မြို့/ကျေး	အရေးပေါ်ဓီးပျက်ပြုပြင်	စီမံ/ဘဏ္ဍာ(ရုံးချိန်)	မြို့/ယာ
09-977275816	01-636873	01-636872	09-977275817

မြို့နယ်လျှပ်စစ်မန်နေဂျာ

လျှပ်စစ်ပုံစံ (၂၄၃)

လျှပ်စစ်စွမ်းအားဝန်ကြီးဌာန
ရန်ကုန်လျှပ်စစ်ဓာတ်အားပေးရေးကော်ပိုရေးရှင်း
ဓာတ်အားခတောင်းခံလွှာ

06-02-2024 16:07:15

Mingaladon

Matsuya R & D (Myanmar) Co,Ltd

Jan-2024

15-02-2024 10:20:07 No. 1846

အမှတ်-အေ /ဂ-၂၁

မဂ်လာဒုံစက်မှုဇုံ

088-023428

နောက်ဆုံးပေးဆောင်ရန်ရက်စွဲ

25-02-2024 ရက်

မဆောင်ပါက ဓာတ်အားဖြတ်ပါမည်။

ငွေစာရင်းအမှတ်	
မီတာအမှတ်	19/05/21
ငွေတောင်းခံလွှာ	YE-46196
နှုန်းထား	00018283
မီတာဖတ်သည့်နေ့	1013
ယခင်လဖတ်ချက်	05-02-2024
ယခုလဖတ်ချက်	1
ကွာခြားယူနှစ်	1
မြောက်ကိန်း	0
ပေါင်းခြင်း	1
သုံးစွဲယူနှစ်	0%
မြင်းကောင်ရေ	0
	0

ဓာတ်အားခတွက်ချက်မှုပုံစံ
မြောက်ကိန်း/ပေါင်းခြင်း တွက်ချက်မှု
0 X 1 + 0 % = 0
ယူနှစ်အလွှာ တွက်ချက်မှု
125 x 0 = 0
Total 0 = 0

ဓာတ်အားခ	0 Ks
မီတာဝန်ဆောင်ခ	500 Ks
မြင်းကောင်ရေခ	0 Ks
ဓာတ်အားခစုစုပေါင်း	**500 Ks**
ကြွေးကျန်ငွေ	0 Ks
ကြိုတင်ငွေ	
ကျသင့်ငွေစုစုပေါင်း	**500 Ks**

YE-46196	1	1	0

ကြိုတင်ငွေလက်ကျန်	0 Ks

KS 500

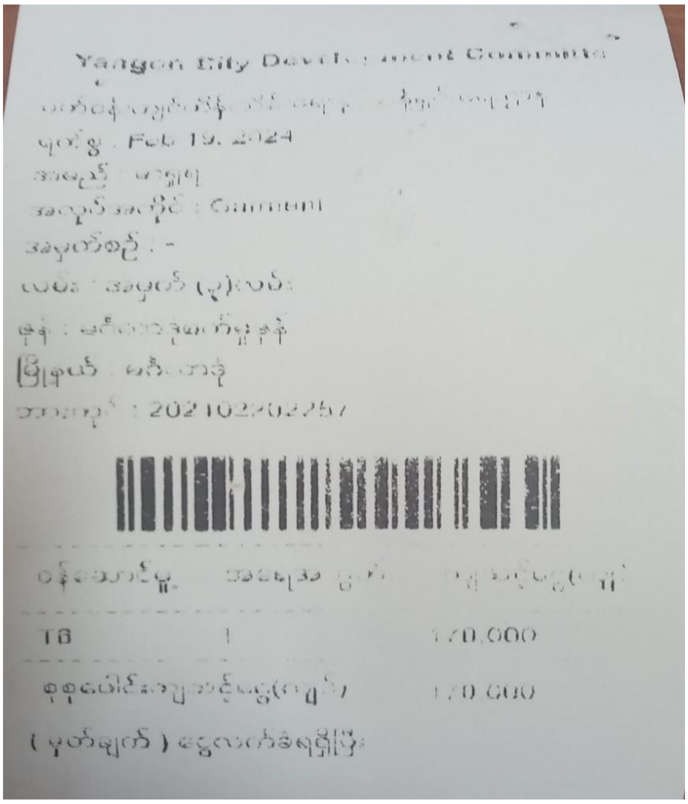
မြို့နယ်လျှပ်စစ်ရုံးသို့တိုင်ကြားနိုင်သောဖုန်းနံပါတ်များ

အရေးပေါ်မီးပျက်ပြုပြင် စီမံ/ဘဏ္ဍာ(ရုံးချိန်)

မြို့/ဗျား			မြို့/ယာ
09-977275816	01-636873	01-636872	09-977275817

မြို့နယ်လျှပ်စစ်မန်နေဂျာ

APPENDIX F
Waste Collection from YCDC



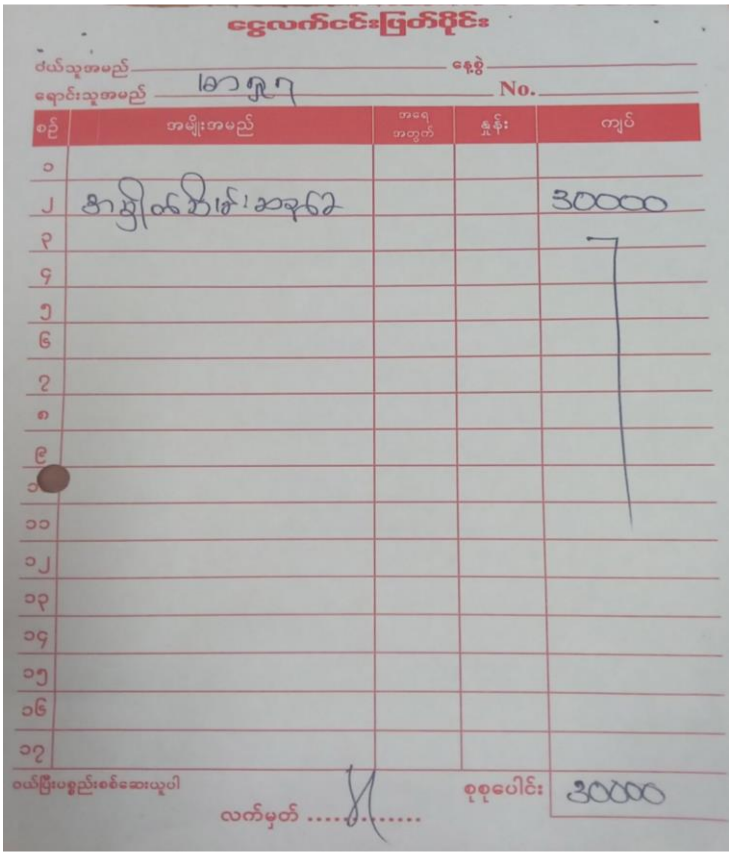
Yangon City Development Committee

Feb 19, 2024

Commercial

2021020202257

T8	1	170,000
		170,000



ငွေလက်ငင်းပြတ်ပိုင်း

ဝယ်သူအမည် နေ့စွဲ

ရောင်းသူအမည် No.

စဉ်	အမျိုးအမည်	အရေအတွက်	နှုန်း	ကျပ်
၁				
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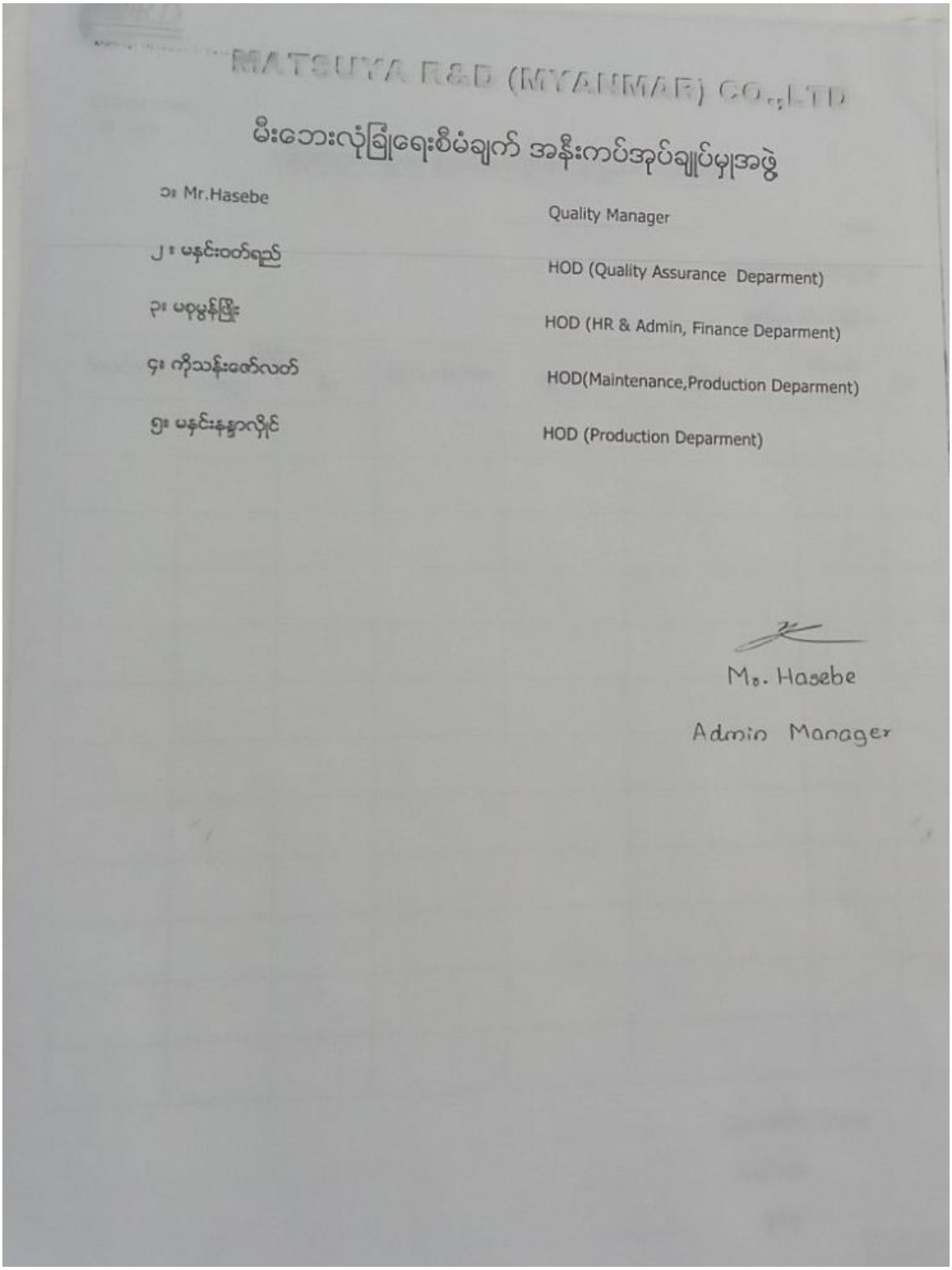
စုစုပေါင်း 30000

လက်မှတ်

APPENDIX G

Health, Safety and Environment Committees of Melody Global Company Limited

Factory Fire Safety Committee



MATSUYA R&D (MYANMAR) CO.,LTD

မီးဘေးလုံခြုံရေးစီမံချက် အနီးကပ်အုပ်ချုပ်မှုအဖွဲ့

၁။ Mr.Hasebe	Quality Manager
၂။ မနှင်းဝတ်ရည်	HOD (Quality Assurance Deparment)
၃။ မဝုမွန်ဖြူး	HOD (HR & Admin, Finance Deparment)
၄။ ကိုသန်းဇော်လတ်	HOD(Maintenance,Production Deparment)
၅။ မနှင်းနွဲ့ဘလိုင်	HOD (Production Deparment)

Mr. Hasebe

Admin Manager

MATSUYA R&D (MYANMAR) CO.,LTD

မီးဘေးလုံခြုံရေးစီမံချက် မီးငြိမ်းသတ်ရေးအဖွဲ့

၁။ ကိုသက်လွင်ဦး	Maintenance	ခေါင်းဆောင်
၂။ ကိုအာကာထက်	Sewing Operator	ဒုခေါင်းဆောင်
၃။ ကိုသန်းတိုးအောင်	Sewing Operator	အဖွဲဝင်
၄။ ကိုကိုကိုထွန်း	Sewing Operator	အဖွဲဝင်
၅။ ကိုကျော်ထက်အောင်	Sewing Operator	အဖွဲဝင်
၆။ ကိုပြည့်ဖြိုးဦး	Sewing Operator	အဖွဲဝင်
၇။ ကိုအောင်သူဟိန်း	Sewing Operator	အဖွဲဝင်

Mr. Hasebe

Admin Manager

MATSUYA R&D (MYANMAR) CO.,LTD

မီးဘေးလုံခြုံရေးစီမံချက် အထောက်အကူပြုအဖွဲ့

၁။ မဖြူဝင်းဝင်း	QC Leader	အဖွဲ့ခေါင်းဆောင်
၂။ ကိုရဲမင်းထွန်း	Sewing Sub-supervisor	အဖွဲ့ဝင်
၃။ မဇာခြည်ဝင်း	Sewing Leader	အဖွဲ့ဝင်
၄။ မအိသီရိနိုင်	Sewing Leader	အဖွဲ့ဝင်
၅။ မဝင်းဝင်းဇင်	Sewing Leader	အဖွဲ့ဝင်
၆။ မဝေဝေလွင်	Sewing Leader	အဖွဲ့ဝင်
၇။ မအိမင်းထက်	Sewing Operator	အဖွဲ့ဝင်
၈။ မစင်းသီတာခိုင်	Sewing Operator	အဖွဲ့ဝင်
၉။ မမိုးလွန်လှိုင်	Sewing Operator	အဖွဲ့ဝင်
၁၀။ မကြည်ကြည်သိန်း	Sewing Operator	အဖွဲ့ဝင်
၁၁။ မဝင်းသူဇာ	Sewing Operator	အဖွဲ့ဝင်
၁၂။ မရင်ရင်သန်း	Sewing Operator	အဖွဲ့ဝင်
၁၃။ မဇူးဝေခိုင်	Sewing Operator	အဖွဲ့ဝင်
၁၄။ မအေးအေးမြင့်	Sewing Operator	အဖွဲ့ဝင်
၁၅။ မအေးမြင့်သူဇာ	Sewing Operator	အဖွဲ့ဝင်

Mr. Hasebe

Admin Manager

MATSUYA R&D (MYANMAR) CO.,LTD

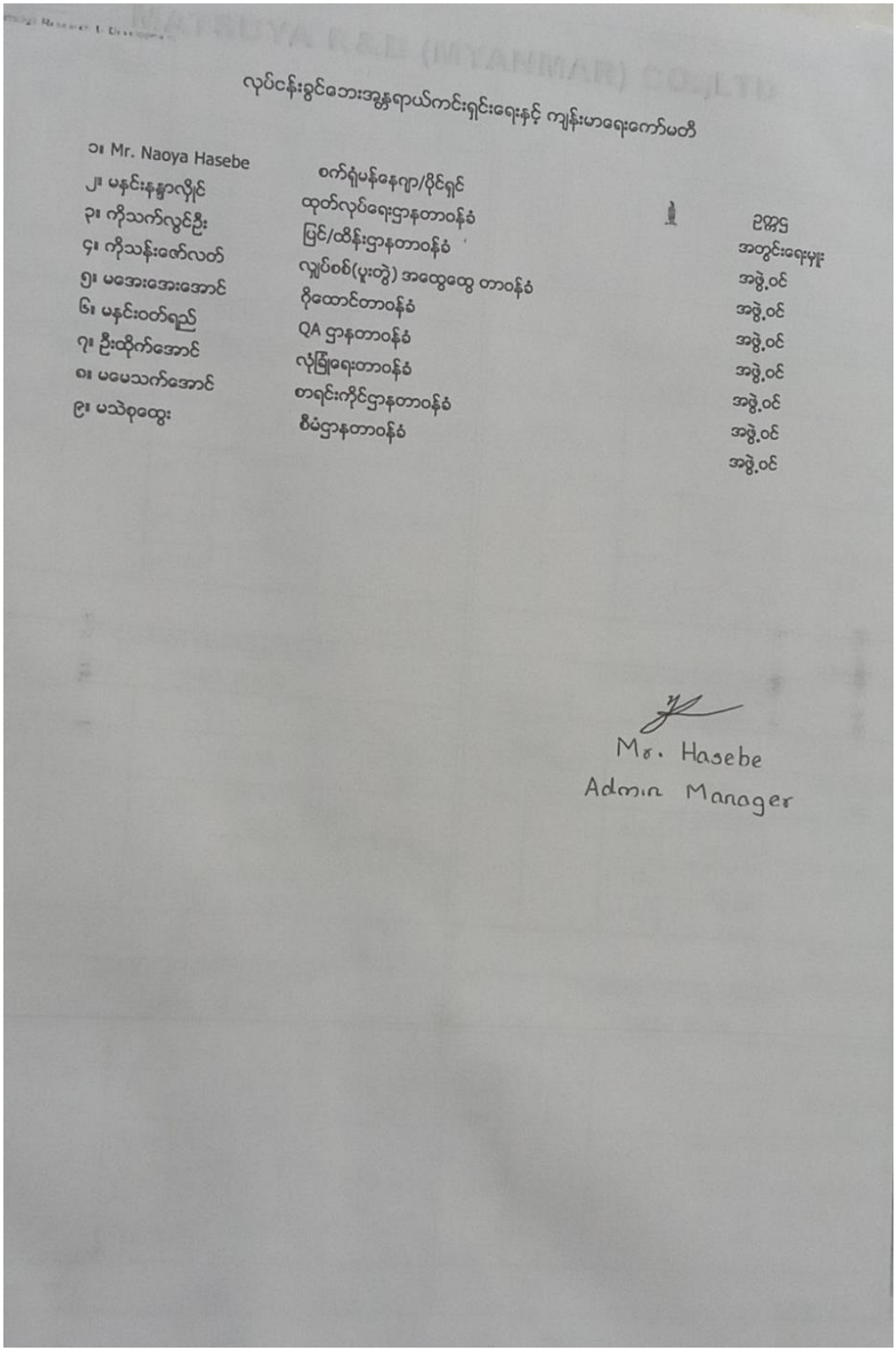
မီးဘေးလုံခြုံရေးစီမံချက် သယ်ထုတ်ရေးအဖွဲ့

၁။ ကိုမျိုးမြင့်	Printing Leader	ခေါင်းဆောင်
၂။ ကိုကျော်ဇင်ဦး	Printing Operator	အဖွဲ့ဝင်
၃။ ကိုကျော်ဇင်ဖြိုး	Printing Operator	အဖွဲ့ဝင်
၄။ ကိုကျော်ဇေယျာ	Printing Operator	အဖွဲ့ဝင်
၅။ ကိုရန်နိုင်ထွန်း	Printing Operator	အဖွဲ့ဝင်
၆။ ကိုကော်လင်းဖြိုး	Cutting Operator	အဖွဲ့ဝင်
၇။ ကိုထွန်းထွန်းနိုင်	Cutting Operator	အဖွဲ့ဝင်

Mr. Hasebe

Admin Manager

Factory Occupational Health and Safety Committee



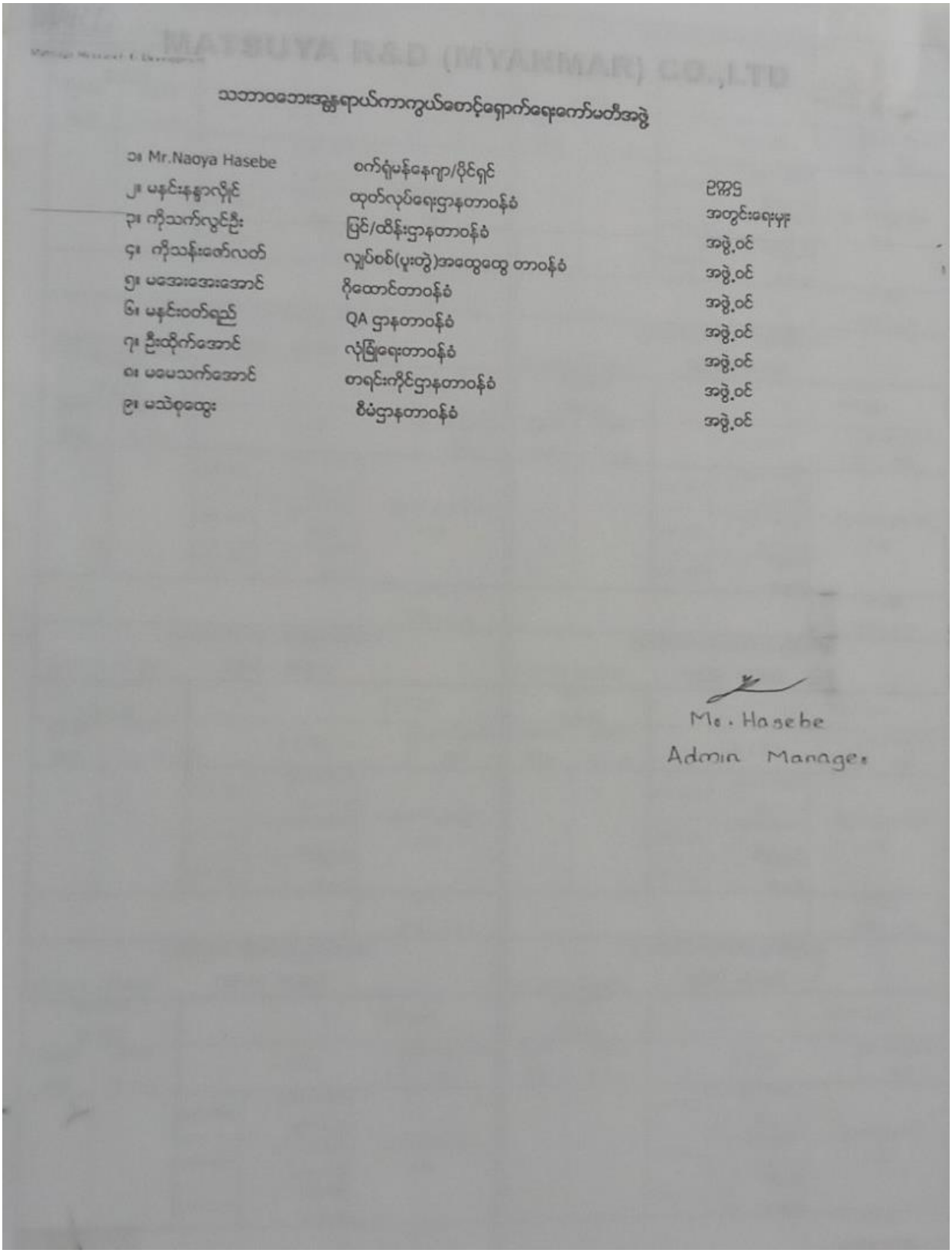
MATSUYA R&D (MYANMAR) CO.,LTD.

လုပ်ငန်းခွင်ဘေးအန္တရာယ်ကင်းရှင်းရေးနှင့် ကျန်းမာရေးကော်မတီ

၁။ Mr. Naoya Hasebe	စက်ရုံမန်နေဂျာ/ဗိုင်ရုင်	
၂။ မနင်းနန္ဒာလိုင်	ထုတ်လုပ်ရေးဌာနတာဝန်ခံ	ဥက္ကဋ္ဌ
၃။ ကိုသက်လွင်ဦး	ပြင်/ထိန်းဌာနတာဝန်ခံ	အတွင်းရေးမှူး
၄။ ကိုသန်းဇော်လတ်	လျှပ်စစ်(ပူးတွဲ) အထွေထွေ တာဝန်ခံ	အဖွဲ့ဝင်
၅။ မအေးအေးအောင်	ဂိုထောင်တာဝန်ခံ	အဖွဲ့ဝင်
၆။ မနင်းဝတ်ရည်	QA ဌာနတာဝန်ခံ	အဖွဲ့ဝင်
၇။ ဦးထိုက်အောင်	လုံခြုံရေးတာဝန်ခံ	အဖွဲ့ဝင်
၈။ မမေသက်အောင်	စာရင်းကိုင်ဌာနတာဝန်ခံ	အဖွဲ့ဝင်
၉။ မသဲစုထွေး	စီမံဌာနတာဝန်ခံ	အဖွဲ့ဝင်
		အဖွဲ့ဝင်

Mr. Hasebe
Admin Manager

Factory Natural Hazardous Chart



MATSUYA R&D (MYANMAR) CO.,LTD

သဘာဝဘေးအန္တရာယ်ကာကွယ်စောင့်ရှောက်ရေးကော်မတီအဖွဲ့

၁။ Mr.Naoya Hasebe	စက်ရုံမန်နေဂျာ/ဝိုင်ရှင်	ဥက္ကဋ္ဌ
၂။ မနင်းနန္ဒာလိုင်	ထုတ်လုပ်ရေးဌာနတာဝန်ခံ	အတွင်းရေးမှူး
၃။ ကိုသက်လွင်ဦး	မြင်/ထိန်းဌာနတာဝန်ခံ	အဖွဲ့ဝင်
၄။ ကိုသန်းဇော်လတ်	လျှပ်စစ်(ပူးတွဲ)အထွေထွေ တာဝန်ခံ	အဖွဲ့ဝင်
၅။ မအေးအေးအောင်	ဂိုထောင်တာဝန်ခံ	အဖွဲ့ဝင်
၆။ မနင်းဝတ်ရည်	QA ဌာနတာဝန်ခံ	အဖွဲ့ဝင်
၇။ ဦးထိုက်အောင်	လုံခြုံရေးတာဝန်ခံ	အဖွဲ့ဝင်
၈။ မစမသက်အောင်	စာရင်းကိုင်ဌာနတာဝန်ခံ	အဖွဲ့ဝင်
၉။ မသဲစုထွေး	စိမံဌာနတာဝန်ခံ	အဖွဲ့ဝင်

Mr. Hasebe
Admin Manager

APPENDIX H
Corporate Social Responsibility

SAVE THEM ALL

Certificate of Donation

We present this certificate to

Matsuya R&D (Myanmar) Co.,Ltd.

Plot No. A7-2, Mingaladon Industrial Park, Cornar of No.3 Highway Rd & Khayehin Rd. Mingaladon Township, Yangon

Thank you for your kind donation as

480,000 MMK(Kyats / ~~USD~~)

to

Our vulnerable programme on rabies control and animals welfare

Daw Soe Thandar Htet

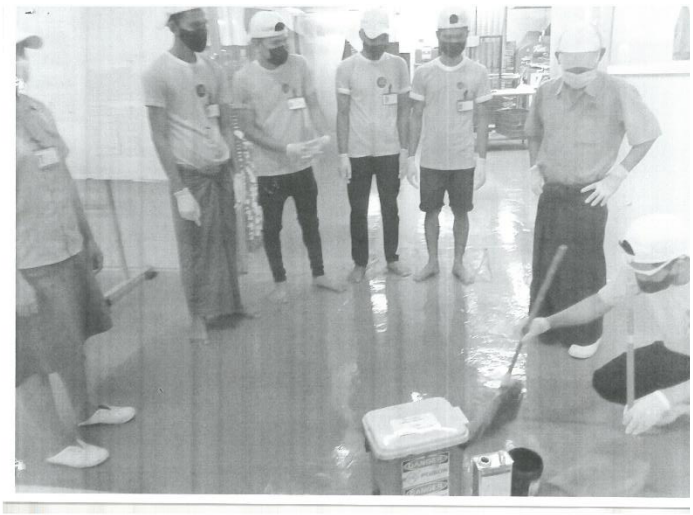
Chairman

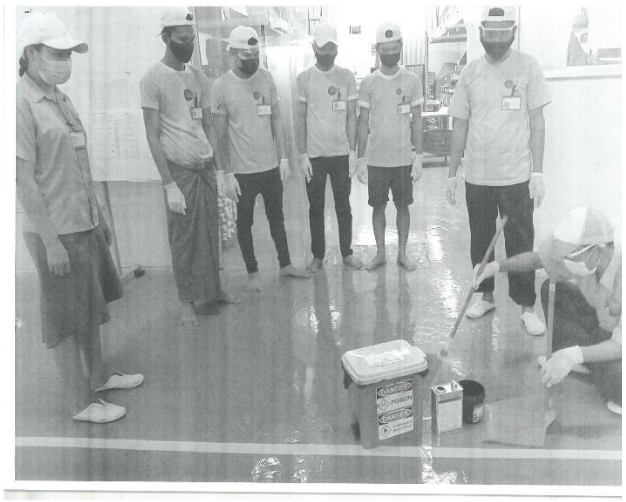
Myanmar Alliance for Rabies Control

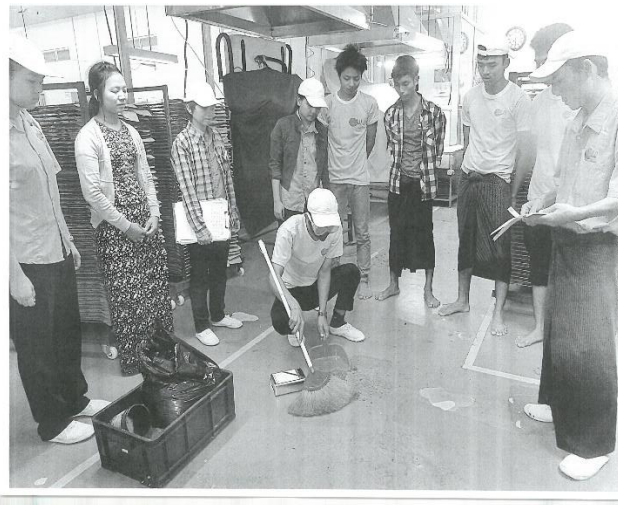
Given this on: 31 / 12 / 2016

APPENDIX I
Safety Trainings

Chemical Safety Training







Fire Safety Training

APPENDIX J
List of Commitment

Matsuya R&D (Myanmar) Company Limited ၏ CMP စနစ်ဖြင့် CMP စနစ်ဖြင့် သွေးဖိအားတိုင်းကိရိယာပါ လက်ပတ်အပြားများကို ထုတ်လုပ်ခြင်းလုပ်ငန်းလည်ပတ်ဆောင်ရွက်ခြင်းကြောင့် ဖြစ်ပေါ်လာနိုင်သော သဘာဝပတ်ဝန်းကျင်၊ လူမှုဘဝနှင့် ကျန်းမာရေးထိခိုက်မှုများ ရှိခဲ့ပါက လျှော့ချရေး၊ စီမံခန့်ခွဲရေးနှင့် တားဆီးရေးအစီအစဉ်များ အနေဖြင့် ပတ်ဝန်းကျင်စီမံခန့်ခွဲမှုအစီအစဉ် Environmental Management Plan (EMP) တွင် ပါဝင်ရမည့်အချက်များကို အကောင်အထည်ဖော်စီမံဆောင်ရွက်သွားမည်ဖြစ်ကြောင်း အောက်ဖော်ပြပါ ဇယားဖြင့် အကျဉ်းချုပ် စာရင်းပြုစု ဖော်ပြထားပါသည်။

ကတိကဝတ်၏ အတိုချုပ်အမည်	**အမှတ်စဉ်**	**ကတိကဝတ်အားရှင်းလင်းချက်**	**အစီရင်ခံစာပါ ရည်ညွှန်းချက် (အခန်း)**
နိဒါန်း	၁	ရည်ရွယ်ချက် လုပ်ငန်းလုပ်ဆောင်မှုများကြောင့်ဖြစ်ပေါ်လာသည့် ပတ်ဝန်းကျင် ထိခိုက်မှုအပေါ် လျှော့ချရန်။ ပတ်ဝန်းကျင်စောင့်ကြပ်ကြည့်ရှုမည့် အစီအစဉ်အား အကောင်အထည်ဖော်ခြင်း။ ရည်မှန်းချက် သဘာဝပတ်ဝန်းကျင်ဆိုင်ရာစီမံခန့်ခွဲမှုစနစ်သည် ပတ်ဝန်းကျင်ဆိုင်ရာ စွမ်းဆောင်ရည်ကို စဉ်ဆက်မပြတ် ပြန်လည် သုံးသပ်ခြင်း၊ စွမ်းဆောင်ရည်မြှင့်တင်ခြင်းဖြင့် အောင်မြင်စေရန် လုပ်ဆောင် ပေးသော စနစ်တစ်ခု ဖြစ်ပါသည်။ သဘာဝပတ်ဝန်းကျင်ဆိုင်ရာစွမ်းဆောင်ရည်ကို မြှင့်တင်ရန် ပြန်လည်သုံးသပ်ခြင်းနှင့် အကဲဖြတ်ခြင်း။	အခန်း (၁)

		သဘာဝပတ်ဝန်းကျင်ဆိုင်ရာစီမံခန့်ခွဲမှုစနစ်သည် သဘာဝပတ်ဝန်းကျင်ဆိုင်ရာစွမ်းရည်ကို မြှင့်တင်ရန် စဉ်ဆက်မပြတ် ပံ့ပိုး ပေးသည်။	
	၁.၁	အဆိုပြုလုပ်ငန်း၏ နောက်ခံအကြောင်းအရာ Matsuya R&D (Myanmar) Company Limited သည် CMP စနစ်ဖြင့် သွေးဖိအားတိုင်းကိရိယာပါ လက်ပတ်အပြားများကို ထုတ်လုပ်ခြင်းလုပ်ငန်းဖြစ်ပြီး နိုင်ငံခြားရင်းနှီးမြှုပ်နှံမှု လုပ်ငန်းတစ်ခုဖြစ်ပါသည်။ ပတ်ဝန်းကျင်စီမံခန့်ခွဲမှုအစီအစဉ် (EMP) ပြုလုပ်ရန် လိုအပ်ကြောင်း ၂၀၁၅ ခုနှစ်၊ ဖေဖော်ဝါရီလ ၁၃ ရက်နေ့တွင် စာအမှတ်၊ DICA-3/FI-1117/2015 (256-C) ဖြင့် မြန်မာနိုင်ငံရင်းနှီးမြှုပ်နှံမှုကော်မရှင်မှ သဘောထားမှတ်ချက် ရရှိပြီးဖြစ်ပါသည်။	အခန်း၁ခွဲ (၁.၄)
မူဝါဒ၊ ဥပဒေနှင့် အဖွဲ့အစည်း ဆိုင်ရာ မူဘောင်များ	၂	ပတ်ဝန်းကျင်ထိန်းသိမ်းရေးဥပဒေ (၂၀၁၂) ပတ်ဝန်းကျင်ထိန်းသိမ်းရေးနည်းဥပဒေ (၂၀၁၄) ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်းဆိုင်ရာ လုပ်ထုံးလုပ်နည်း (၂၀၁၅) မြန်မာနိုင်ငံမှချမှတ်ထားသော စက်ရုံနှင့် သက်ဆိုင်သည့် အခြား လိုက်နာ ဆောင်ရွက်ရမည့်လုပ်ထုံးလုပ်နည်း၊ ဥပဒေ၊ နည်းဥပဒေ နှင့် မူဝါဒများ အမျိုးသားပတ်ဝန်းကျင်ဆိုင်ရာအရည်အသွေး (ထုတ်လွှတ်မှု) လမ်းညွှန်ချက် (၂၀၁၅)နှင့် နိုင်ငံတကာ ပတ်ဝန်းကျင်ဆိုင်ရာ စံသတ်မှတ်ချက်နှင့် ပတ်ဝန်းကျင်စီမံခန့်ခွဲမှုဆိုင်ရာ လမ်းညွှန်ချက်များ။	အခန်း (၂)
စီမံကိန်းအကြောင်းအရာဖော်ပြချက်	၃	မြေကွက်အမှတ် (A7-2)၊ မင်္ဂလာဒုံစက်မှုဇုန်၊ မင်္ဂလာဒုံမြို့နယ်၊ ရန်ကုန်တိုင်းဒေသကြီးတွင် တည်ရှိပါသည်။	အခန်း၁ခွဲ (၃.၁)
	၃.၁	စုစုပေါင်း ဧရိယာသည် ၁.၉၇၅ ဧက ဖြစ်သည်။	အခန်း၁ခွဲ (၃.၁)
	၃.၂	အဆိုပြုလုပ်ငန်း၏ထုတ်ကုန်သည် သွေးဖိအားတိုင်းကိရိယာပါ လက်ပတ်အပြားများကို ထုတ်လုပ် သွားမည် ဖြစ်ပါသည်။	အခန်း၁ခွဲ (၃.၂)

	၃.၃	အဆိုပြုလုပ်ငန်းအတွက် လိုအပ်သောအဓိကကုန်ကြမ်းများကို တရုတ်နိုင်ငံမှ တင်သွင်းမည်ဖြစ်သည်။	အခန်း၃ (၃.၃)
	၃.၄	အဆိုပြုလုပ်ငန်းသည် ပြည်ပမှ ၃ ဦးနှင့် ပြည်တွင်းလုပ်သား ၂၆၅ ဦးတို့ဖြင့် လုပ်ငန်းကို ဆောင်ရွက်သွား မည်ဖြစ်ပါသည်။	အခန်း၃ (၃.၃)
ပတ်ဝန်းကျင်အရည်အသွေး တိုင်းတာမှု	၄	အမျိုးသားပတ်ဝန်းကျင်ဆိုင်ရာအရည်အသွေး (ထုတ်လွှတ်မှု) လမ်းညွှန်ချက် (၂၀၁၅)နှင့် နိုင်ငံတကာ ပတ်ဝန်းကျင်ဆိုင်ရာ စံသတ်မှတ်ချက်များနှင့် ပတ်ဝန်းကျင် စီမံခန့်ခွဲမှုဆိုင်ရာ လမ်းညွှန် ချက်များကို အခြေခံလေ့လာတိုင်း တာထားပါသည်။	အခန်း (၄)
လေအရည်အသွေး	၄.၁	အမျိုးသားပတ်ဝန်းကျင်ဆိုင်ရာအရည်အသွေး (ထုတ်လွှတ်မှု) လမ်းညွှန်ချက် (၂၀၁၅)၏ ထုတ်လွှတ်အခိုးအငွေ့ (Air emissions) လမ်းညွှန် သတ်မှတ်ချက် တို့ဖြင့် နှိုင်းယှဉ်ဖော်ပြထားပါသည်။	အခန်း၃ (၄.၂)
ဆူညံသံ	၄.၂	အမျိုးသားပတ်ဝန်းကျင်ဆိုင်ရာအရည်အသွေး (ထုတ်လွှတ်မှု) လမ်းညွှန်ချက် (၂၀၁၅)၏ အမြင့်ဆုံးလက်ခံနိုင်သည့် ဆူညံသံ အဆင့် (Noise level) လမ်းညွှန်သတ်မှတ်ချက် စက်မှုဇုန် ဧရိယာတွင် (70 One hour LAeq (dBA)) ဖြင့်နှိုင်းယှဉ် ဖော်ပြ ထားပါသည်။	အခန်း၃ (၄.၂)
အလင်းရောင်ရရှိမှု	၄.၃	Illumination and Limiting Glare Index based on IES Code, 1968 ဖြင့် နှိုင်းယှဉ်ဖော်ပြထားပါသည်။	အခန်း၃ (၄.၂)
သောက်သုံးရေအရည်အသွေး	၄.၄	WHO Guideline ဖြင့် နှိုင်းယှဉ်ဖော်ပြထားပါသည်။	အခန်း၅ (၅.၂.၅)
စွန့်ပစ်ရေအရည်အသွေး	၄.၅	NEQEG Wastewater Standards ဖြင့် နှိုင်းယှဉ်ဖော်ပြထားပါသည်။	အခန်း၅ (၅.၂.၅)
ဒေသဆိုင်ရာအချက်အလက်များ	၄.၆	ရန်ကုန်တိုင်းဒေသကြီး၏ တရားဝင်ပြဋ္ဌာန်းထားသော မြို့နယ်ဆိုင်ရာ အချက်အလက်များမှ ဖော်ပြထား ပါသည်။	အခန်း၃ (၄.၄)နှင့် (၄.၅)
	၅	ဆန်းစစ်ခြင်းနည်းလမ်း သိသာထင်ရှားသောသက်ရောက်မှု= (ပမာဏ + အချိန် + ကျယ်ပြန့်မှု)* ဖြစ်နိုင်ခြေ	အခန်း၅ (၅.၁)

ပတ်ဝန်းကျင်ထိခိုက်မှု ဆန်းစစ်ခြင်းနှင့် လျှော့ချရေးနည်းလမ်းများ	၅.၁	ထိခိုက်မှုဆန်းစစ်ခြင်း ကောင်းကျိုး အလုပ်အကိုင်အခွင့်အလမ်းပေါများလာခြင်း၊ လမ်းပန်းဆက်သွယ်ရေးကောင်းမွန်လာခြင်း၊ နည်းပညာများ တိုးတက်လာခြင်း။ ဆိုးကျိုး သဘာဝပတ်ဝန်းကျင်အရင်းအမြစ်များ၊ ဂေဟစနစ်အရင်း အမြစ်များ၊ လူသားများအပေါ် ထိခိုက်မှုများ၊ အမှိုက်စွန့်ပစ်ခြင်းကြောင့် ထိခိုက်မှုများ။	အခန်း၇ (၅.၁)
ပတ်ဝန်းကျင်စီမံခန့်ခွဲမှု	၆	Matsuya R&D (Myanmar) Company Limited ၏ ပတ်ဝန်း ကျင်စီမံခန့်ခွဲမှုအစီအစဉ် (EMP)အတွက် စက်ရုံစီမံခန့်ခွဲရေးအဖွဲ့၊ အလုပ်သမားများ၊ ဒေသခံလူထုများ၏ အမြင်၊ သက်ဆိုင်ရာ တာဝန်ရှိသူတို့၏ အကြံပြုချက်များနှင့် ကွင်းဆင်းလေ့လာသူများမှ ဆွေးနွေးတိုင်ပင်မှု တို့အပေါ် အခြေခံပြီး ဆောင်ရွက်သွားမည် ဖြစ်သည်။ EMP တွင် စက်ရုံအတွင်း ဘေးအန္တရာယ် ကင်းရှင်းရေးစီမံခန့်ခွဲမှုများကို လိုက်နာရန် အတွက် ထည့်သွင်းဖော်ပြထားပါသည်။	အခန်း (၆)
လေထုညစ်ညမ်းမှုနှင့် ဖုန်မှုန့်များ	၆.၁	ကာဗွန်ဒိုင်အောက်ဆိုဒ်လျော့ချရန်အတွက် စက်ရုံအနီး အတွင်း သစ်ပင် ပန်းပင်များ စိုက်ပျိုးရမည်။ အဆိုပြုလုပ်ငန်းဧရိယာအတွင်း စွန့်ပစ်ပစ္စည်းများ မီးရှို့ခြင်းကို တားမြစ်ထားရမည်။ လေထုညစ်ညမ်းမှုလျှော့ချရန်လုပ်ငန်းသုံးယာဉ်များ၊ မီးစက်များနှင့် လုပ်ငန်းဆိုင်ရာ စက်ပစ္စည်းများကို ပုံမှန် စောင့်ကြည့်စစ်ဆေး ရမည်။ ပတ်ဝန်းကျင်အပေါ် မီးခိုးထွက်ရှိမှု လျော့နည်းစေရန် မီးခိုးခေါင်းတိုင်များ တပ်ဆင်ရမည်။ မော်တော်ယာဉ်များ၊ ရေစုပ်စက်များနှင့် မီးစက်များကို ပုံမှန်ပြုပြင်ထိန်းသိမ်း ထားရှိရမည်။	အခန်း၇ (၆)

ဆူညံသံထွက်ရှိမှု	၆.၂	မီးစက်ခန်းများထားရှိခြင်းနှင့်အခြားသက်ဆိုင်သည့် စက်ပစ္စည်း များအား စနစ်တကျ ထိန်းသိမ်းထားရှိရမည်။ ဝန်ထမ်းများကို သက်ဆိုင်ရာကိစ္စရပ်များနှင့် ပတ်သက်၍ သင့်တော်သော သင်တန်းများ ပေးခြင်း၊ ဆူညံသံထွက်ရှိသည့် နေရာများ တွင် PPE များကို ဝတ်ဆင်စေခြင်း။	အခန်း၌ (၆)
မီးဘေးအန္တရာယ်	၆.၃	မီးအန္တရာယ်အရေးပေါ် အခြေအနေများ အတွက် စက်ရုံအတွင်းတွင် မီးသတ်ဆေးဗူးများ၊ မီးသတ် ရေပိုက်များ၊ မီးသတ်ရေကန် ထားရှိရမည်။ အရေးပေါ်ထွက်ပေါက်များနှင့် စုရပ်နေရာ များအား လမ်းညွှန်ပြ ထားရှိရမည်။ မီးသတ်ရေလှောင်ကန်များ၊ မီးငြိမ်းသတ်ရေး ကိရိယာများကို ပုံမှန်စစ်ဆေးခြင်း စက်ရုံ အတွင်း အရေးပေါ်အချက်ပေးစနစ်များ တပ်ဆင်ခြင်း၊ အရေးပေါ်ထွက်ပေါက်များ တစ်လျှောက်တွင် စက်ပစ္စည်းများနှင့် အခြားသောကုန်ပစ္စည်းများ ပိတ်ဆို့ထားခြင်း မရှိရန် စီစဉ်ထားရမည်။	အခန်း၌ (၆)
လုပ်ငန်းခွင်ဘေးကင်းရေးနှင့် ကျန်းမာရေး	၆.၄	ရှေးဦးပြုစုနည်းသင်တန်းများ၊ ဘေးအန္တရာယ် ကင်းရှင်းရေး လေ့ကျင့်မှု၊ မီးငြိမ်းသတ်နည်း သင်တန်းများ၊ အခြား လိုအပ်သော လေ့ကျင့်မှုများ၊ စက်ပစ္စည်းများကို စနစ်တကျ ကိုင်တွယ်မှုများအား သင်တန်းပေးခြင်း၊ လုပ်ငန်းခွင်အတွင်း အလုပ်သမားများ အလင်းရောင်ကောင်းစွာ ရရှိစေရန်နှင့် အမြင်အာရုံမထိခိုက်စေရန် အလင်း ရောင်များကို လုံလောက်စွာထားရှိခြင်း ဌာနတစ်ခုချင်းစီအတွက် တစ်ကိုယ်ရေသုံးကာကွယ်ရေး ပစ္စည်းများ ထောက်ပံ့ပေးခြင်း၊ လျှပ်စစ်အန္တရာယ် ကာကွယ်ရန်အတွက် လျှပ်စစ် ထိန်းသိမ်းရေး ဝန်ထမ်းများထားရှိ၍ ပုံမှန် စစ်ဆေး ကာကွယ်မှုများ ပြုလုပ်စေခြင်း၊ ဝန်ထမ်းများ၏ ကျန်းမာရေးတွက် ဓနာရီအတွင်း လက်ခံနိုင်သည့် အမြင့်ဆုံးဆူညံမှုနှုန်းမှာ ၇၀ dB(A) ဖြစ်ပြီး အသံဆူညံသည့် နေရာများတွင် အသံလုံသည့် နားကြပ်များ၊ နားအကာ အကွယ်ပစ္စည်းများ တပ်ဆင်စေခြင်း။	အခန်း၌ (၆)

အစိုင်အခဲစွန့်ပစ္စည်းများ	၆.၅	အဆောက်အဦတစ်ခုစီတွင် သီးခြား အမှိုက်ပုံးများ ထားရှိခြင်း၊ အမှိုက်အမျိုး အစားခွဲခြားစွန့်ပစ်ခြင်း၊ YCDC နှင့် ချိတ်ဆက်၍ အမှိုက်စွန့်ပစ်ခြင်း။	အခန်းခွဲ (၆)
စွန့်ပစ်ရေ	၆.၆	စွန့်ပစ်ပစ္စည်းများ သိမ်းဆည်းမှုအား ပုံမှန် စောင့်ကြည့် စစ်ဆေးခြင်း၊ လုပ်ငန်းခွင်ကျန်းမာရေး လုံခြုံမှုနှင့် ပတ်ဝန်းကျင်ဆိုင်ရာ လိုအပ်ချက်များနှင့်အညီ စနစ်တကျ စွန့်ပစ်ခြင်း။ စွန့်ပစ်ပစ္စည်းများကို YCDC နှင့် ချိတ်ဆက်၍ စွန့်ပစ်ခြင်း။	အခန်းခွဲ (၆)
စွမ်းအင်	၆.၇	အပူနှင့်အအေးထိန်းရန်အတွက် အချိန် ကန့်သတ်သည့် ကိရိယာနှင့် သာမိုစတပ်များ တပ်ဆင်ခြင်း။ စွမ်းအင်ချွေတာသောကိရိယာများတပ်ဆင်ခြင်း။ အသုံးမပြုသည့်အချိန်တွင် မီးပိတ်ထားခြင်း၊ စက်ပစ္စည်းများ ရပ်နားထားခြင်း။	အခန်းခွဲ (၆)
အရေးပေါ်တုံ့ပြန်မှုနှင့် ဘေးအန္တရာယ်စီမံခန့်ခွဲမှု	၆.၈	မီးဘေး၊ ငလျင်၊ ရေလွှမ်းမိုးမှု၊ မုန်တိုင်းနှင့် အခြားအရေးပေါ်ကိစ္စများကို ပို၍ သင့်တော်သော စီမံခန့်ခွဲမှုများပြုလုပ်ခြင်း။ စက်ရုံ၏ ကဏ္ဍတစ်ခုချင်းတိုင်းတွင် မီးငြိမ်းသတ်ရေး ကိရိယာများနှင့် မီးငြိမ်းသတ်ရေး စနစ်များ ထားရှိခြင်းနှင့် စစ်ဆေးခြင်း။ မီးဘေးထွက်ပေါက်၊ အရေးပေါ်ထွက်ပေါက် အစရှိသည်တို့ကို အလုပ်သမားများနှင့် တိုင်ပင် ဆွေးနွေးပြီး အသေးစိတ်အကဲဖြတ်ခြင်း၊ မီးငြိမ်းသတ်ခြင်းအား ပုံမှန်လေ့ကျင့် ထားရှိခြင်း။ ငလျင်လှုပ်တဲ့အခါ လုံခြုံသည့်နေရာတွင်သာ နေရန်၊ အပြင် မထွက်ခြင်း၊ အပြင်တွင် လုပ်ကိုင် ရသည့် လုပ်သားများမှာ သစ်ပင်၊ အဆောက်အဦ များကို သတိထားရန်နှင့် သက်ဆိုင်ရာလုံခြုံရေး သင်တန်းများ ပို့ချခြင်း။	အခန်းခွဲ (၆)

		မုန်တိုင်းတိုက်ခြင်း၊ ရေကြီးခြင်း၊ မြေပြိုခြင်း တို့ ကြောင့် ဖြေကဲ့သို့သော အခြားအန္တရာယ်ရှိ တိရိစ္ဆာန်များ၏ အန္တရာယ်များကို သတိပေးခြင်း၊ ရှေးဦးသူနာပြုစုခြင်း ကဲ့သို့သော ကျန်းမာရေး ဆိုင်ရာ အဖွဲ့အစည်းများ ပြင်ဆင်ထားရှိခြင်း။ နီးစပ်ရာဆေးရုံ၊ ဆေးခန်း၊ ရဲစခန်း၊ မီးသတ်ဌာန တို့၏ ဆက်သွယ်နိုင်မည့် ဖုန်းနံပါတ်များအား လူအများမြင်သာသည့် နေရာများတွင် ထားရှိခြင်း။ မီးသတ်အဖွဲ့၊ ကယ်ဆယ်ရေးအဖွဲ့နှင့် လုံခြုံရေး ဟူသော အဖွဲ့များ ထားရှိ၍ လစဉ် လုံခြုံရေးများ အတွက် အစည်းအဝေးများ ပြုလုပ် စီမံခန့်ခွဲခြင်း၊ ဘေးအန္တရာယ်ဆိုင်ရာ သင်တန်းများအား သေချာ ပြုလုပ်စေခြင်း။	
စောင့်ကြပ်ကြည့်ရှုမှု	၇	အဆိုပြုစီမံကိန်းသည် ပတ်ဝန်းကျင် စောင့်ကြပ် ကြည့်ရှုမှု အစီရင်ခံစာအား (၆) လ တစ်ကြိမ် ဝန်ကြီးဌာနသို့ တင်ပြရမည်။	အခန်းခွဲ (၆.၉)
လေအရည်အသွေးစစ်ဆေးမှု	၇.၁	PM2.5, PM 10, SO2, NO2, CO2 တစ်နှစ် ၂ ကြိမ် အဆိုပြုလုပ်ငန်းအတွင်း တစ်နှစ်လျှင် ၁၆ သိန်းကျပ်	ဇယား (၆.၁)
စွန့်ပစ်ပစ္စည်းထွက်ရှိမှု	၇.၂	စွန့်ပစ်ပစ္စည်းအစိုင်အခဲ၊ စွန့်ပစ်ရည် အပတ်စဉ် စက်ရုံအတွင်း ပြန်လည်အသုံးပြုရန်ထားရှိသည့် နေရာနှင့် အမှိုက်များ တစ်လ ၅ သောင်းကျပ်	ဇယား (၆.၁)
မီးဘေးအန္တရာယ်စစ်ဆေးမှု	၇.၃	မီးငြိမ်းသတ်ရေးကိရိယာများ လစဉ် စက်ရုံအတွင်း	ဇယား (၆.၁)

		တစ်နှစ်လျှင် ၁၂ သိန်းကျပ်	
စက်ရုံအတွင်း အလင်းရောင်ရရှိမှုအခြေအနေ	၇.၄	အလင်းရောင် လစဉ် ကုန်ပစ္စည်းဖြတ်တောက်ခြင်း၊ အရည်အသွေး စစ်ဆေးခြင်းကဲ့သို့သော လုပ်ငန်းများ လုပ်ကိုင်သည့် နေရာ တစ်နှစ်လျှင် ၄ သိန်းကျပ်	ဇယား (၆.၁)
ဘေးအန္တရာယ်ဆိုင်ရာ သင်တန်းပို့ချခြင်း	၈	လုပ်ငန်းခွင်၌ ကြုံတင်ခန့်မှန်းနိုင်သော အရေးပေါ် အခြေအနေများကို အရေးပေါ် တုံ့ပြန်နိုင်ရန် အစီအစဉ်များ ချမှတ် ဆောင်ရွက်ခြင်း။	အခန်းခွဲ (၆.၁၁)
မကျေနပ်မှုများနှင့် ပြဿနာများကို ဖြေရှင်းခြင်း	၉	စီမံကိန်းအနီးပတ်ဝန်းကျင် နေထိုင်သောသူများ (သို့) သက်ဆိုင်သူများသည် ၎င်းတို့ ခံစားနေရသော ပြဿနာများ၊ သက်ရောက်မှု များနှင့် ပတ်သက်၍ ဖြေရှင်းမှုများ ပြုလုပ်ရန်။ စက်ရုံ၏ တာဝန်ရှိသူများ၊ စက်မှုဇုန် စီမံခန့်ခွဲရေး ကော်မတီ၊ အုပ်ချုပ်ရေးဦးစီးဌာန တို့ဖြင့် ပူးပေါင်းချိတ်ဆက်လုပ်ဆောင်ခြင်း။ ကော်မတီအဆင့်တွင် အခြားမဖြေရှင်းနိုင် သော ပြဿနာများကို တာဝန်ရှိ အာဏာပိုင် များသို့ တင်ပြပြီး တရားရေးအရ အဆုံးအဖြတ် ပြုလုပ် မည် ဖြစ်သည်။	အခန်းခွဲ (၆.၁၃)
လူထုအကျိုးတူပူးပေါင်းပါဝင်မှု	၁၀	အဆိုပြုလုပ်ငန်းသည် လူထုအကျိုးပြု ပူးပေါင်း ပါဝင်မှုကို ကျန်းမာရေး၊ ပညာရေး နှင့် နယ်မြေ ဖွံ့ဖြိုးတိုးတက်ရေးအတွက် မြန်မာနိုင်ငံ ရင်းနှီး မြှုပ်နှံမှု ကော်မရှင်က ချမှတ်သည့်အတိုင်း ကုမ္ပဏီ ၏ အကျိုးအမြတ် ၂ ရာခိုင်နှုန်းအား နှစ်စဉ် ထည့်ဝင်သွားမည်ဖြစ်သည်။	အခန်းခွဲ (၆.၁၂)
နိဂုံးနှင့်သုံးသပ်ချက်	၁၁	အကျဉ်းချုပ်အားဖြင့် ပြည်ထောင်စု သမ္မတ မြန်မာ နိုင်ငံတော်၏ လမ်းညွှန်ချက်များ၊ ပတ်ဝန်းကျင် ဆိုင်ရာ ဥပဒေ၊ နည်းဥပဒေ၊ စည်းမျဉ်းစည်းကမ်း များနှင့် ချမှတ်ထားသော မူဝါဒလမ်းညွှန်ချက်များ အတိုင်း ပတ်ဝန်းကျင်ဆိုင်ရာ စီမံခန့်ခွဲမှု အလေ့ အကျင့်များ၊	အခန်း (၇)

		လုပ်ငန်းစဉ်များနှင့် လိုက်နာ ဆောင် ရွက် ကျင့်သုံးရန် တာဝန်များကို ပတ်ဝန်းကျင် စီမံ ခန့်ခွဲမှု အစီအစဉ်တွင် ရှင်းလင်း ဖော်ပြ ထားပါ သည်။