

SAI GON THUONG TIN BANK LAO SOLE CO., LTD

**MSME Access to Finance
COVID-19 Emergency Support and Recovery Project**

Environmental and Social Audit Report

(Re-Financing Project)

Prepared by

Department of Small and Medium Enterprise Promotion

Ministry of Industry and Commerce, Lao PDR.

June 9, 2022

Executive Summary

SAI GON THUONG TIN BANK LAO SOLE CO., LTD (“SACOMBANK LAO”), a commercial bank that has provided banking and financial services in Lao PDR since 2008. Currently, SACOMBANK LAO has head and branches office in Vientiane Capital, Savanhnakhet and Champasak province, and total staff of 200, including 82 females. The services include deposits, loans and other banking and financial services. Loans are for (i) consumer and non-consumer goods including auto, housing and furniture, personal, and (ii) Small, and Medium Enterprise (MSME), especially financing on working capital, cash flow financing, property financing/refinancing and performance guarantee or combination. The target sectors are trading, service, manufacture and agriculture sector including agribusiness. As of September 30th, 2021, there were 2,517 borrowers or clients. Of which, 159 clients were MSMEs and 60 were large scale business. Under MSME, 62 MSMEs were in trading sector, 1 was in logistic sector, 41 in tourism sector, 17 in agriculture sector, 6 in handcraft sector, 14 in industry sector, and 18 were other sectors. The maximum loan was about 12,671,052.63 US\$, while the average amount of loan was about 605,263.32 US\$.

SACOMBANK LAO and its clients, especially MSMEs have been impacted by economic and social disruptions resulting from the ongoing COVID-19 crisis and participated in the Lao PDR MSME Access to Finance Emergency Support and Recovery Project (MSME A2F – ESRP) since July 2021. SACOMBANK LAO has also adopted the project’s Environmental and Social Management System (ESMS) in April 2022, which will be implemented along with its labour management procedure and human resource policies. As a starting point, total sub-loan projects proposed by SACOMBANK LAO for refinancing, following a screening, is 35 sub-loans, with total amount of US\$2,652,088.74 (equivalent LAK 26,555,737,000).

The total number of sub-loans or MSMEs proposed for refinancing is 35 (see Annex 3). Of these, 31% are micro enterprises, 69 % are small enterprises, and trading sector covers 34%, services sector 40%; agriculture sector 17%, manufacture 3% and other sectors 6%. The maximum loan size was about US\$ 200,000, while the average amount of loan was about US\$ 71,678.

This E&S audit includes assessment of E&S risks of the sub-loan projects proposed for refinancing and its relevance, compliance with and the organisational capacity of SACOMBANK LAO to implement the ESMS and the World Bank Environmental and Social Standards (ESSs). The E&S audit is necessary given that the 35 sub-loans proposed for refinancing precede the adoption of SACOMBANK LAO’s ESMS. In addition, the audit includes recommended corrective actions to address minor gaps in relation to E&S national standards. The audit was conducted through 1) desk review of the project and sub-loan projects related documents including legal and institutional framework, ESMS, Environmental and Social Commitment Plan (ESCP), Stakeholder Engagement Plan (SEP) and sub-loan project screening and appraisal; 2) Interview of SACOMBANK LAO (Ms. Bounsavanh Sayasith, and Mr. Somvang Mounphokham), MSMEs and relevant sectors such as Ministry of Natural Resources and Environment (MONRE), Labour and Social Welfare (MLSW), among others; 3) Conducting additional E&S risk assessment of performance compliance and capacity of SACOMBANK LAO to implement ESMS.

All sub-loans available for refinancing have been screened for E&S risks and those with substantial and high risk (or listed in Group One under the National EIA Decree, 2019) requiring full Environmental Impact Assessment (EIA) requirements in Lao were considered to be excluded. The sub-loans eligible for refinancing are those with low risk. The key environmental aspects associated with the proposed low-risk sub-loans include wastewater especially from livestock farms and restaurants, air emissions from energy including electricity use of all sub loans; dust generated from some sub loans' activities such as transportation and loading/unloading construction materials including cement; traffic congestion of some construction materials transportation, some shops and restaurants that are close to road; nuisance noise from restaurant with Karaoke. Solid waste is common issue and generated from all the sub-loan projects, especially restaurants, livestock farms, car repair, construction materials, cloth shops, and importantly from a clinic. However, as the majority of the sub loans are working capital for the existing businesses, and due to sub-loans are small scale in nature with proper mitigation measures, the potential risks are considered low. In addition, they comply with national policies and standards. For example, solid waste management practices are consistent with environmental protection law (2012), national environmental standards decree (2017) and pollution control guidelines (2015). Solid waste is usually packed and covered by plastic bags, stored at an appropriate place, and then collected by a municipal cleaning company and dispose it at the municipal landfill. Wastewater is stored in a septic tank with cover, and when it is nearly full, it is collected and disposed at wastewater treatment at the municipal landfill by a municipal cleaning company. Use of electricity efficient and saving bulbs and turning off lights when not using it were practiced by many sub loans/MSMEs. In addition, the adoption and implement of the project ESMS would help addressing any minor risks and enhancing compliance with Lao legislation. All MSMEs comply with provision of PPE to protect against Covid-19, in line with health regulations in Lao.

However, some sub loans or MSMEs may not consistently provide or enforce the wearing of Personal Protective Equipment (PPE) for workers, to protect them against workplace accidents, such as hard hats, environmental code of practice (ECOP), staff and community grievance redress mechanism. Two sub loans (hotels) that require IEE as per the EIA decree have not have IEE, leading to exclusion. Despite of the fact that E&S due diligence found there have been no adverse environment and social impacts or any grievances caused by the sub loan projects.

This E&S audit report includes corrective actions proposed to address the minor gaps found. MSMEs are responsible for the implementation of these corrective actions and SACOMBANK LAO will be responsible for monitoring of compliance and risks, and report to the Department of Small and Medium Enterprise Promotion (DOSMEP) including Project Management Unit (PMU) periodically as planed or required. DOSMEP/PMU will provide capacity support and conduct monitoring of the implementation, reporting of SACOMBANK LAO and sub-loan projects as needed. In addition, DOSMEP/PMU will report the WB about the implementation of the corrective actions, residual risks and compliance.

Abbreviation and Acronyms

A2F	Access to Finance
COVID-19	Coronavirus Disease 2019
CPF	Country Partnership Framework
DOSMEP	Department of Small and Medium Enterprise Promotion
ESIA	Environmental and Social Impact Assessment
EID	Emerging infectious diseases
E&S	Environmental and Social
EMP	Environmental Management Plan
ESMMP	Environmental and Social Management and Monitoring Plan
EPL	Environmental Protection Law
ESCP	Environmental and Social Commitment Plan
ESF	Environmental and Social Framework
ESMF	Environmental and Social Management Framework
ESMS	Environmental and Social Management System
ESR	Emergency Support and Recovery
ESS	Environmental and Social Standard
FI	Financial Intermediary
GBV	Gender-based Violence
GRS	Grievance Redress Service
IDA	International Development Association
IA	Implementing Agency
IEE	Initial Environmental Examination
IPF	Investment Project Financing
IMF	International Monetary Fund
LTU	Lao Trade Union
LMP	Labour Management Procedure
LoC	Line of Credit
LNCCI	Lao National Chamber of Commerce and Industry
MOF	Ministry of Finance

MOIC	Ministry of Industry and Commerce
MOLSW	Ministry of Labour and Social Welfare
MoNRE	Ministry of Natural Resources and Environment
MSMEs	Micro, Small and Medium Enterprises
MTR	Mid-Term Review
M&E	Monitoring and Evaluation
OHS	Occupational Health and Safety
PAD	Project Appraisal Document
PEC	Project Executive Committee
PFI	Participated Financial Institute
PMU	Project Management Unit
POM	Project Operations Manual
PPA	Performance and Policy Actions
PPSD	Project Procurement Strategy for Development
PLR	Performance and Learning Review
PF	Promotion Fund
PFI	Participating Financial Institution
PRC	Project Review Committee
SACOMBANK LAO	SAI GON THUONG TIN BANK LAO SOLE CO., LTD
SEP	Stakeholder Engagement Plan
STEP	Sustainability Training and E-Learning Program
SEA	Sexual Exploitation and Abuse
SFA	Subsidiary Financing Agreement
SMEs	Small and Medium Enterprises
VAC	Violence Against Children
WB	The World Bank

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1. Introduction

1.1 Overview of the A2F-ESR project

The Lao PDR Micro, Small, and Medium Enterprise (MSME) Access to Finance-Emergency Support and Recovery Project (P174169) (A2F-ESR) project is financed by the World Bank (WB) and implemented by the Ministry of Industry and Commerce (MOIC), particularly the Department of Small and Medium Enterprise Promotion (DOSMEP) and five commercial banks namely Lao-Viet, Sacombank Lao, Maruhan Japan, Lao-China and Vietin Bank. The project is a continuation of the existing World Bank's funded project– Small and Medium Enterprise Access to Finance Project (SME A2F) (P131201), which had been implemented by MOIC, DOSMEP and four commercial banks: Lao-Viet, Sacombank Lao, ST and Lao-China Bank.

The A2F-ERSP project aims to increase and enhance access to finance for MSMEs in the context of the COVID-19 emergency and recovery. It will achieve this through a combination of Lines of Credit (LOC) to for emergency and recovery phases of the crisis, intermediated through select financial institutions, to MSMEs. The Project will also invest in strengthening the capacity of financial institutions to implement crisis management strategies and develop MSME finance business strategies, technical assistance to support MSMEs obtain access to finance, and capacity building to DOSMEP to strengthen its ability to formulate and implement policies to promote MSME development. Whilst the Project is focusing on emergency response to the crisis, it will also have a longer-term impact on the economic recovery by providing a flexible approach to addressing financial needs of the MSMEs during the crisis and in the recovery phase. The target beneficiary MSMEs under the Project are registered micro (1-5 employees, small (6-50 employees) and medium private enterprises (51 to 99 employees) operating in Lao PDR that have been in business for at least two years and wish to sustain their business activities in the targeted sectors such as (i) Farming and livestock; (ii) Agriculture processing (iii) Handicrafts; and (iv) Tourism; which includes restaurants, grocery shops, mobile shops, handicraft shops, travel agencies and private tour operators, distribution of construction materials stores, clothing store, shoes shops, gold/jewellery shops, car service shop, mini marts and kindergarten, etc.

The Project consists of four components, which will be implemented from 2020 to 2025. Component 1, Emergency and Recovery Line of Credit to MSMEs, International Development Association (IDA) will provide US\$34 million via Ministry of Finance (MOF) to SME fund (SEMF), DOSMEP, MOIC, who will provide long-term resources to PFIs for on lending long-term credit to MSMEs. The project will support MSMEs that are privately owned, registered, have been in business for at least two years, and wish to expand their business activities. Component 2, Strengthening Bank of Lao Capacity to Supervise a PCG Fund, includes provision of Technical Assistance (TA) to the Bank of Lao PDR (BOL) to strengthen its capacity to draw on Principles for Public Credit Guarantee (PCG) Schemes for SMEs, tailored to the Lao context, supervise and monitor the PCG. Component 3, Technical Assistance for DOSMEP, SMEs and PFIs, is capacity building support of DOSMEP, PFIs, MSMEs, as well as project implementation, safeguards, and monitoring related activities. Component 4,

Contingent Emergency Response Component (CERC), the project will contribute to providing immediate and effective response in the event of an eligible crisis or emergency.

The project is implemented under the World Bank's new Environmental and Social Framework (ESF), which was officially endorsed and launched in October 2018.

The project has an Environmental & Social Management system (ESMS), Environmental & Social Commitment Plan (ESCP) and Stakeholder Engagement Plan (SEP) in place before the project launching. SACOM BANK LAO has adapted and adopted the project ESMS, which was reviewed and cleared by the World Bank. The approved ESMS has been disclosed on the bank's website¹.

1.2 Objectives of Environmental and Social Audit

The objective of the environmental and social (E&S) audit is to assess E&S risks and compliance of the sub-loan projects proposed for refinancing, organisational capacity and recommendation for corrective actions. This is done in accordance with the Sacombank Lao's ESMS approved and disclosed in June 2022. The E&S audit is necessary given that the 35 sub-loans proposed for refinancing precede the adoption of Sacombank Lao's ESMS. All sub-loans available for refinancing have been screened for E&S risks. Those with high risk, or which trigger Environmental Impact Assessment requirements in Lao have been excluded as per Annex 1 and 2 of this report. The sub-loans eligible for refinancing are those with low risk only.

1.3 Scope and Methodologies

This E&S audit focused on the component 1, Emergency and Recovery Line of Credit to MSMEs, particularly the sub-loan projects proposed for refinancing. The audit included reviewing E&S risks and mitigation measures as well as screening and capacity of SACOMBANK LAO to monitor and manage the sub-loan projects, and recommended actions to address E&S gaps and issues. The steps and methods for E&S audit included:

- Reviewing the project and sub-loan projects related documents including legal and institutional framework, ESMS, ESCP and SEP.
- Meeting and interviewing with SACOMBANK LAO and the MSMEs to collect and validate information about the sub-loan projects.
- Screen all subprojects against exclusion list in the ESMS's Annex A (Annex 1) and project legal agreement, and then screen, review and categorize subprojects according to their potential E&S risk and impacts based on guidance in the ESMS's Annex B (Annex 2). Those subprojects requiring an EIA or IEE since the effectiveness of the Ministerial Agreement No. 8056/MONRE as per Annex 1 and 2 of this report have been ruled out for refinancing under the project.

¹ SACOMBANK LAO's ESMS, was approved by the World Bank, and made available at: <https://www.sacombank.com.la/la/en/Pages/default.aspx>

- Assess sub-loans considered low or medium risks against national laws, whilst taking into consideration ESS requirements as best practice (subprojects considered to have adverse E&S risks or impacts are excluded from support).
- Assessment of organisational capacity based on the existing organisational arrangement and staff experiences on E&S management.
- Providing recommendations, an action plan for corrective measures to bridge the gaps that includes specific activities and implementation timelines.

2. Legal and Institutional Framework

Lao PDR has not had a specific regulation on E&S management for MSMEs. However, all sub-loans provided need to be compliant with the provisions of the available legal framework of Lao PDR. Key relevant legislation includes:

- 1) The Environmental Protection Law (EPL) was issued in 2000 and revised in 2012. The EPL (2012) covers the general provision and requirements for effective 1) environmental impact assessment; 2) protection of natural and social environment including environmental quality; 3) management of control of pollutions, waste, and toxic substance from various sources, environmental certification and permission, and public participation; 4) conservation and utilization of natural resources; 5) environmental rehabilitation; 6) environmental emergencies and natural disasters; 7) environmental protection fund; 8) prohibitions of officers or civil servants and operators; 9) dispute settlement; and 10) management and inspection, etc.
- 2) Decree on Environmental Impact Assessment, 2019, defines principles, regulations, and procedures on management, monitoring, and inspection of an Environmental Impact Assessment (EIA) so that the process will be implemented in order to prevent, reduce, and mitigate negative environmental impacts; to ensure that the affected peoples are reasonably compensated, resettled, and assisted in improving their living conditions better than existing situation. The Decree provides a provision that affected people and other stakeholders may express their opinions on implementation of the investment project and activities via hotline telephone, electronic, [or] send opinions, complaints in writing to the project owners or the concerned governmental organizations or in other means.
- 3) National Environmental Standards Decree, 2017, defines quality of air, soil, water, noise and vibration, pollutions, and measures for management and control.
- 4) Pollution Control Guidelines, 2015, defines types of pollution, management and control, certification, monitoring, inspection and reporting of pollutions and management.
- 5) Polluted and Hazardous Waste Management Guidelines, 2015, defined principles and management methods, monitoring and inspection, obligations, and responsibility for management of polluted and hazardous waste.
- 6) Law on Chemicals Management, 2015, defined type of chemicals including hazardous chemicals, safety measures and prevention and solutions for accidents, businesses and management including licencing, monitoring, inspection, and responsibilities for chemicals management.

- 7) Law on Hygiene, Disaster Prevention and Health Promotion, issued in 2011 and updated 2019, defines the principles, rules, measures and requirements for hygiene, disease prevention and health promotion. Particularly, it provides a regulation and guideline for hygiene practices for all group of people including labour and occupation, places and facilities, production, consumption and environmental health. Disease prevention includes immunization and prevention of communicable and infectious disease. Health promotion includes rules, measures and requirements for promoting health and quality of life of all group of people, nutrition, healthy environment and recreation.
- 8) Labour Law, adopted in 2006 and updated in 2013, defines the principles, regulations and measures on administration, monitoring, labour skills development, recruitment, and labour protection. This labour law applies to all employers, registered and unregistered employees, Lao employees working for foreign organizations, and foreign employees working within the Lao PDR. Importantly, it defines a mandatory obligation for employers and other relevant parties on Labour Occupational Health and Safety (OHS) to protect labour health and safety, and labour accident and occupational diseases.
- 9) Law on Preventing and Combating Violence Against Women and Children (2014) Law on gender (2019) and Women Development and Protection (2004). These legislations provide regulations and measures to manage, prevent and address potential misconduct among civil servants including health workers and outsourced volunteers, community health and safety issues and risks associated with Sexual Exploitation and Abuse (SEA), Gender-based Violence (GBV) and Violence Against Children (VAC).
- 10) Law on Handling Petitions (2015) provides provisions of objectives, principles and process of applying and handling different types of grievance, petition and complaints that may be raised by citizens.

3. Sub-loan project Description

Total sub-loan projects proposed by Sacombank Lao for refinancing, following a screening, is 35, with total amount of US\$ 2,652,008. All the sub-loan projects are MSME² operating business for at least two years. Out of total proposed sub-loans, 25 sub loans are for working capital (“WC”) and 10 sub loans are investment capital (“IC”). 31% of the sub loan are MSME and 69% are SME. Trading sector covered 34%, services sector 40%; agriculture sector 17%, manufacture sector 3% and other sectors 6%. The business types were in maintaining, installing, and selling all type of air conditioning, and the repairing car and sale of car tires. The maximum loan size was about US\$ 200,000, while the average amount of loan was about US\$ 71,678 (Annex 3).

Eight the sub-loan projects are in provinces, including four sub loans in Savannakhet province and 4 in Champasack province. The rest of the sub loans are in Vientiane Capital. In general, many of them are in urban or at the centre and community area, and some are in suburb area (The sub loan locations are in Annex 4). None of the sub-loan projects are located in the following environmental critical areas:

- Proximity to river/stream, wetland/pond/lake and estuary

² MSME are private enterprise that consists of 1 to 5, 6 to 50 and 51 to 99 employees, respectively.

- Proximity to protected area (e.g., forest/endangered species)/ecologically sensitive area (e.g., river/protected areas)
- Proximity to culturally sensitive/indigenous area
- Area at risk of floods, hazardous materials and waste, etc.
- Conflict area (e.g., land use conflict)
- Crowded communities and traffic.

4. Environmental and Social Issues

4.1 Environmental and Social Screening and Categorization

The proposed sub loans were screened and categorized based on the project and E&S screening and categorization guidance (Annex A and B of the ESMS or Annex 1 and 2 of this report). None of the sub loans exceed 200,000 USD and in the exclusive list (Annex 1). In general, all sub loans, in accordance with the Annex 2, are (i) construction materials shops; (ii) an auto repair shop; (iii) accommodation, restaurants and a massage shop; (iv) crops and farms, (v) a diagnostic clinic), (vi) an ice factory, (vii) jewellery shops, and (viii) cloth shops (without dealing in hazardous or toxic chemicals, flammable materials). All proposed 35 sub-loans are low risk (Annex 3).

However, out of 37 proposed sub loans, two sub loans (hotels) have not had IEE as required under the Ministerial Agreement No.8056/MONRE (2013) and considered to be substantial to high risk and are excluded. The rest of sub loans are low risk. (Annex 3).

4.2 Environmental and Social Risks

In general, as described in the A2F-ESR project's ESCP and ESMS, the sub-loan projects are likely to cause minimal or negligible environmental and social risks and impacts..." given the nature and scale of the sub-loan projects due to small size of MSMEs and credit to be provided to them is not exceed 200,000 USD. All sub loans are low risk, the main purpose of sub loans for increasing working capital, with buying goods for sale, buy livestock and poultry, and some equipment (cleaning machine, ice storage, furniture). All sub loans are not involved with any civil works. In addition, based on additional assessment (Annex 3b), there are minor E&S aspects and risks associated with the proposed sub-loans for refinancing, and they are temporary impact during short time period (as during transportation good or equipment may cause traffic jams at the store). These minor risks are found in number of the sub-loans as noted in the Annex 3 and summarized here. The key environmental aspects and risks include (i) energy use and air emissions; (ii) dust generated from transportation of construction materials including cement; (iii) wastewater from accommodation, restaurants, livestock farms, a clinic, an auto repair shop, and offices; (iv) nuisance (odour, noise, and congestion) from livestock farms, restaurant-Karaoke and shops situated close to main road and limited parking space; and (v) municipal solid waste (MSW) from all MSMEs and clinical waste from a dental clinic. Socially, occupational health and safety (OHS) and compliance issues are among the key concerns for some MSMEs (Table 1).

Overall, based on E&S policies review, media check, site visit and interview of key stakeholders (Annex 6 and 7), most MSMEs demonstrate E&S compliance with national regulations, no serious impacts caused by the E&S management gaps, and during conducting due diligence, there is no complaint from community concerning with these sub loans. Solid waste management and implement environmental management practices are consistent with Lao law. Solid waste is usually packed and covered by plastic bags, stored at an appropriate place, and then collected by a municipal cleaning company and dispose it at the municipal landfill. Wastewater is stored in a septic tank with cover, and it is collected and disposed by the staff/cleaners and a municipal cleaning company when it is nearly full. Use of electricity efficient and saving bulbs and turning off lights when not using it were practiced by many sub loans/MSMEs. Nevertheless, some aspects could be enhanced, and this could be an added value of Sacombank Lao’s involvement, by developing capacity building materials to build awareness of E&S best practice.

However, some MSMEs, due to their small size and low capacity, may not always provide Personal Protective Equipment (PPE) to workers to avoid workplace accidents (Table 3). But it is important to note that MSMEs staff do have PPE for Covid-19 prevention, in particular provision and use of masks and sanitized gels.

Based on a risk assessment matrix and categorization Table 2, 3 and Annex 3 the E&S risk is considered low, as the score is between 1 and 4 (low risk).

Table 1 Key Environmental and Social Issues and Management Practice Associated with the Proposed Sub-loan Projects for Refinancing

No	Environmental Aspects/ Risk	Descriptions
1	Energy consumption and air emissions	<p>Energy consumption and air emissions are relevant to all sub loans. It is common that all sub loans use energy and release emissions. The majority of air emissions is generated from vehicles’ fuel oils combustion and electricity use of the existing business activities. However, although actual amount of energy use and emissions are unknown or unmeasurable due to inadequate data, as many businesses and activities are relatively small scale, emissions caused by the sub-loan projects, especially working capital would be small or unlikely to cause any significant increase of emissions in the atmosphere.</p> <p>It is noted that energy saving, and low carbon emissions are encouraged by the government, but there is no specific requirement imposed to any MSMEs or organisation. However, many sub loans have implemented some energy (electricity) saving practices such as the use of electricity efficient and saving bulbs and turning off lights when not using it. This should minimize or avoid emissions to some extent.</p> <p>Emission standards from vehicle are defined in Article 7, the national environmental standard 2017, but its requirements are neither clear nor enforceable. So far, exhaust emissions from vehicle have not been widely or publicly monitored and enforced in Lao PDR.</p>

No	Environmental Aspects/ Risk	Descriptions
		<p>Environmental Protection Law (2012)'s Article 23: Environmental Management of Household Businesses requires <i>‘households with business operations, production, cultivation, livestock and any services that may impose negative impacts on social and natural environment, particularly waste disposal, wastewater discharge, making noise, light, odour, smoke emission, vibration and hazardous chemicals, shall have plans to solve all of these issues’</i>, but specific regulations and guidelines or standards have not been developed and enforced.</p> <p><i>Article 25: Limitation of Impacts Derived from Construction Activities and Others requires ‘Persons, legal entities and organizations providing services on construction, renovation and others for roads, bridges, water supply, electrification, irrigation, airports, buildings, or factories, which emit pollutants, shall take measures or actions to prevent against or correct environmental impacts caused by toxic chemicals, smoke, dust, vibration, noise, light, odour, wastes and disturbance as being stipulated by the National Environmental Quality Stand’</i>, but there is no specific regulations and guidelines or standards for MSMEs.</p>
2	Water consumption and wastewater	<p>It is common that all sub loans use water and release wastewater. The main sources of wastewater are from water consumption for operating the existing business activities, including cleaning. As many businesses and activities are small scale, wastewater caused by the sub-loan project, especially working capital would be small or unlikely to cause any significant increase of wastewater and impact environment and adjacent communities.</p> <p>In general, in Vientiane, MSMEs's wastewater, especially blackwater is stored in a septic tank with cover, and it is collected and disposed by the staff/cleaners and a municipal cleaning company when it is nearly full.</p> <p>Apart from Environmental Protection Law (2012)'s Article 23 mentioned above, the quality of discharged wastewater is defined in Article 14, the national environmental standard 2017, and hotel triggers to control its wastewater discharge. However, hotel's wastewater discharge has not been widely monitored and enforced in Lao PDR.</p>
3	Solid waste	<p>It is common that all sub loans use materials and generate solid waste. However, as many businesses and activities are small scale and temporary, solid waste generated from by the sub-loan projects, especially working capital would be small or unlikely to cause any significant increase of solid waste and impact environment and adjacent communities. On one hand, solid waste from MSMEs or sub loans is usually packed and covered by plastic bags, stored at an</p>

No	Environmental Aspects/ Risk	Descriptions
		<p>appropriate place and then collected by a municipal cleaning company and dispose it at the municipal landfill. In addition, based on field visit to some MSMEs (Annex 7) and media check (e.g., Google, Facebook, etc) of all MSMEs there was no compliant on solid waste disposal by the sub-loans. These demonstrates a compliance.</p> <p>A general requirement for solid waste management is defined in the Environmental Protection Law (2012), particularly Article 38: Waste Disposal requires “<i>separation for different purposes such as recycle, reuse, reprocess as new products and elimination with methods and techniques within identified areas based on regulations</i>”.</p> <p>In addition, open burning and inappropriate disposal of solid waste has been prohibited in Vientiane capital since 2019³ and the Vientiane Capital Department of Natural Resource and Environment established a hotline (1523) since September 2020⁴.</p> <p>For the waste from diagnostic/dental clinic and livestock waste related to livestock vaccination, especially, the sharps waste from clinic/ health care centre, and all vaccination (from animal farms) will be handled and in compliance with the guidance in annex 9 (Agreement on Sanitation of Health Facilities, Ministry of Health, No.1667/MOH, issued on 10 August 2018), annex 10 (Sharps Waste Management Guidelines, Department of Planning and Cooperation, Ministry of Health, issued on 10 October 2019), annex 11 (Property Toxic Chemical and Hazardous Wastes Management Guideline, Department of Environment and Natural Resources Inspection, Ministry Of Environment and Natural Resources, issued in 2022).</p>
4	Nuisance (dust, noise and traffic congestion)	<p>Dust is relevant to especially the construction materials shops, where workers might possibly be exposed dust from construction materials such as cement. However, it is unlikely to be a major issue since dust as it is temporary, limited to people who expose to it. Importantly, the risk could be addressed by implementation of ECOP including provision of Personal Protective Equipment (PPE).</p> <p>General ambient air and industry emission standards, especially particular matter 10 and 2.5 micron (PM 10 and PM2.5) are defined in Article 5 and 6 of the national environmental standard 2017, but there is no specific requirement for the MSMEs or the proposed sub-loans.</p>

³ Source of information: <https://laotiantimes.com/2019/12/27/vientiane-officially-bans-burning-of-garbage/>. Accessed on 18 March 2020.

⁴ Source of information: <https://laotiantimes.com/2021/02/09/garbage-burning-remains-a-hot-issue-for-vientiane-capital/>. Accessed on 18 March 2020.

No	Environmental Aspects/ Risk	Descriptions
		<p>Noise is possibly generated from a restaurant with Karaoke. No issue and compliant found during site visit, interview head of village, and media check, while direct measurement of noise level may not be technically and logistically possible during the audit. The national environmental standard 2017 defined nuisance noise (L90) less than 10 dB(A) or general one (Lmax) < 115 dB(A).</p> <p>Traffic congestion is possibly occurred as some MSMEs (e.g., constructional materials shops) situated by roads and have limited parking space. However, it is unlikely to be a major issue since it is temporary and avoidable or manageable by implementation of ECOP.</p>
5	Occupational health and safety, e.g., inadequate Personal Protective Equipment provided (e.g., safety goggles/masks, hard hat/ protective glove)	<p>Occupational health and safety (OHS), including procedures and PPE of some MSMEs such as construction material retail shops, heavy equipment dealer, maize drying factory may be inconsistent and at times not sufficient to prevent workplace accidents. However, there have not been reports on accident or injuries. Some MSMEs do not have formal OSH policies or guidelines but they normally deploy PPEs when and where that they perceive it is needed and affordable, while Lao PDR has not had specific PPE requirements and guidelines for specific MSME to follow.</p> <p>Additional due diligence including site visit, stakeholder interview and media check of 13 sub loans was conducted to check OHS risks and compliance (Annex 6 and 7). The findings confirmed that there is no OHS risk or grievance.</p>

Table 2 Environmental and Social Risk and Impact Matrix

Likelihood	Almost certain	5	10	15	20	25
	Probable	4	8	12	16	20
	Possible	3	6	9	12	15
	Unlikely	2	4	6	8	10
	Rare	1	2	3	4	5
		Insignificant	Minor	Moderate	Major	Catastrophic
Consequence						

- 1-4: Insignificant to minor risks or impacts. Ensure ongoing compliance with relevant national laws.
- 5-8: Moderate risks or impacts. A simplified Environmental and Social Code of Practice (ESCOP) or a control measure is needed.

- 9-12: High/Substantial risks or impacts. The sub-loan should not proceed
- >12 or 15-25: Every high/Extreme risk or impact. The sub-loan should not proceed.

Table 3 E&S Risk Categorization

Category	Definition	Notes
High Risk	High Risk means any business activity which is likely to have significant adverse environmental impacts that are sensitive, diverse or unprecedented, and which includes, for the avoidance of doubt, activities involving (a) involuntary resettlement, (b) risk of adverse impacts on ethnic minorities, (c) significant risks to or impacts on the environment, community health and safety, biodiversity, cultural heritage, or (d) significant occupational health and safety risks (risk of serious injury or fatality to workers).	Not allowed to proceed under the project.
Substantial Risk	Substantial Risk means any business activity that is not as complex as High-Risk activities, however, has some significant risks and impacts with the possibility of avoiding or reversing but with substantial investment and time and may give rise to limited degree of social conflict, harm, human security risk.	Not allowed to proceed under the project.
Moderate Risk	Moderate Risk means any business activity that has potentially limited adverse environmental or social risks and/or impacts that are few in number, generally site-specific, largely reversible, and readily addressed through mitigation measures. Impacts are often site-specific without likelihood of impacts beyond the activity's footprint and routine safety precautions are expected to be sufficient to prevent accidents.	Allowed, but requires review (see Annex C in ESMS).
Low Risk	Low Risk means any business activity minimal or negligible risks to and impacts on human populations and/or the environment with few or no adverse risks and impacts and issues.	Allowed but should be straightforward to review (see Annex C in ESMS).

Source: SACOMBANK LAO's ESMS

Due to the low nature of risks of the sub-loans, as per requirement in WB Environmental and Social Standard (ESS) 9 on Intermediary Facilities, all sub-loans will need to comply with relevant Lao legislation. Nevertheless, while the sub-loans have been assessed based on Lao legislation, as part of due diligence, the relevance of WB standards to the sub-loans has also been analysed.

Table 4 Relevance of WB ESS to Sub-Loans

ESS	Type and aspects of sub-loans relevant to ESS
ESS 1: Assessment and Management of Environmental and Social Risks and Impacts)	All sub-loans proposed for refinancing were screened and categorized on E&S risk in accordance with SACOMBANK LAO’s ESMS. None of the sub loans are in the Exclusion List or required IEE or EIA.
ESS 2: Labour and Working Conditions	<p>Relevant for all sub-loans. MSMEs comply with the Lao labour law and these checks are conducted by SACOMBANK LAO before approving loans. SACOMBANK LAO’s labour management policy is in Annex 5. While the Lao law does not require industry-specific grievance mechanisms to be in place, MSMEs commonly handle complaints or disputes internally through informal mechanisms or based on guidance in the Labour Law (for workers). In addition, concerns can be handled by the existing national system in place with Village Mediation Committee (VMC) and the fiduciary structure, which functions from local to national level, in accordance with the law on the Handling of Petition (2015).</p> <p>Additional due diligence was conducted to ensure MSME eligible for loans did not have any outstanding labour disputes. A search of mainstream and social media was conducted to determine whether or not there were reports of major worker grievances for the MSME’s sub-loan activities. In addition, the team conducted interviews of relevant sectors such as Ministry of Labour and Social Welfare (MOLSW), but no grievance, disputes or labour violations were found (Annex 6 and 7).</p> <p>Occupational health and safety, including procedures and personal Protective Equipment (PPE) of some MSMEs may be inconsistent and not sufficient to prevent workplace accidents, though there are no report on accident and injuries. There is, however, compliance with PPE to protect against COVID-19.</p>
ESS 3: Resources Efficiency and Pollution Prevention and Management	Relevant due to water and energy efficiency though to a low or minimum extent due to the size and type of MSMEs.
ESS 4: Community Health and Safety	<p>The extent of the impact/risk is site specific and unlikely to cause adverse impact or nuisance to a community since the MSMEs are existing. However, some of the sub-loans, such as maize drying factory and construction material distribution shops, etc might cause some nuisance (e.g., traffic congestion and noise) to neighbours, especially if appropriate measures or environmental code of conduct are not implemented.</p> <p>As noted, while the Lao law does not require industry-specific grievance mechanisms to be in place for projects not requiring</p>

ESS	Type and aspects of sub-loans relevant to ESS
	EIA/IEE, MSMEs commonly handle complaints or disputes directly or through the VMC or Village Chiefs.
ESS 5: Land acquisition, restrictions on land use and involuntary resettlement	Not relevant, there is no land acquisition in any of the sub-loans. Sub-loans or sub-projects that will likely involve land acquisition and resettlement will not be financed under the project. This is specified in the PFI's ESMS, Annex C: E&S Risk Screening Form.
ESS 6: Biodiversity conservation and sustainable management of living natural resources	Not relevant, the sub-loans are located and operating in Vientiane, provincial towns of Savannakhet, and Champassak far from protected and conservation area or area with biodiversity significance and living natural resources. They are small scale and do not cause impact on natural resources.
ESS 7: Indigenous Peoples/Sub-Saharan African Historically Underserved Traditional Local Communities	Not relevant, the sub-loans are located and operating in Vientiane capital and provincial town of Savannakhet and Champasack not effect indigenous peoples or ethnic groups in their territories.
ESS 8: Cultural heritage	Not relevant, the sub-loans will not finance works that could disrupt either tangible or intangible cultural heritage, or the commercialization of intangible cultural heritage.
ESS 9: Financial Intermediaries	Relevant for all sub-loans
ESS 10: Stakeholder Engagement and Information Disclosure	Relevant for all sub-loans. While the MSMEs, due to their small nature, do not have specific plan or strategy on stakeholder engagement and information disclosure (nor is this required by legislation), they are existing businesses with practices established that includes letting customers know about changes, sales, vacancies, etc. as part of their business operation.

4.3 Organizational capacity and competency

In general, SACOMBANK LAO has assigned E&S staff to specifically oversee the E&S issues as mentioned in ESMS. As mentioned in section 1.1, SACOMBANK LAO adopted the project's ESMS and appointment of three staff including a senior, loan credit officer as the focal point to be responsible for E&S issues as well as implementation of their ESMS. SACOMBANK LAO including staff's responsibilities are as described in its ESMS.

SACOMBANK LAO is responsible for screening sub-loans in accordance with its ESMS, including that any corrective E&S actions, if needed, are properly implemented according to national standards and/or WB ESS as applicable. SACOMBANK LAO is also responsible for monitoring sub-loan's activities to ensure they remain compliant with relevant legislation/standards, and this will be done by the loan credit officer and the E&S focal point, as detailed in the ESMS. As per the ESMS, low-risk sub-loans do not require monitoring.

SACOMBANK LAO will participate in E&S trainings to be provided by the project and online courses on the World Bank (WB) website. In addition, the project will be developing best

practice booklets to enhance knowledge of E&S aspects in MSMEs and enhance compliance with Lao laws.

DOSMEP will provide oversight and assist SACOMBANK LAO to implement its ESMS. This will include:

- Sample review of complete loan applications and loan documents;
- Ensuring reporting is provided;
- Providing support where required on screening of loans (e.g., where there is uncertainty on the E&S risk profile of a Sub-borrower).

Based on low risks outlined, the existing practices of SACOMBANK LAO and the additional support provided by DOSMEP, it is found that the organizational capacity to manage low risks posed by the sub-loans is adequate.

5. Proposed Environmental and Social Measures

The majority of sub-loans have a common E&S minor issues or risks. Measures and actions to address the risks and enhance compliance with Lao laws are summarized in the Table 5. Sub loan that is in the exclusion list or triggers IEE should be excluded. In order to assist MSMEs with these measures, DOSMEP, working with SACOMBANK LAO, will also develop a best-practice booklet with E&S information including labour requirements, Occupational Health and Safety, PPE and environmental measures that will enhance compliance with Lao laws.

Sub loan projects as well as MSMEs are responsible for the implementation of the measures and actions, including monitoring and reporting. SACOMBANK LAO is to ensure the implementation of the measures and actions by sub-loans and responsible for monitoring of compliance and risks, and report to DOSMEP including PMU periodically or as required. DOSMEP/PMU provides capacity support and conduct monitoring of the implementation, reporting of SACOMBANK LAO and sub-loan projects as needed. In addition, DOSMEP/PMU will report the WB about the implementation of the measures and actions and compliance.

Table 5 E&S Measures and Actions for Sub-loan Projects

No	E&S risks	Action	Timeframe	Responsible Body
1	Energy consumption and air emissions	Maintain vehicles and appliance regularly Raise staff/ employee awareness on energy saving Monitor energy use and implement energy saving measures including turn off the lights when not using them and, use energy saving appliance such as appliance with green labels and inverter air conditioners, as appropriate	Q2-3 2022	All sub loans/ MSMEs in Annex 3
2	Water consumption and wastewater	Raise staff/ employee awareness on water saving including installation of water saving signage Monitor and maintain water supply system, leakage, water use and ensure to turn off the water taps when not using them Improve/develop and maintain wastewater storage/septic tank with cover and ensure it is collected and disposed properly by the staff/cleaners and a municipal cleaning company	As above	All sub loans/ MSMEs in Annex 3
3	Solid waste	Ensure proper solid waste collection and disposal by the staff/cleaners and municipal waste collection company, as well as avoidance of spills, open-burning and improper dumping Increase awareness of staff and promote minimize, separation and recycle of solid waste, ban of burning, as appropriate. All the sharps waste from clinic/ health care centre, and all vaccination (from animal farms) will be handled and compliance with the guidance in annex 9 (Agreement on Sanitation of Health Facilities, Ministry of Health, No.1667/MOH, issued on 10 August 2018), annex 10 (Sharps Waste Management Guidelines, Department of Planning and Cooperation, Ministry of Health, issued on 10 October 2019), annex 11 (Property Toxic Chemical and Hazardous Wastes Management Guideline, Department of	As above	All sub loans/ MSMEs in Annex 3

No	E&S risks	Action	Timeframe	Responsible Body
		Environment and Natural Resources Inspection, Ministry Of Environment and Natural Resources, issued in 2022).		
4	Dust	Provide PPE such as masks, gloves, glasses, etc as needed, in order to protect against workplace accidents in compliance with Lao laws. Implement activities with care, use a cover and water to control and prevent blowing dust as appropriate. Keep and cover construction materials safety to avoid blowing dust	As above	All sub loans/ MSMEs in Annex 3
5	Traffic congestion	Monitoring and guide, and avoid incorrect parking Provide traffic regulation, warning signs, parking information to users Increase parking space if needed Avoid loading and unloading the construction materials during rush hour and park the construction material transportation truck at the edge of road/lane Take short time and ensure safety when loading and unloading construction materials	As above	All sub loans/ MSMEs in Annex 3
6	Inadequate personal Protective Equipment (PPE) provided.	Provide necessary PPE (e.g., hardhat, safety goggles/masks/gloves, boots) and hygienic facilities to staff/workers as needed to protect against workplace accidents in line with Lao Labour Law and COVID-19 prevention and control measures.	As above	All sub loans/ MSMEs in Annex 3
7	Inadequate employee health and safety measures (e.g., manual handling weight limits/	Provide information and awareness of manual handling weight limits for male and female as well as recommendations on how to carry weight.	As above	All sub loans/ MSMEs in Annex 3

No	E&S risks	Action	Timeframe	Responsible Body
	maximum load lifting capacity) for male and female)			
8	Abuse, harassment, violence, discrimination, unhygienic hazard, and health risk	<ul style="list-style-type: none"> -Provide information with contact details of responsible agencies (police, Local Authority, Lao Women’s Union in charge of handling and facilitating resolution of gender-based violence and violence against children issues, guidelines, behaviour change communication materials and edutainment to increase awareness of staff, parents, guardians, and students/children - Create a checklist, monitoring and reporting scheme and platform, plan and implement actions against abuse, harassment, violence, discrimination, unhygienic hazard, and health risk accordingly. - Provide first aid kits - Create an emergency response plan and - Provide training to staff and relevant bodies to implement above actions 		All sub loans/ MSMEs in Annex 3
	Nuisance noise from restaurants with Karaoke and music	<p>Sample measures/actions to mitigate this impact in line with national regulation and practice are:</p> <ul style="list-style-type: none"> (i) working/service hours for Karaoke and music shall be limited and allowed up to 12am. (ii) national standard, 2017 on nuisance noise control will be observed. (iii) where feasible for indoor restaurants with Karaoke and music, low-cost sound-proof facilities (foams) could be installed. 		

Annex 1 ESMS's Annex A-Exclusion List

These are a list of activities that form part of the ESMS where any involvement would trigger a “no go” on providing a loan to a Sub-borrower. For the avoidance of doubt, any activities that require an Initial Environmental Examination (IEE) or an Environmental & Social impact Assessment (ESIA) under regulations in Lao PDR are excluded.

The following exclusions to ALL sub-loans processed under the Project:

- Production or trade in any product or activity deemed illegal under host country laws or regulations or international conventions and agreements, or subject to international bans, such as pharmaceuticals, pesticides/herbicides, ozone depleting substances, PCBs, wildlife or products regulated under CITES.
- Production or trade in weapons and munitions.
- Production or trade in alcoholic beverages (excluding beer and wine)².
- Production or trade in tobacco².
- Gambling, casinos and equivalent enterprises.
- Production or trade in radioactive materials. This does not apply to the purchase of medical equipment, quality control (measurement) equipment and any equipment which is considered to be the radioactive source to be trivial and/or adequately shielded.
- Production or trade in unbonded asbestos fibres or use of asbestos-containing materials. This does not apply to purchase and use of bonded asbestos cement sheeting where the asbestos content is less than 20%.
- Drift net fishing in the waterway using nets in excess of 2.5 km in length.
- Production or activities involving harmful or exploitative forms of forced labour⁵/harmful child labour⁶.
- Sub-loans involving logging/harvesting of timber or wood products.
- Production and distribution of construction materials is one of the eligible activities provided that wood/lumber production are sourced legally and further due diligence of the sources will be pursued as part of processing and approval of the transaction.
- Commercial logging operations for use in primary tropical moist forest production or trade in wood or other forestry products other than from sustainably managed forests.
- Sub-loans involving any transaction that will require acquisition of land regardless of tenure or ownership, physical relocation of households or displacement of livelihoods.
- Activities involving major construction and civil works that would cause significant adverse impact and require an impact assessment (IEE or ESIA) according to the national regulations and in line with WB ESF policies (e.g., higher risk activities), which would be beyond the capacity of the MSMEs to manage.
- Activities based on or directly linked to land/natural resource-based productions such as food production and processing, and other transactions that cause impacts that are

⁵Forced labour means all work or service, not voluntarily performed, that is extracted from an individual under threat of force or penalty.

⁶Harmful child labour means the employment of children that is economically exploitive, or is likely to be hazardous to, or to interfere with, the child's education, or to be harmful to the child's health, or physical, mental, spiritual, moral, or social development.

required high investment and or unlikely to be addressed within project timeframe and the capacity of project stakeholders.

- Industrial-scale or EIA required activities involving significant conversion or degradation of natural and/or critical habitats and/or any activities in legally protected or internationally recognized areas.
- Industrial-scale or EIA required activities involving production, harvesting, or trade in wood or other forestry products from plantation and natural forests other than from legal and sustainable origin.
- Industrial-scale or EIA required activities involving harvesting of wild fish populations or other aquatic species other than from legal and sustainable origin.
- Activities, including relocation, that have adverse impacts on the lands, natural resources, or critical cultural heritage subject to traditional ownership or under customary use by the Indigenous Peoples (ethnic minorities).
- Activities involving significant alteration, damage, or removal of any critical cultural heritage.
- High and Substantial risk sub-loans (following the definitions of World Bank's Environmental and Social Framework (also see Annex B). In this case it means any activities that would require an impact assessment under Lao PDR requirements.

Categorisation

Category	Definition	Example Activities
<p>High Risk</p>	<p>High Risk means any business activity which is likely to have significant adverse environmental and social impacts that are socially sensitive, irreversible, large-scale or unprecedented, and which includes, for the avoidance of doubt, activities involving (a) involuntary resettlement, (b) risk of adverse impacts on indigenous peoples, (c) significant risks to or impacts on the environment, community health and safety, biodiversity, cultural heritage, or (d) significant occupational health and safety risks (risk of serious injury or fatality to workers).</p> <p>Such as:</p> <p>Project request the Environment and Social Impact Assessment (ESIA)</p>	<ul style="list-style-type: none"> ▪ Oil and Gas: <ul style="list-style-type: none"> – Greenfield exploration and production operations. – Refinery construction and operation. ▪ Mining and Coal Processing Sector: <ul style="list-style-type: none"> – Operations that involve large scale extraction of minerals, coal or building materials, via underground or open-pit mining. – Development of large mineral processing facilities/integrated mills. ▪ Power Sector: <ul style="list-style-type: none"> – New thermal power station development. – Hydropower developments with large dams and other impoundments designed for the holding back or permanent storage of water (and run of the river with significant environmental & social impacts. – Large scale electric power transmission and distribution. ▪ Transportation and Logistics: <ul style="list-style-type: none"> – Large infrastructure projects, including development of [new] ports and harbours, airports, road, rail, and mass transit systems. ▪ Realignment and/or widening of an existing road, where such new road, or realigned and/or widened section of road. ▪ Activities that require an ESIA in Lao PDR (See Table below).

<p>Substantial Risk</p>	<p>Substantial Risk means any business activity that is not as complex as High-Risk activities, however, has some significant risks and impacts with the possibility of avoiding or reversing but with substantial investment and time and may give rise to limited degree of social conflict, harm, human security risk.</p> <p>Such as:</p> <p>Project request the Initial Environment Examination (IEE)</p>	<ul style="list-style-type: none"> ▪ Power Sector: <ul style="list-style-type: none"> – Expansion of existing thermal power operations within an existing footprint and/or will not result in significant environmental/social impact – Renewable power developments that will not result in significant environmental/social impacts. ▪ Manufacturing: <ul style="list-style-type: none"> – Development of a manufacturing facility where there are no significant environmental & social impacts, however it is not part of an existing industrial park ▪ Infrastructure: <ul style="list-style-type: none"> – Development of a large water supply network using existing water supply (i.e., development and construction of infrastructure) – Development of datacentres, where there are no significant environmental & social impacts, however recognising that these can be significant users of energy. <p>Activities that require an IEE and or ESIA in Lao PDR (See Table B2 below).</p>
<p>Moderate Risk</p>	<p>Moderate Risk means any business activity that has potentially limited adverse environmental or social risks and/or impacts that are few in number, generally site-specific, largely reversible, and readily addressed through mitigation measures. Impacts are often site-specific without likelihood of impacts beyond the activity’s footprint and routine safety</p>	<ul style="list-style-type: none"> ▪ Acquisition of new transportation equipment (automobiles, trucks, other specialised equipment, and replacement parts); ▪ Small-scale processing of agricultural produce e.g., rice. ▪ Building of small warehouses or renovation of existing physical premises on the land fully owned by the MSMEs; ▪ Acquisition of assets such as industrial machines, medium sized tools and equipment.

	<p>precautions are expected to be sufficient to prevent accidents.</p> <p>Such as:</p> <p>Additional Environmental and Social Code Of Practice (ESCOP) will be required but ensure activities follow Standard Operating Procedure (SOP) and national regulation /standards, local authorities' and suppliers' advice/standards.</p>	
<p>Low Risk</p>	<p>Low Risk means any business activity minimal or negligible risks to and impacts on human populations and/or the environment with few or no adverse risks and impacts and issues.</p> <p>Such as:</p> <p>There is a basic or general guide for environmental and social management knowledge. And but ensure activities follow Standard Operating Procedure (SOP).</p>	<ul style="list-style-type: none"> ▪ Office based activities such as marketing, consultancy, etc. ▪ Working capital needs (loans for payment of salaries, marketing costs, audit and accounting costs); ▪ Acquisition of communications equipment (phone and fax equipment, computers, printers, servers, software, other hardware, etc.); ▪ Purchase of construction materials for shops selling construction material, ▪ Purchase of feed stock, and feed mixer machine; ▪ Acquisition of fixed small assets (refrigerators, replacement parts, etc.), small tools and equipment etc.). ▪ All types of retail outlets (except those dealing in hazardous or toxic chemicals, flammable materials); and ▪ Restaurants and other food premises.

Under Ministerial Agreement No. 8056/MONRE, a list of activities is provided and are divided into two categories. Activities in category 1 are required to conduct an Initial Environmental Examination (IEE) and those in Category 2 are required to complete an Environmental and Social Impact Assessment (ESIA). The investment projects and activities have been divided into 5 sectors as follows: (1) energy; (2) agriculture and forestry; (3) industry processing; (4) infrastructure and service and (5) mining.

Type and size details of investment projects and activities classified into categories 1 and 2 are in the table Activities Requiring IEE and ESIA in Lao PDR below:

TYPES OF INVESTMENT PROJECTS AND ACTIVITIES		CATEGORY 1 - REQUIRED TO CONDUCT IEE	CATEGORY 2 - REQUIRED TO CONDUCT EIA
I. Investment projects and activities in energy sector			
Electric power development			
1.1	Electricity generation by Hydropower (Hydropower plants construction)	(a) 1-15 megawatt or (b) catchment basin < 200 million m ³ or (c) catchment area <1,500 hectares	(a) ≥ 15 megawatt or (b) catchment basin ≥ 200 million m ³ or (c) catchment area ≥ 1,500 hectares
1.2	Nuclear power, control and disposal of nuclear waste		All size
1.3	Natural gas or biogas power	5-50 megawatts	> 50 megawatts
1.4	Wind power by using turbines	2-10 turbines	> 10 turbines
1.5	Coal, oil or biomass power plant project	≤ 10 megawatts	> 10 megawatts
Gas and petroleum			
1.6	Petroleum and pipelines		All sizes
1.7	Extraction of oil or natural gas		All sizes
1.8	Oil refinery		All sizes
1.9	Petroleum storage facilities	5,000-50,000 m ³	> 50,000 m ³
High voltage transmission development			
1.10	High voltage transmission construction:		
1.10.1	High voltage ≥ 230 Kilovolt	≤ 15 Kilometers	> 15 Kilometers

1.10.2	High voltage < 230 Kilovolt	All sizes	
1.11	High voltage power distribution station	< 10 hectares	≥ 10 hectares
II. Investment projects and activities in agriculture and forestry			
Tree plantation and crops			
2.1	Planting and cutting industrial tree plantation	20-200 hectares	> 200 hectares
2.2	Plantation of industrial crops	20-400 hectares	> 400 hectares
Animal raising and fisheries			
2.3	Large animal rearing (cattle, buffaloes, horses, etc.)	≥ 500 head	
2.4	Poultry raising	≥ 5,000 head	
2.5	Pig raising	≥ 500 head	
2.6	Fishpond and aquatic culture in industrial ponds	≥ 10 hectares	
2.7	Fish cage and aquatic culture in cages along rivers	≥ 300 m ²	
2.8	Crocodile raising	≥ 100 heads	
III. Investment projects and activities in processing industrials			
Food processing industry			
3.1	Production, processing and storage of foods (meat, fish, fruit, cooking oil, animals and animal feed)	≤ 1 ton/day	> 1 ton/day
3.2	Milk processing factory	≤ 40 ton/day	> 40 ton/day
3.3	Tapioca and tapioca products processing	40-80 ton/day	> 80 ton/day
3.4	Sugar factory	≤ 30 ton/day	> 30 ton/day
3.5	Liquor manufacture	≤ 500,000 liters/year	> 500,000 liters/year

3.6	Drinking water processing	All sizes	
3.7	Tobacco factory	All sizes	
Textile, pulp, paper and wood products			
3.8	Textile, cotton, garment manufacture and dye factories	All sizes	
3.9	Leather tanning factory	All sizes	
3.10	Leather processing factory	≤ 1 million pieces/year	> 1 million pieces/year
3.11	Wicker, bamboo and rattan production factory	All sizes	
3.12	Plywood factory	≤ 100,000 m ² /year	> 100,000 m ² /year
3.13	Paper factory	≤ 30 tons/year	> 30 tons/year
3.14	Printing house	All sizes	
Chemical products and clinical equipment			
3.15	Petroleum and hydrocarbon factory		All sizes
3.16	Chemical production factory		All sizes
3.17	Medical equipment and pharmaceutical factory using chemical reactions and biochemicals		All sizes
3.18	Cleaning products	≤ 10 tons/day	> 10 tons/day
3.19	Rubber manufacture	50-200 tons/year	> 200 tons/year
3.20	Plastic manufacture	≤ 400 tons/year	> 400 tons/year
Non-metallic product manufacture			
3.21	Glass product factory	All sizes	
3.22	Mineral product production and no other metals processing	All sizes	
3.23	Cement, lime and plaster factory	≤ 20 tons/hour	> 20 tons/hour

Mining extraction industry			
3.24	Steel and iron smelting factory	≤ 5,000 tons/year	> 5,000 tons/year
3.25	Precious metal processing factory		All sizes
3.26	Steel processing factory	≤ 50 tons/day	> 50 tons/day
3.27	Non-ferrous metal processing factory	All sizes	
3.28	Metal fabrication (tanks, sinks, etc.)	All sizes	
3.29	Battery production factory	All sizes	
Other industries			
3.30	Home appliances, office equipment, and electrical tools production	All sizes	
3.31	Automotive and alkaline battery production factory	≤ 70 tons/year	> 70 tons/year
3.32	Spare parts factory for automobiles and related machines	≤ 1,000 tons/year	> 1,000 tons/year
3.33	Bicycles and wheelchairs for disabled people	≤ 10,000 sets/year	> 10,000 sets/year
3.34	Home appliances factory	≤ 10,000 pieces/year	> 10,000 pieces/year
3.35	Water supply and treatment	All sizes	
Waste treatment			
3.36	Disposal of non-hazardous waste	≤ 5,000 tons/year	> 5,000 tons/year
3.37	Hazardous waste disposal		All sizes
3.38	Hazardous waste treatment		All sizes
3.39	Other waste management and treatment		All sizes
3.40	Construction of a factory for recycling		All sizes

3.41	Construction of a waste incinerator		All sizes
3.42	City wastewater treatment	≤ 50,000 persons	>50,000 persons
3.43	Industrial wastewater treatment		All sizes
3.44	Waste drainage construction	All sizes	
IV. Investment projects and activities in infrastructure and services			
4.1	Backfill for marsh, river, canals damaging public benefits		All sizes
4.2	Dormitory and condominium construction	>50 rooms	
4.3	Golf course construction		All sizes
4.4	Sport complex construction		All sizes
4.5	Hotel or resort construction	≤ 80 rooms	> 80 rooms
4.6	Hotel complex construction	≤ 50 hectares	> 50 hectares
4.7	Tourism and recreation in areas of environment and social significance		All sizes
4.8	Special economic zone development		All sizes
4.9	Hospital construction	≤ 80 beds	> 80 beds
4.10	Railway construction		All sizes
4.11	Road construction (national, province, district, special zone levels)		All sizes
4.12	Road rehabilitation (national, province, district and special zone levels)	All sizes	
4.13	Airport construction		All sizes
4.14	Telecom network construction	All sizes	
4.15	Navigation (improvement of channels along rivers)	≤ 200 tons	> 200 tons

4.16	Port construction		
4.16.1	Port for public transport	≤ 500 tons (excluding ship weight)	> 500 tons (excluding ship weight)
4.16.2	General goods port	≤ 500 tons (excluding ship weight)	> 500 tons (excluding ship weight)
4.16.3	Dangerous goods port		All sizes
4.17	Erosion protection and embankment construction	≤ 1 Kilometre	>1 Kilometre
V. Investment projects and activities in mining sectors			
Mining processing and exploitation			
5.1	Gravel and sand extraction	1,000-50,000 m ³ /day	> 50,000 m ³ /day
5.2	Rock drilling and transport	≤ 50 tons/day	> 50 tons/day
5.3	Extraction of construction materials (earth, gravel, sand, etc.)	≤ 100,000 m ³ /year or areas ≤ 20 hectares	> 100,000 m ³ /year or areas > 20 hectares
5.4	Extraction of solid minerals (without using chemicals)		All sizes
5.5	Extraction of solid minerals (using hazardous chemicals)		All sizes
5.6	Solid minerals processing	≤ 50,000 tons/year	> 50,000 tons/year
Water control and management			
5.7	Abstraction and use of groundwater for use in industry, agriculture and urban consumption	500- 5,000 m ³ /day	> 5,000 m ³ /day
5.8	Construction of reservoir and dams	1-200 million m ³ or height of dam ≤ 10 m ³	> 200 million m ³ or height of dam > 10 m ³

Areas that are important for environmental and social aspects cover the following zones:

- All areas or most areas of proposed zone have been announced as protection area, conservation areas in accordance with the law on forest No. 64/NA dated 13/06/2019;
- All areas or most areas of proposed zone have been announced as wildlife and aquatic animal conservation area in accordance with law on wildlife and aquatic animals, No. 07/NA dated 24/12/2008;
- All areas or most areas of proposed zone have been announced as national cultural heritage and history areas in accordance with law on national heritage No. 44/NA dated 24/12/;
- All areas or most areas of proposed zone have been announced as water resource conservation areas in accordance with law on water and water resource, No. 23/NA dated 11/05/2017; and
- Other areas have been announced as environmental and social important areas in different periods.

Annex 3: Proposed Sub-loans for refinancing under SACOMBANK LAO and its E&S Issue

1. Proposed sub-loans for refinancing

No	Name of business	Business Size (MI= Micro, S= Small, M= Medium)	Sector [Trading, Services and Manufacture]	Type of business /Business Activities (describe)	Date of contract	Contract End Date	Loan purpose in detail and sector	Type of Loan Purposed [Working Capital vs. Investment Capital]	Refinance - able (LAK)	Refinance - able (USD)
1	VALANDY VANNALATSAMY	M	Services	Restaurant: Noodle (Pho) and cook as order	20/01/2021	20/01/2026	Increase working capital	Working Capital	504,165,000	53,070
2	BOUAPHANH CHANTHACHITH	MI	Trading	Sale of clothes	22/01/2020	22/01/2030	Buy equipment	Working Capital	359,796,000	37,873
3	XAYPHONE NGONGVORALATH	S	Services	Restaurant: Rice noodle with ginger	09/01/2020	09/01/2025	Expand the business	Working Capital	693,328,000	72,982
4	LOTKHAM BACKAM	S	Services	Restaurant: Noodle (Pho) and cook as order	27/04/2020	27/04/2025	Expand the business	Working Capital	440,621,000	46,381
5	VISAY VORACHACK	S	Services	Food, coffee and beverage store	04/01/2021	04/01/2021	Expand the business	Working Capital	474,998,000	50,000
6	PHOUVAN SINLAVONG	S	Trading	sell Lao cement	24/02/2020	24/02/2025	Expand the business	Working Capital	298,300,000	31,400
7	NONGKHAN TUISITTHIPHONE XAY	S	Trading	wholesale business to sell Beer Lao, drink.	19/03/2020	19/03/2025	Increase working capital	Working Capital	2,327,562,000	200,000
8	CHANTHAPHILIT MEKSAVANH	S	Other	Maintaining, installing, and selling all type of air conditioning	21/10/2020	21/10/2025	Increase working capital	Working Capital	864,400,000	90,989

No	Name of business	Business Size (MI= Micro, S= Small, M= Medium)	Sector [Trading, Services and Manufacture]	Type of business /Business Activities (describe)	Date of contract	Contract End Date	Loan purpose in detail and sector	Type of Loan Purposed [Working Capital vs. Investment Capital]	Refinance - able (LAK)	Refinance - able (USD)
9	SVT TRADING SOLE CO., LTD	S	Trading	Wholesale and retail store	03-12-2020	03-12-2025	Increase working capital	Working Capital	824,990,000	86,841
10	KHAMKHAO CHANTHO	MI	Trading	Sale of gold and jewels	13/07/2020	13/07/2025	Increase working capital	Working Capital	450,000,000	47,368
11	PHATTHAKHONE BANOUVONG	S	Services	Diagnostic clinic	01/08/2020	01/08/2027	Buy equipment	Working Capital	478,569,000	50,376
12	SAMLAN PHUTTHAVONGSA	MI	Trading	Sale of clothes	10/01/2020	10/01/2025	Increase working capital	Working Capital	433,328,000	45,613
13	SOMPHE VONGSAYYA	S	Services	Restaurant; Karaoke room	16/09/2020	16/09/2030	Buy equipment	Working Capital	1,041,127,000	109,592
14	THILAVANH VONGSOUTH	S	Other	Repairing car and sale of car tires, and other	05/08/2020	05/08/2035	Buy equipment	Working Capital	932,987,000	98,209
15	VIENTIANE ICE SOLE CO., LTD	S	Manufacture	Ice factory	01/07/2020	01/07/2027	Buy equipment	Working Capital	2,833,332,000	200,000
16	LATTANAPHONE SAPHOUVONG	MI	Trading	Sell gold	29/06/2020	29/06/2025	Working Capital	Working Capital	569,485,000	59,946
17	PHANLA PHILAVONG	MI	Trading	Urine clothes	21/01/2021	11/11/2035	Buy equipment	Working Capital	481,641,000	50,699
18	SOUPHACHIT CHANHTHANEEVONG	S	Services	Rent tables, chairs	20/01/2020	20/01/2026	Increase working capital	Working Capital	800,975,000	84,313
19	DAOPHET THIPPHAVONG	MI	Services	Repairing car	25/08/2020	25/08/2025	Investment Capital	Working Capital	795,000,000	83,684

No	Name of business	Business Size (MI= Micro, S= Small, M= Medium)	Sector [Trading, Services and Manufacture]	Type of business /Business Activities (describe)	Date of contract	Contract End Date	Loan purpose in detail and sector	Type of Loan Purposed [Working Capital vs. Investment Capital]	Refinance - able (LAK)	Refinance - able (USD)
20	SOUKSOMCHAY VONGSAVANH	MI	Trading	Sell gold	08/04/2020	08/04/2025	Increase working capital	Working Capital	408,326,000	42,982
21	THILAPHONE PHADOUANGDETH	S	Services	Massage shop	22/10/2020	22/10/2035	Buy equipment	Working Capital	700,000,000	73,684
22	KANCHANA COMMERCE IMPORT-EXPORT SOLE CO., LTD	S	Trading	IMPORT-EXPORT of candy	26/02/2021	26/02/2026	Increase working capital	Working Capital	458,335,000	48,246
23	SONEPHINE XAYYANAM	MI	Trading	Sell construction equipment	21/01/2020	21/01/2025	Increase working capital	Working Capital	430,000,000	45,263
24	CHIVONE SAYAVONGSING	S	Services	Restaurant: food huts	21/04/2021	21/04/2026	Increase working capital	Working Capital	600,000,000	63,158
25	KHAMMOUNG PHOMMACHANH	MI	Services	Accommodation Service	03/03/2021	26/2/2026	Increase working capital	Working Capital	466,104,000	49,064
26	PHAIVANH PHETVANKHAM	S	Services	wholesale and retail store	14/02/2020	14/02/2025	Increase working capital	Working Capital	358,322,000	37,718
27	SOUKSAMAI VONGSATHIEN	S	Services	Restaurant	16/3/2020	16/3/2025	Increase working capital	Working Capital	313,329,000	32,982

No	Name of business	Business Size (MI= Micro, S= Small, M= Medium)	Sector [Trading, Services and Manufacture]	Type of business /Business Activities (describe)	Date of contract	Contract End Date	Loan purpose in detail and sector	Type of Loan Purposed [Working Capital vs. Investment Capital]	Refinance - able (LAK)	Refinance - able (USD)
28	SOMBAT DUANGPASERT	S	Trading	Sell construction equipment	10/03/2020	10/03/2025	Increase working capital	Working Capital	733,328,000	77,192
29	VONGLATSAMY SAYPANYA	S	Services	Restaurant: food huts	04/03/2020	04/03/2035	Buy equipment	Working Capital	749,245,000	78,868
	VONGLATSAMY SAYPANYA	S	Services	Restaurant: food huts	09/08/2020	09/08/2025	Increase working capital	Working Capital	476,664,000	50,175
30	CHANTHACHONE AGRICULTUE FARM SOLE.CO., LTD	S	Agriculture	Cattle Farm	23/02/2021	23/02/2026	Increase working capital: purchase cattle, vaccine and supplement	Working Capital	1,306,664,000	137,544
31	BOUNKHAM FARM	S	Agriculture	Cattle Farm	12/11/2020	12/10/2030	Buy equipment	Working Capital	800,000,000	84,211
32	CHINDAMANY DEVELOPMENT AGRICULTURE SOLE CO., LTD	S	Agriculture	Cattle Farm	26/2/2021	26/2/2026	Increase working capital: purchase cattle and supplement	Working Capital	767,470,000	80,786

No	Name of business	Business Size (MI= Micro, S= Small, M= Medium)	Sector [Trading, Services and Manufacture]	Type of business /Business Activities (describe)	Date of contract	Contract End Date	Loan purpose in detail and sector	Type of Loan Purposed [Working Capital vs. Investment Capital]	Refinance - able (LAK)	Refinance - able (USD)
					26/2/2021	26/2/2031	Repairing and buy equipment	Working Capital	200,000,000	21,053
33	NAKA FARM SOLE CO., LTD	S	Agriculture	Chicken Farm	03/04/2021	03/04/2031	Increase working capital to purchase chicken feed and farm equipment	Working Capital	750,000,000	78,947
34	SOMCHIT CHALERN SUB SOLE CO., LTD	S	Agriculture	Raising fish, planting bamboo trees raising younger and coconuts	24/02/2021	24/02/2026	Increase working capital for buy fishes, bamboo trees and coconuts	Working Capital	949,150,000	99,911
35	SAYLIPHARB FARM PRIVATE ENTERPRISE	Mi	Agriculture	Chicken Farm: Saigon breed, Myanmar breed, Thai breed.	25/03/2021	25/03/2026	Buy chicken, feed.	Working Capital	484,196,000	50,968
TOTAL:									26,555,737,000	2,652,088.74

2. Degree and significance of E&S Risks as per the E&S Risk and Impact Matrix (Table 4)

No	Name of business	Type of business /Business Activities (describe)	Business Size (MI= Micro, S= Small, M= Medium)	Size	E&S Category [H=High, M= Medium, L=Low Risk]	Air emissions	Waste-water	Solid waste	Nuisance (dust, noise, traffic congestion)	Resource (water, electricity use, raw materials)	Community health and safety	Labour and working condition/ health
1	VALANDY VANNALATSAMY	Restaurant: Noodle (Pho) and cook as order	M	15 tables, 144 m2 (12 mx12 m)	L	4	3	4	2	4	2	4
2	BOUAPHANH CHANTHACHITH	Sale of clothes	MI	area:200 m2	L	4	3	4	2	4	2	4
3	XAYPHONE NGONGVORALATH	Restaurant: Rice noodle with ginger	S	area:375 m2	L	4	3	4	2	4	2	4
4	LOTKHAM BACKAM	Restaurant: Noodle (Pho) and cook as order	S	area:250 m2	L	4	3	4	2	4	2	4
5	VISAY VORACHACK	Food, coffee and beverage store	S	area:200 m2	L	4	3	4	2	4	2	4
6	PHOUVAN SINLAVONG	sell Lao cement	S	sold: 200 T/month, 253 m2	L	4	3	4	2	4	2	4
7	NONGKHAN TUISITHIPHONEXAY	wholesale business to sell Beer Lao, drink.	S	Bought: 27,600 bottle/month	L	4	3	4	2	4	2	4
8	CHANTHAPHILIT MEKSAVANH	Maintaining, installing, and selling all type	S	sold: 60 unite/month, 382 m2	L	4	3	4	2	4	2	4

No	Name of business	Type of business /Business Activities (describe)	Business Size (MI= Micro, S= Small, M= Medium)	Size	E&S Category [H=High, M= Medium, L=Low Risk]	Air emissions	Waste-water	Solid waste	Nuisance (dust, noise, traffic congestion)	Resource (water, electricity use, raw materials)	Community health and safety	Labour and working condition/ health
		of air conditioning										
9	SVT TRADING SOLE CO., LTD	Wholesale and retail store	S	area:475 m2	L	4	3	4	2	4	2	4
10	KHAMKHAO CHANTHO	Sale of gold and jewels	MI	sold:15-20 bath/month	L	4	3	4	2	4	2	4
11	PHATTHAKHONE BANOUVONG	Diagnostic clinic	S	5 sets of big beds, area: 464 m2 (15mx30m)	L	4	3	4	2	4	2	4
12	SAMLAN PHUTTHAVONGS A	Sale of clothes	MI	area: 9 m2 (3mx3m)	L	4	3	4	2	4	2	4
13	SOMPHE VONGSAYYA	Restaurant; Karaoke room	S	5-8 rooms	L	4	3	4	2	4	2	4
14	THILAVANH VONGSOUTH	Repairing car and sale of car tires, and other	S	area: 225 m2 (15m x 15m)	L	4	3	4	2	4	2	4
15	VIENTIANE ICE SOLE CO., LTD	Ice factory	S	3 machines area: 375 m2 (15m x 25m)	L	4	3	4	2	4	2	4
16	LATTANAPHONE SAPHOUVONG	Sell gold	MI	10-25 bad/month	L	4	3	4	2	4	2	4
17	PHANLA PHILAVONG	Urine cloth	MI	area: 14 m2 (4mx4m)	L	4	3	4	2	4	2	4
18	SOUPHACHIT CHANHTHANEEVONG	Rent tables, chairs	S	area: 300 m2 (10mx20m)	L	4	3	4	2	4	2	4

No	Name of business	Type of business /Business Activities (describe)	Business Size (MI= Micro, S= Small, M= Medium)	Size	E&S Category [H=High, M= Medium, L=Low Risk]	Air emissions	Waste-water	Solid waste	Nuisance (dust, noise, traffic congestion)	Resource (water, electricity use, raw materials)	Community health and safety	Labour and working condition/ health
19	DAOPHET THIPHAVONG	Repairing car	MI	area: 56 m2 (7mx8m)	L	4	3	4	2	4	2	4
20	SOUKSOMCHAY VONGSAVANH	Sell gold	MI	area: 21 m2 (7mx3m)	L	4	3	4	2	4	2	4
21	THILAPHONE PHADOUANGDETH	Massage shop	S	10 rooms area: 300 m2	L	4	3	4	2	4	2	4
22	KANCHANA COMMERCE IMPORT-EXPORT SOLE CO., LTD	IMPORT-EXPORT of candy	S	area: 400 m2 (20m x 20m)	L	4	3	4	2	4	2	4
23	SONEPHINE XAYYANAM	Sell construction equipment	MI	area: 192 m2	L	4	3	4	2	4	2	4
24	CHIVONE SAYAVONGSING	Restaurant: food huts	S	25 huts	L	4	3	4	2	4	2	4
25	KHAMMOUNG PHOMMACHANH	Accommodation Service	MI	28 rooms. Established in 2010	L	4	3	4	2	4	2	4
26	PHAIVANH PHETVANKHAM	wholesale and retail store	S	area: 70 m2 (7mx10m)	L	4	3	4	2	4	2	4
27	SOUKSAMAI VONGSATHIEN	Restaurant	S	15 tables	L	4	3	4	2	4	2	4
28	SOMBAT DUANGPASERT	Sell construction equipment	S	area: 300 m2 (15m x 20m)	L	4	3	4	2	4	2	4
29	VONGLATSAMY SAYPANYA	Restaurant: food huts	S	20-30 huts	L	4	3	4	2	4	2	4

No	Name of business	Type of business /Business Activities (describe)	Business Size (MI= Micro, S= Small, M= Medium)	Size	E&S Category [H=High, M= Medium, L=Low Risk]	Air emissions	Waste-water	Solid waste	Nuisance (dust, noise, traffic congestion)	Resource (water, electricity use, raw materials)	Community health and safety	Labour and working condition/ health
30	CHANTHACHONE AGRICULTUE FARM SOLE.CO., LTD	Cattle Farm	S	100 Cattles	L	4	3	4	2	4	2	4
31	BOUNKHAM FARM	Cattle Farm	S	80 Cattles	L	4	3	4	2	4	2	4
32	CHINDAMANY DEVELOPMENT AGRICULTURE SOLE CO., LTD	Cattle Farm	S	60 Cattles	L	4	3	4	2	4	2	4
33	NAKA FARM SOLE CO., LTD	Chicken Farm	S	1,000 Chicken	L	4	3	4	2	4	2	4
34	SOMCHIT CHALERN SUB SOLE CO., LTD	Raising fish, planting bamboo trees raising younger and coconuts	S	3 ponds 100 bamboo trees 150 coconuts area: 2 Hectares	L	4	3	4	2	4	2	4
35	SAYLIPHARB FARM PRIVATE ENTERPRISE	Chicken Farm: Saigon breed, Myanmar breed, Thai breed.	Mi	80-90 chicken	L	4	4	4	2	4	4	4

Annex 4: Location of MSMEs from SACOMBANK LAO

No	Name of MSME/Company	Province	District	Village	Telephone	Location (Link Google Map)
1	VALANDY VANNALATSAMY	Champasak	Pakse	Phonxay	020 58194555	https://www.google.com/maps?q=15.119735717773438,105.809326171875&z=17&hl=th
2	BOUAPHANH CHANTHACHITH	Vientiane capital	Xaythany	Thangon	02078912839	https://www.google.com/maps/place/18.129534,+102.626650/@18.1297255,102.6261838,299m/data=!3m1!1e3!4m5!3m4!7e2!8m2!3d18.1295343!4d102.6266505
3	XAYPHONE NGONGVORALATH	Vientiane capital	Hardxaiythong	Keangpayarg	02055555274	https://www.google.com/maps/place/17%C2%B056'36.6%22N+102%C2%B037'41.5%22E/@17.9435003,102.6259946,598m/data=!3m2!1e3!4b1!4m5!3m4!1s0x0:0x2e6fb98e6fe7fbba!8m2!3d17.9434952!4d102.6281833
4	LOTKHAM BACKAM	Vientiane capital	Sikhodthabong	Muengwathong	02055689044	https://www.google.com/maps/place/17%C2%B058'20.4%22N+102%C2%B033'56.0%22E/@17.972346,102.5633712,598m/data=!3m2!1e3!4b1!4m5!3m4!1s0x0:0x984614216f6fc2fb!8m2!3d17.9723409!4d102.5655599
5	VISAY VORACHACK	Vientiane capital	Chanthabuly	Xiengyeun	02095157666	https://www.google.com/maps/place/17%C2%B057'56.9%22N+102%C2%B036'31.3%22E/@17.9658107,102.6065057,598m/data=!3m2!1e3!4b1!4m5!3m4!1s0x0:0xc07474fb7f4cfd25!8m2!3d17.965799!4d102.608697
6	PHOUVAN SINLAVONG	Savahnakhet	Kaisonephomviharn city	Sanamxay	020 23042918	16°34'16.4"N 104°46'10.8"E
7	NONGKHAN TUISITTHIPHONEXAY	Savahnakhet	Kaisonephomviharn city	Chomkeo	020 22603030	16°35'14.3"N 104°45'29.4"E
8	CHANTHAPHILIT MEKSAVANH	Savahnakhet	Kaisonephomviharn city	Sapharn neua	020 98973999	16°32'51.1"N 104°45'09.6"E

No	Name of MSME/Company	Province	District	Village	Telephone	Location (Link Google Map)
9	SVT TRADING SOLE CO.,LTD	Vientiane capital	Nasaiythong	Tham	020 97156669	17.970160, 102.630668
10	KHAMKHAO CHANTHO	Vientiane capital	Xaysettha	Naxay	020 55619948	17.965381, 102.614479
11	PHATTHAKHONE BANOUVONG	Vientiane capital	Sikhodthabong	Dongnathong	020 96156565	17.976231, 102.610851
12	SAMLAN PHUTTHAVONGSA	Vientiane capital	Xaysettha	thatluang	020 56009994	17.964411, 102.616163
13	SOMPHE VONGSAYYA	Vientiane capital	Xaysadtha	Naxay	020 55511168	17.971038, 102.627863
14	THILAVANH VONGSOUTH	Vientiane capital	Chanthabuly	Sybounheuang	020 55622959	17.922566, 102.647234
15	VIENTIANE ICE SOLE CO.,LTD	Vientiane capital	Xaythany	Phonthong	020 59444449	18.134552, 102.727782
16	LATTANAPHONE SAPHOUVONG	Vientiane capital	Sisattanak	Donkoiy	020 22599952	17.962442, 102.617529
17	PHANLA PHILAVONG	Vientiane capital	Xaysettha	Nakea	020 23332354	18.032393, 102.665398
18	SOUPHACHIT CHANHTHANEEVONG	Vientiane capital	Chanthabuly	Dongpaleip	020 28249394	18.036680, 102.570107
19	DAOPHET THIPPHAVONG	Vientiane capital	Xaysettha	Huakhoua	020 22229938	17.968324, 102.659072
20	SOUKSOMCHAY VONGSAVANH	Vientiane capital	Chanthabuly	Thongkhankham	020 55697752	17.965574, 102.614184
21	THILAPHONE PHADOUANGDETH	Vientiane capital	Chanthabuly	Phonthongsavanh	020 54445615	17.964247,102,703891
22	KANCHANA COMMERCE IMPORT-EXPORT\SOLE CO.,LTD	Vientiane capital	Chanthabuly	Thongsarnngang	02056633665	17.979425,102,617842
23	SONEPHINE XAYYANAM	Vientiane capital	Sisattanak	Donkoiy	020 58358348	17.960622, 102.703218

No	Name of MSME/Company	Province	District	Village	Telephone	Location (Link Google Map)
24	CHIVONE SAYAVONGSING	Vientiane capital	Hadxaifyfong	Dongkhamxang	020 97358348	18.960622, 102.703244
25	KHAMMOUNG PHOMMACHANH	Vientiane capital	Sikhodthabong	Nongbeukneua	020 5555 5398	18°01'46.1"N 102°35'15.1"E
26	PHAIVANH PHETVANKHAM	Vientiane capital	Xaythany	Nathom	020 55888760	18°03'21.2"N 102°37'54.6"E
27	SOUKSAMAI VONGSATHIEN	Vientiane capital	Xaysettha	Huakhoua	020 5559 8058	17°58'18.6"N 102°39'47.9"E
28	SOMBAT DUANGPASERT	Vientiane capital	Naxaiythong	Eilai tai	020 55999858	18.925235, 102.449405
29	VONGLATSAMY SAYPANYA	Vientiane capital	Chanthabuly	Huayhong	020 29789156	18.025532, 102.614348 18.026189, 102.613177
30	CHANTHACHONE AGRICULTUE FARM SOLE.CO.,LTD	Vientiane capital	Parkngeum	Donehai	020 55519057	17.951985,102.636642
31	BOUNKHAM FARM	Champasak	Phonethong	Fungdeng	030 9657888	15.04168487010297, 105.67565358729132
32	CHINDAMANY DEVELOPMENT AGRICULTURE SOLE CO.,LTD	Vientiane	Thulakhom	Jeng	0205418899	18.291723, 102.521036
33	NAKA FARM SOLE CO.,LTD	Savahnakhet	Kaisonephomviharn city	Dongkhamluang	020 95800787	16°33'42.7"N 104°53'18.1"E
34	SOMCHIT CHALERNSUB SOLE CO.,LTD	Vientiane capital	Xaysettha	Samke	020 55911123	18.004896, 102.636833
35	SAYLIPHARB FARM PRIVATE ENTERPRISE	Vientiane capital	Xaythany	Na	020 99901159	https://maps.app.goo.gl/gRG2mQwVrhZvAffJ8

Annex 5: SACOMBANK LAO's Human Resource Policies Evaluation

This appendix aims to document the comparative analysis of the Human Resource (HR) Policies of SACOMBANK LAO against the requirements of ESS2, and to identify whether or not there are significant gaps exist.

Summary

The SACOMBANK LAO has established a sound labour management system with clear written guidelines and procedures in the form of a comprehensive set of human resource policies that comply, and in some instances surpass, the requirements of the 2013 Labour Law of Lao PDR. Overall, SACOMBANK LAOs practices and performance in Human Resource management comply with the requirements of ESS2.

1. HR Policies and Procedures

The SACOMBANK LAO has been operating its business in Lao PDR since 2008. As of 2021, the bank has a total workforce of 200, and female accounted for about 41%. The SACOMBANK LAO has HR policy and a regulation on labour management in place since 2008 and is updated regularly. The HR department and federation of trade unit is responsible for HR policy making and revision, daily operations (recruitment, training, remuneration, social insurance, etc.), and performance evaluation. In Lieu of Labour Management Procedures, the SACOMBANK LAO has a comprehensive set of human resource policies in place, and strictly comply with the labour code of Lao PDR, which are mainstreamed into the policies and procedures of SACOMBANK LAO and certified by Department of Labour Management, Ministry of Labour and Social Welfare. The effective labour management regulation (No. 018, dated 15/10/2021) that was assessed include the following policies or regulation, among others:

- General terms and conditions of employment
- Recruitment Policy
- Occupational Health and Safety Policy, including Hygiene and Fire Emergency Response
- Policy on Grievances and Conflict Solutions
- Policy on Security
- Policy Leave and Allowance
- Policy or prohibitions on drug, gambling, discrimination, etc.

Evaluation and conclusion: Following the Lao PDR's labour law and regulations, the SACOMBANK LAO has defined its Human Resource Management system through a series of policies and procedures, that address the main requirements of ESS2.

2. Terms and conditions

The SACOMBANK LAO's sample labour contract and labour management regulation (No. 018, dated 15/10/2021) were provided for review. When signing a labour contract, the basic terms and conditions, including the term of specific job positions, work content and place of

work, work time and rest time, labour remuneration, bonus and social insurances, labour protection, labour conditions and protection against occupational hazards, and entitlement to re-imburement for travel expenses are specified.

Article 17 of the labour management regulation defines working hour. Working hours are in alignment with the Lao PDR's regulations (of not more than 48 hours a week) and overtime work is compensated in accordance with Lao PDR's regulation on overtime.

The SACOMBANK LAO Branches and HQ are operating 5 days a week, from Monday to Friday. Employees are entitled to paid leave (exclusive of the 7 Lao national holidays and 1 Vietnam National Day) as well as maternity as well as sick, maternity and family/leave as required by 2013 Labour Law of Lao PDR.

In accordance with the 2013 Labour Law of Lao PDR, SACOMBANK LAO employees will receive written notice of termination and details of severance payments required by law, in a timely manner. As mandated by the Labour law, wages earned, social insurance benefits, pension contributions and other entitlements are paid prior to termination.

Evaluation and conclusion: Lao PDR's 2013 labour law includes provisions on employment, labour contract management and leave, contract termination, remuneration, and the SACOMBANK LAO relevant practices comply and surpass such provisions, and are communicated to all employees through induction training, on-the-job training and routine operations. In terms of contract terms and working conditions for direct workers, there is no gap between the SACOMBANK LAO practices and ESS2.

3. Non-discrimination and Equal Opportunity

The SACOMBANK LAO has in place a policy on non-discrimination. Under this policy SACOMBANK LAO is committed to maintaining a working environment free from all forms of discrimination. In addition, all applicants are given an equal opportunity to gain employment and to progress professionally. Equal opportunity applies without regard to race, colour, sex, religion, age, marital status, disability, veteran status or national origin. A specific clause is included in the non-discrimination policy to specifying that disability will not be barrier to employment. Complaints regarding the application of this policy can be lodged with the HR department, and disciplinary action (including termination) may result from those who engage in any form of discrimination. The policy also includes a clause specifying that there will be no retaliation against those who file complaints. In addition, SACOMBANK LAO has in place a policy explicitly targeting incidents of sexual harassment.

Evaluation and conclusion: The policies and requirements on non-discrimination, equal opportunity, and anti-sexual harassment that SACOMBANK LAO has in place are aligned with the requirements of ESS2.

4. Workers Organizations

While SACOMBANK LAO currently does not have a worker organization, the 2013 Labour Law allows for trade unions to be "established within labour units that have been operating for at least six months or within other branches of work where employees see fit to establish such, at the central, provincial, municipal or district level."

Evaluation and conclusion: a worker organization or federation of trade union is in place. This demonstrates compliance with Lao PDR's 2013 labour law.

5. Age of employment

The SACOMBANK LAO complies strictly with Lao PDR's policy and international commitments on the prohibition of child labour, and, given the nature of the industry (financial services) does not employ anyone under the age of 18.

Evaluation and conclusion: In consideration of the nature of job positions, there is no risk of children under the age of 18 being employed in SACOMBANK LAO.

6. Forced Labour

The SACOMBANK LAO complies strictly with Lao PDR's policy and international commitments on the prohibition of forced labour and given the nature of the industry (financial services), there have been no instances of forced labour that have or are likely to occur.

Evaluation and conclusion: Given of the nature of job positions and industry, there is no risk of forced labour being employed in SACOMBANK LAO.

7. Employee Grievance Redress Mechanism

Article 63 and 64 Of Labor Law, 2013 defines measures for handling grievance and labour conflict. The SACOMBANK LAO has included a grievance procedure in HR policies that encourages employees to bring any workplace grievance to the attention of their immediate supervisor or upper-level management. In cases where the immediate supervisor does not address the concern within a specified amount of time (5 days), or if the supervisor is the problem, then the next level of supervision should be engaged. The procedure is designed to avoid legal exposure but does not preclude the possibility of making claims using the labour dispute resolution committee specified in the 2013 Labour Law, or recourse to the courts.

Evaluation and conclusion: A grievance mechanisms proportionate to the type of workplace has been provided to all SACOMBANK LAO workers, who are informed of its existence at the time of recruitment, along with the measures to protect them from retaliation. The grievance mechanism does not impede access to other judicial or administrative remedies. The grievance procedure is aligned with the requirements of ESS2 on grievance mechanism.

8. Occupational Health and Safety

Article 117 Of Labor Law, 2013 defines about labor occupational health and safety. Under its OHS and General Safety policies SACOMBANK LAO commits to providing a safe and healthy workplace. The administration and HR departments are responsible for assessing safety reports from staff, monitoring health and safety conditions in the workplace, developing and putting in place OHS systems, and preparing and conducting training programs on OHS. The policy includes guidelines on specific risks relevant to the SACOMBANK LAO workplace specifying staff responsibilities with regard to the safe use of office furnishings and equipment, the risk of fire, and lifting heavy loads. This policy is complemented by a road safety policy and a policy on the prevention of violence in the workplace.

Evaluation and Conclusion: The comprehensive OHS policy (inclusive of practical guidelines), complemented by the general safety, road safety and violence prevention policies of SACOMBANK LAO are aligned with the requirements of ESS2.

Annex 6: Public Grievance Check of SACOMBANK LAO's Sub loans for Refinancing

No	Name of business	Type of business /Business Activities	Loan purpose in detail and sector	Media check on Google (30 March 2022)	Media check on Facebook (30 March 2022)	Check with Ministry of Labour and Social Welfare on 10 March 2022)
1	VALANDY VANNALATSA MY	Restaurant: Noodle (Pho) and cook as order	Increase working capital	Grievance was not found	Grievance was not found	Grievance was not found
2	BOUAPHANH CHANTHACHITH	Sale of clothes	Buy equipment	Grievance was not found	Grievance was not found	Grievance was not found
3	XAYPHONE NGONGVORALATH	Restaurant: Rice noodle with ginger	Expand the business	Grievance was not found	Grievance was not found	Grievance was not found
4	LOTKHAM BACKAM	Restaurant: Noodle (Pho) and cook as order	Expand the business	Grievance was not found	Grievance was not found	Grievance was not found
5	VISAY VORACHACK	Food, coffee and beverage store	Expand the business	Grievance was not found	Grievance was not found	Grievance was not found
6	PHOUVAN SINLAVONG	sell Lao cement	Expand the business	Grievance was not found	Grievance was not found	Grievance was not found
7	NONGKHAN TUISITTHIPHO NEXAY	wholesale business to sell Beer Lao, drink.	Increase working capital	Grievance was not found	Grievance was not found	Grievance was not found
8	CHANTHAPHILIT MEKSAVANH	Maintaining, installing, and selling all type of air conditioning	Increase working capital	Grievance was not found	Grievance was not found	Grievance was not found
9	SVT TRADING SOLE CO.,LTD	Wholesale and retail store	Increase working capital	Grievance was not found	Grievance was not found	Grievance was not found
10	KHAMKHAO CHANTHO	Sale of gold and jewels	Increase working capital	Grievance was not found	Grievance was not found	Grievance was not found

No	Name of business	Type of business /Business Activities	Loan purpose in detail and sector	Media check on Google (30 March 2022)	Media check on Facebook (30 March 2022)	Check with Ministry of Labour and Social Welfare on 10 March 2022)
11	PHATTHAKHONE BANOUVONG	Diagnostic clinic	Buy equipment	Grievance was not found	Grievance was not found	Grievance was not found
12	SAMLAN PHUTTHAVONGSA	Sale of clothes	Increase working capital	Grievance was not found	Grievance was not found	Grievance was not found
13	SOMPHE TVONGSAYYA	Restaurant; Karaoke room	Buy equipment	Grievance was not found	Grievance was not found	Grievance was not found
14	THILAVANH VONGSOUTH	Repairing car and sale of car tires, and other	Buy equipment	Grievance was not found	Grievance was not found	Grievance was not found
15	VIENTIANE ICE SOLE CO.,LTD	Ice factory	Buy equipment	Grievance was not found	Grievance was not found	Grievance was not found
16	LATTANAPHONE SAPHOUVONG	Sell gold	Working Capital	Grievance was not found	Grievance was not found	Grievance was not found
17	PHANLA PHILAVONG	Urine cloth	Buy equipment	Grievance was not found	Grievance was not found	Grievance was not found
18	SOUPHACHIT CHANHTHANE EVONG	Rent tables, chairs	Increase working capital	Grievance was not found	Grievance was not found	Grievance was not found
19	DAOPHET THIPPHAVONG	Repairing car	Investment Capital	Grievance was not found	Grievance was not found	Grievance was not found
20	SOUKSOMCHAY VONGSAVANH	Sell gold	Increase working capital	Grievance was not found	Grievance was not found	Grievance was not found
21	THILAPHONE PHADOUANGDETH	Massage shop	Buy equipment	Grievance was not found	Grievance was not found	Grievance was not found

No	Name of business	Type of business /Business Activities	Loan purpose in detail and sector	Media check on Google (30 March 2022)	Media check on Facebook (30 March 2022)	Check with Ministry of Labour and Social Welfare on 10 March 2022)
22	KANCHANA COMMERCE IMPORT-EXPORT SOLE CO.,LTD	IMPORT-EXPORT of candy	Increase working capital	Grievance was not found	Grievance was not found	Grievance was not found
23	SONEPHINE XAYYANAM	Sell construction equipment	Increase working capital	Grievance was not found	Grievance was not found	Grievance was not found
24	CHIVONE SAYAVONGSING	Restaurant: food huts	Increase working capital	Grievance was not found	Grievance was not found	Grievance was not found
25	KHAMMOUNG PHOMMACHANH	Accommodation Service	Increase working capital	Grievance was not found	Grievance was not found	Grievance was not found
26	PHAIVANH PHETVANKHAM	wholesale and retail store	Increase working capital	Grievance was not found	Grievance was not found	Grievance was not found
27	SOUKSAMAI VONGSATHIEN	Restaurant	Increase working capital	Grievance was not found	Grievance was not found	Grievance was not found
28	SOMBAT DUANGPASERT	Sell construction equipment	Increase working capital	Grievance was not found	Grievance was not found	Grievance was not found
29	VONGLATSAMY SAYPANYA	Restaurant: food huts	Buy equipment and increase working capital	Grievance was not found	Grievance was not found	Grievance was not found
30	CHANTHACHONE AGRICULTUE FARM SOLE.CO.,LTD	Cattle Farm	Increase working capital: purchase cattle, vaccine and supplement	Grievance was not found	Grievance was not found	Grievance was not found
31	BOUNKHAM FARM	Cattle Farm	Buy equipment	Grievance was not found	Grievance was not found	Grievance was not found

No	Name of business	Type of business /Business Activities	Loan purpose in detail and sector	Media check on Google (30 March 2022)	Media check on Facebook (30 March 2022)	Check with Ministry of Labour and Social Welfare on 10 March 2022)
32	CHINDAMANY DEVELOPMENT AGRICULTURE SOLE CO., LTD	Cattle Farm	Increase working capital: purchase cattle and supplement and repairing and buy equipment	Grievance was not found	Grievance was not found	Grievance was not found
33	NAKA FARM SOLE CO., LTD	Chicken Farm	Increase working capital to purchase chicken feed and farm equipment	Grievance was not found	Grievance was not found	Grievance was not found
34	SOMCHIT CHALERN SUB SOLE CO., LTD	Raising fish, planting bamboo trees raising younger and coconuts	Increase working capital for buy fishes, bamboo trees and coconuts	Grievance was not found	Grievance was not found	Grievance was not found
35	SAYLIPHARB FARM PRIVATE ENTERPRISE	Chicken Farm: Saigon breed, Myanmar breed, Thai breed.	Buy chicken, feed.	Grievance was not found	Grievance was not found	Grievance was not found

Annex 7: Result of due diligence for MSMEs at Village Authority level

No	Name of business	Type of business	Due diligence date completed	Name Head of Village	Telephone	E&S complaint check	Village contribution by MSMEs
Vientiane capital							
3	Xayphone Ngongvorlath	Restaurant: Rice noodle with ginger	28 Apr 2022	Mr Sengkeo Keothavone, Head Village	020 55407893	Doesn't have any issue on the E&S complaint.	Good cooperation and supporting the village authorities.
4	Lotkham Backam	Restaurant: Noodle (Pho) and cook as order	28 Apr 2022	Mr Vernsawat Syhalard, Head Village	020 59677970	Doesn't have any issue on the E&S complaint.	Good cooperation and supporting the village authorities.
5	Visay Vorachack	Food, coffee and beverage store	28 Apr 2022	Ms Koungmalay Xayyavong, Head Village	020 22224959	Doesn't have any issue on the E&S complaint. But there was one time this restaurant creates a noise, then villager complained to Village Authority and then give this restaurant one notice. After that up to now, there is not issue.	Good cooperation and supporting the village authorities.
13	Somphet Vongsayya	Restaurant; Karaoke room	28 Apr 2022	Mr Chansamone, Head Village	020 54214441	Doesn't have any issue on the E&S complaint.	Good cooperation and supporting the village authorities.
24	Chivone Sayavongsing	Restaurant: food huts	27 Apr 2022	Miss Somsanouk Syhalat, Deputy of Head Village	020 99876694	Doesn't have any issue on the E&S complaint.	Good cooperation and supporting the village authorities.
27	Souksamai Vongsathien	Restaurant	27 Apr 2022	Miss Somsanouk Syhalat, Deputy of Head Village	020 99876694	Doesn't have any issue on the E&S complaint.	Good cooperation and supporting the village authorities.

29	Vonglatsamy Saypanya	Restaurant: food huts	28 Apr 2022	Mr Bounnan Chaleunsouk, Head Village	020 5503940 020 5900082	Doesn't have any issue on the E&S complaint.	Good cooperation and supporting the village authorities.
30	Chanthachone Agriculture Farm Sole.Co.,Ltd	Cattle Farm	01-Apr-22	Mr Khamphong, Head Village	020 55416941	Doesn't have any issue on the E&S complaint.	Good cooperation and supporting the village authorities
34	Somchit Chalernsub Sole Co.,Ltd	Raising fish, planting bamboo trees raising younger and coconuts	27Apr 2022	Mr Vongxay, Head Village	020 55613231	Doesn't have any issue on the E&S complaint.	Good cooperation and supporting the village authorities.
Province							
1	Valandy Vannalatsamy	Restaurant: Noodle (Pho) and cook as order	11 May 2022	Mr. Khampaserd, Deputy of Head Village	020 55360999	Doesn't have any issue on the E&S complaint.	Good cooperation and supporting the village authorities.
31	Bounkham Farm	Cattle Farm, 030 9657888	12 May 2022	Ms. Vankhemmachan, Deputy of Head Village	030 9035951	Doesn't have any issue on the E&S complaint. There are no wastewater system. The water only use for animal drinking, it's organic farm.	Good cooperation and supporting the village authorities.
32	CHINDAMANY DEVELOPMENT AGRICULTURE SOLE CO., LTD (Sengthien farm)	Cow farm	04-May-22	Mr. Souladeth, Deputy of Head Village	020 56261493	Doesn't have any issue on the E&S complaint. There are no wastewater system including drainage. The water only use for animal drinking, and watering the grass.	Good cooperation and supporting the village authorities.
33	NAKA FARM SOLE CO.,LTD	Chicken Farm	10-May-22	Mr. Silaysack, Deputy of Head Village	020 55640740	Doesn't have any issue on the E&S complaint. There are no wastewater system. The water only use for animal drinking, it's organic farm.	Good cooperation and supporting the village authorities.

Annex 8: Pictures of MSMEs

No.001 VALANDY VANNALATSAMY (Restaurant):



No.003 XAYPHONE NGONGVORALATH (Restaurant):



No.005 VISAY VORACHACK (Restaurant):



No.006 PHOUVAN SINLAVONG (Retailer Lao cement):



No.010 KHAMKHAO CHANTHO (Sale of gold and jewels):



No.011 PHATTHAKHONE BANOUVONG (Diagnostic clinic):



No.015 VIENTIANE ICE SOLE CO.,LTD (Ice factory):



No.021 THILAPHONE PHADOUANGDETH (Massage shop):



No.024 CHIVONE SAYAVONGSING (Restaurant):



No.027 SOUKSAMAI VONGSATHIEN (Restaurant):



No.029 VONGLATSAMY SAYPANYA (Restaurant):



No.030 CHANTHACHONE AGRICULTUE FARM SOLE.CO.,LTD (Cattle Farm):



No.031 BOUNKHAM FARM (Cattle Farm):



No.032 CHINDAMANY DEVELOPMENT AGRICULTURE SOLE CO.,LTD (Cattle Farm)



No.033 NAKA FARM SOLE CO.,LTD (Chicken Farm):




No.034 SOMCHIT CHALERN SUB SOLE CO.,LTD (Goat farm):



No.035 SAYLIPHARB FARM PRIVATE ENTERPRISE (Chicken Farm):



Annex 9: Agreement on Sanitation of Health Facilities, Ministry of Health, No.1667/MOH, issued on 10 August 2018.



ສາທາລະນະລັດ ປະຊາທິປະໄຕ ປະຊາຊົນລາວ
ສັນຕິພາບ ເອກະລາດ ປະຊາທິປະໄຕ ເອກະພາບ ວັດທະນະຖາວອນ

ກະຊວງສາທາລະນະສຸກ

1667 /ສກ
ເລກທີ /ສກ
ນະຄອນຫຼວງ ວຽງຈັນ, ວັນທີ 15 AUG 2018

ຂໍ້ຕົກລົງ
ວ່າດ້ວຍດ້ານອະນາໄມສະຖານທີ່ບໍລິການສາທາລະນະສຸກ

- ອີງຕາມ ມາດຕາ 19 (ບັນຍັດ) ຂອງກົດໝາຍວ່າດ້ວຍການອະນາໄມ, ກັບສະບາດ ແລະ ສິ່ງສົມສຸຂະພາບສະບັບປັບປຸງ ເລກທີ 09/ສສຊ, ລົງວັນທີ 21 ທັນວາ 2017.
- ອີງຕາມ ດຳລັດ ສອນນະຍົກລັດຖະມົນຕີ ວ່າດ້ວຍ ການຈັດຕັ້ງ ແລະ ການເຄື່ອນໄຫວຂອງ ກະຊວງສາທາລະນະສຸກ, ເລກທີ 096/ບຍ, ລົງວັນທີ 09 ມີນາ 2017.
- ອີງຕາມ ການສະເໜີ ຂອງ ກົມອະນາໄມ ແລະ ສິ່ງສົມສຸຂະພາບ.

ລັດຖະມົນຕີກະຊວງສາທາລະນະສຸກ ອອກຂໍ້ຕົກລົງ:
ຍາກທີ 1
ຫຼັງການທົ່ວໄປ

ມາດຕາ 1 ຈຸດປະສົງ
ຂໍ້ຕົກລົງສະບັບນີ້ ໄດ້ກຳນົດມາດຕະຖານອະນາໄມ ບຸກຄະຖານທີ່ບໍລິການສາທາລະນະສຸກ ເພື່ອຮັກສາຄວາມສະອາດຈົບງາມ ແລະ ຄວາມເປັນລະບຽບລະບຽບສົມບູນ, ສົມບູນກັບຫຼັກການອະນາໄມ, ຄວາມປອດໄພ ແລະ ບໍ່ອາດເກີດຂຶ້ນຂອງ ການແຜ່ເຊື້ອສະບາດຈາກຄົນເຈັບ, ຈາກເງື່ອນ, ເຄື່ອງໃຊ້ ແລະ ອຸປະກອນການແພດ ໂດຍສະເພາະແມ່ນໃຫ້ບໍ່ມີອາຍຸ ສຸຂະພາບຂອງຂະນົກການແພດ, ຄົນເຈັບ, ຜິວອ່ອນເຈັບ ແລະ ປະຊາຊົນທີ່ຜູ້ບໍລິໂພກໃນຄັ້ງ ລວມທັງບໍລິນາຮັກສາສ່ວນຕົວ.

ຂໍ້ຕົກລົງສະບັບນີ້ ຍັງໄດ້ກຳນົດພາລະບົດບາດ ແລະ ຄວາມຮັບຜິດຊອບຂອງບັນດາອົງການຈັດຕັ້ງກ່ຽວກັບການຈັດຕັ້ງປະຕິບັດ.

ມາດຕາ 2 ບັນນາທິປະໄຕ

- **ອະນາໄມ** ໝາຍເຖິງ ການທຳຄວາມສະອາດ ແລະ ການກຳຈັດສິ່ງທີ່ເປັນອັນຕະລາຍ ຫຼື ອາດຈະເປັນອັນຕະລາຍ ຕໍ່ສຸຂະພາບທັງດ້ານອ່າງກາຍ, ຈິດໃຈ ແລະ ສິ່ງສົມສຸຂະພາບອື່ນໆ ເຊັ່ນ ການອະນາໄມສ່ວນບຸກຄົນ, ການອະນາໄມການກິນ, ການຢູ່, ການນັ່ງທີ່ມ ແລະ ອື່ນໆ.
- **ອະນາໄມ-ສິ່ງແວດລ້ອມ** ໝາຍເຖິງ ການຄວບຄຸມ ສະບັບການສິດທິພົນ ແລະ ປັດໄຈຕ່າງໆທັງຫຼາຍກະບວນພາບ, ເກມີ, ຊີວະພາບ ແລະ ສິ່ງຄົມທີ່ເຮັດ ຫຼື ອາດເຮັດໃຫ້ເກີດຜົນສົ່ງຜ່ານສຸຂະພາບທາງອ່າງກາຍ ແລະ ຈິດໃຈ ແລະ ການດຳລົງຊີວິດຢູ່ໃນສິ່ງຄົມສະບູນໂດຍທາງດິນ ແລະ ທາງອ້ອມ.
- **ມາດຕະຖານ** ໝາຍເຖິງ ລະບົບການປະຕິບັດທີ່ສະແດງເຖິງຄວາມສຳເລັດທີ່ເປັນຍອມຮັບໂດຍທົ່ວໄປ.
- **ສະຖານທີ່ບໍລິການສາທາລະນະສຸກ** ໝາຍເຖິງ ໂຮງໝໍ, ໂຮງພັດສົບ, ຫ້ອງກວດພະຍາດເອກະຊົນທົ່ວໄປ, ຫ້ອງວິເຄາະທາງດ້ານການແພດ ແລະ ຊີວະແພດ, ສະຖາບັນ ແລະ ຫ້ອງວິເຄາະທາງດ້ານຊີວະເຕັກໂນໂລຢີ, ສູນຄົ້ນຄ້າດ້ານ

ການແພດ, ສູນທົດລອງ ແລະ ຄົນເຈັບສັດ, ອະນາຄານເລືອດ, ການສະບາຍບຸນເຮືອນສຳລັບຜູ້ສູງອາຍຸ, ສູນເກີບມັງ ແລະ ຜາສົບຄົນຕາຍ, ຫ້ອງປັບປັດເຮືອນເອກະຊົນ, ການດູແລສຸຂະພາບຜູ້ເຮືອນ, ສະຖານທີ່ປັກເຂັມ, ຫ້ອງກວດໂລກາຈິດ, ອົນຍາຍາທີ່ຖືກຄ້ອງຕາມກົດໝາຍ ແລະ ຜູ້ສົມໃຊ້ທີ່ບໍ່ຖືກຄ້ອງ, ສະຖານທີ່ບໍລິການເຜົາສົບຄົນຕາຍ, ສະຖາບັນ ແລະ ສູນບໍລິການເພີ່ນຜູ້ຄົນພິການ, ສູນບໍລິການເປັນບົວສັດ ແລະ ແຫຼ່ງອື່ນໆທີ່ມີຂໍ້ຕົກລົງອາດຈະສະຖານທີ່ບໍລິການສາທາລະນະສຸກ.

- **ແຜນນໍາປອດໄພ (Water Safety Plan) ໝາຍເຖິງ** ຜົນທຳນຽມປະເມີນ ແລະ ການຄຸ້ມຄອງ ຄວາມສ່ຽງກໍານົດໄພທີ່ລວມເອົາທາງສັນຍາອະນາໄມສະຖານທີ່ ເພື່ອແກ້ໄຂບັນຫາ ທີ່ຈຳເປັນກ່ຽວກັບ ສິ່ງມີແຜນນໍາປະປາຍອາດໄພ (ໝບປປຍ) ແລະ ແຜນນໍາສະຖາປະນາອາດໄພ (ໝສປຍ).
- **ບໍລິເວນອະນາຄອນ** ໝາຍເຖິງ ພື້ນທີ່ທັງໝົດທີ່ຜູ້ອ້ອມອອບອາຄານ ແລະ ບຸກຄົນອ້ອມອອບຂອງສະຖານທີ່ບໍລິການສາທາລະນະສຸກ.
- **ສິ່ງສົມສຸຂະພາບ** ໝາຍເຖິງ ສິ່ງໃດທີ່ຜູ້ໃຊ້ໃນສະຖານທີ່ເຮັດວຽກງານ ທີ່ມີຄວາມສາມາດກໍາໃຫ້ເກີດຜົນກະທົບຕໍ່ສຸຂະພາບ ຫຼື ການບາດເຈັບ ເຊັ່ນ: ສານເຄມີທີ່ໃຊ້ໃນການເຮັດວຽກ, ລັງສີທີ່ໃຊ້ໃນການກວດ ຫຼື ບົນບົວຄົນເຈັບ, ສຽງດັງ ເປັນຕົ້ນ.
- **ຄວາມສ່ຽງ** ໝາຍເຖິງ ສິ່ງທີ່ສະແດງຄວາມເປັນໄປໄດ້ທີ່ສິ່ງຕະລາຍຈະກໍາໃຫ້ເກີດອັນຕະລາຍຕໍ່ສຸຂະພາບ ຫຼື ການບາດເຈັບ ສໍາລັບປະຕິບັດວຽກງານ ຫຼື ເກີດຄວາມສ່ຽງທາງສິ່ງສົມສຸຂະພາບ ເຊັ່ນ: ບົກເຄື່ອງຂອງທີ່ຜ່ານເປັນປະຈຳທຸກວັນໂດຍບໍ່ມີ ອຸປະກອນຮັບປະກັນທີ່ເຮັດໃຫ້ເກີດການບາດເຈັບກັບການສືບສັນຫຼັງ.
- **ວຽກຍົກ** ໝາຍເຖິງ ລັກສະນະວຽກງານທີ່ໃຊ້ແຮງບັນດານ ຫຼື ໃຊ້ກຳລັງງານທີ່ເຮັດໃຫ້ເກີດການເຜົາຜານອາຫານ ໃນຂ້າງ ກາຍບໍ່ເກີນ 200 ກິໂລກາໂລສິດຊິ່ວໂມງ ເຊັ່ນ: ຂຽນສ່ຽງສີ, ພິມຕິດ, ບັນທຶກສໍາມູນ, ຍົບຈັກ, ບັງກວດສອບ ຜະລິດຕະພັນ, ປະກອບສິ່ງສ່ວນສະໜາດຍ້ອນ, ບັງຄັບເຄື່ອງຈັກດ້ວຍຕົນ, ການຍົກຄຸມວຽກງານ ຫຼື ວຽກງານອື່ນໆທີ່ໃກ້ ຄຽງກັບວຽກ ງານດັ່ງກ່າວນີ້.
- **ວຽກປານກາງ** ໝາຍເຖິງ ລັກສະນະວຽກງານທີ່ໃຊ້ແຮງປານກາງ ຫຼື ໃຊ້ກຳລັງງານທີ່ເຮັດໃຫ້ເກີດການເຜົາຜານ ອາຫານໃນອ່າງກາຍເກີນ 200 ເຖິງ 350 ກິໂລກາໂລສິດຊິ່ວໂມງ ເຊັ່ນ: ວຽກຍົກ, ລາກແກ້ ຫຼື ເຄື່ອນຍ້າຍ ສິ່ງຂອງທີ່ໃຊ້ແຮງປານກາງ, ຕອກຕະປູ, ຮັບລົດບັນທຸກ, ຮັບລົດແທກເຕີ ຫຼື ວຽກງານອື່ນໆທີ່ໃກ້ຄຽງກັບວຽກງານດັ່ງກ່າວນີ້.
- **ວຽກຍົກ** ໝາຍເຖິງ ລັກສະນະວຽກງານທີ່ໃຊ້ແຮງງານຫຼາຍ ຫຼື ໃຊ້ກຳລັງງານທີ່ເຮັດໃຫ້ເກີດການເຜົາຜານອາຫານ ໃນ ອ່າງກາຍເກີນ 350 ກິໂລກາໂລສິດຊິ່ວໂມງ ເຊັ່ນ: ວຽກງານທີ່ໃຊ້ເລີ້ວ ຫຼື ສຽງສຸດຕັກ, ເລືອບໄມ້, ເຈາະໄມ້ ເນື້ອແຂງ, ຫຸນໂດຍໃຊ້ຄ່ອນຕີສະໜາດໃຫຍ່, ບົກ ຫຼື ເຄື່ອນຍ້າຍທັກສິ່ນໄບບ່ອນສູງ ຫຼື ບ່ອນຄ້ອຍ ຫຼື ວຽກງານອື່ນໆ ທີ່ໃກ້ ຄຽງກັບວຽກງານດັ່ງກ່າວນີ້.
- **ອຸນນະພູມລວມໃນໂລກ (WBGT: Wet Bulb Globe Temperature)** ໝາຍເຖິງ ອຸນນະພູມທີ່ໄດ້ແທກເປັນອົງສາແຊນເຊັດສ ຊຶ່ງໄດ້ແທກອອກອາກາດທີ່ບໍ່ມີແສງແດດ ຫຼື ໃນອາຄານ, ມີລະດັບຄວາມຮ້ອນເທົ່າກັບ 0.7 ເທົ່າຂອງອຸນນະພູມທີ່ອ່ານຄ່າຈາກເທີໂມເມັດໃນບຸກຄາມທຳມະຊາດບວກ 0.3 ເທົ່າທີ່ອ່ານຄ່າຈາກໂກລະເທີໂມເມັດ ຫຼື ອຸນນະພູມທີ່ໄດ້ແທກເປັນອົງສາແຊນເຊັດສ ຊຶ່ງໄດ້ແທກອອກອາກາດທີ່ມີແສງແດດມີລະດັບຄວາມຮ້ອນເທົ່າກັບ 0.7 ເທົ່າຂອງອຸນນະພູມທີ່ອ່ານຄ່າຈາກເທີໂມເມັດໃນບຸກຄາມທຳມະຊາດບວກ 0.2 ເທົ່າທີ່ອ່ານຄ່າຈາກໂກລະເທີໂມເມັດ ແລະ ບວກ 0.1 ເທົ່າຂອງອຸນນະພູມທີ່ອ່ານຄ່າຈາກເທີໂມເມັດເປັນເປາຍສ່ຽງ.

ມາດຕາ 3 ສະເຫດການກຳໃຊ້
ຂໍ້ຕົກລົງສະບັບນີ້ ມີຜົນບັງຄັບໃຊ້ໃດ້ກັບທຸກສະຖານທີ່ບໍລິການສາທາລະນະສຸກທັງພາກສ່ວນລັດ, ເອກະຊົນ ແລະ ອົງການຈັດຕັ້ງອື່ນໆຕໍ່ອ້ອງ.

- ພະນັກງານໄດ້ຊີ້ບາງການສືບສວນກຸ່ມຄຸນນະພາບ ແລະ ໄດ້ແນະນຳວິທີການປະຕິບັດການທຳຄວາມສະອາດ ບ່າງລະອຽດ ແລະ ຕາມແຈ້ງ ເຊັ່ນ:
 - ✓ ຄວາມຖີ່ໃນການເຮັດຄວາມສະອາດຕໍ່ວັນ, ຕໍ່ຊົ່ວໂມງ
 - ✓ ວິທີການທຳຄວາມສະອາດໃນແຜ່ນດວງກຸ່ມ
 - ✓ ການນຳໃຊ້ນ້ຳປ້າຍສຳເລັດ
 - ✓ ການຍື່ນທີ່ທຳການປະຕິບັດວຽກງານປະຈຳວັນ ຫຼື ຊົ່ວໂມງ ເປັນຕົ້ນ
- ມີຜູ້ຕິດຕາມ ແລະ ປະເມີນການປະຕິບັດວຽກງານຄວາມສະອາດໃນສິ່ງເວດລົມຂອງພະນັກງານ, ມີແບບຮ່ອມ ລາຍງານເຜີຍກາຍປະຕິບັດວຽກງານປະຈຳວັນ ຫຼື ຊົ່ວໂມງ, ມີການເຊັນສົບຂອງຜົນການປະຕິບັດວຽກງານ ແລະ ການໃຫ້ສື່ສະເໜີແນະນຳຜູ້ຕິດຕາມ ແລະ ປະເມີນ ເປັນໄລຍະ.
- ມີການລາຍງານຜົນການປະຕິບັດວຽກງານ ແລະ ກວດສອບສະພາບຄວາມສະອາດເດືອນລະເທື່ອ.

- ມີຕ້ອງແກ້ບ່າງສິ່ງທີ່ບໍ່ຄົບຖ້ວນທີ່ເປັນສະບາດຕິດຕໍ່ສັບຂອງ.
- ບໍ່ຄວນມີຜູ້ກຳ ໃນຕ້ອງອອກຄົນຈັບ ເນື່ອງຈາກເປັນແຫຼ່ງພາະພັນຂອງເຊື້ອພະຍາດ.
- ບໍ່ຄວນມີຄອກໄມ້ປະດັບ ຫຼື ໂຕກອກໄມ້ພາຍໃນອາຄານ.
- ມີການຈັດແບ່ງອາຄານເປັນລະບຽບ, ສະອາດ, ສວຍງາມ ແລະ ເປັນສິດສ່ວນ.
- ມີບ້ານໂຕສະບາດໃຫ້ຄວາມສຸຂີ ແລະ ບ້ານເດີນຄ່າງ ບ່າງຊື່ດາວ ໂດຍມີກະບະຂອງນ້ຳປ້າຍ ເຊັ່ນ: ຂະໜາດຂອງ ບ້ານ, ສີຂອງຕິດທັງສິ່ງ ແລະ ສິນສີ່ປ້າຍ ຕ້ອງປະຕິບັດຕາມກົດລະບຽບຂອງກະຊວງໃນອາທິດ ແລະ ອື່ນສິ່ງ.
- ຕ້ອງມີໃບອະນຸຍາດ ຫຼື ທັງສີ່ສິ່ງຂອງຈາກກົມກອງທັງວຽດຊອງ ແລະ ຕ້ອງໄດ້ຕິດຕາມກວດກາ ແລະ ປະເມີນຜົນ ຈາກພາສະນະທີ່ກ່ຽວຂ້ອງເປັນນິກກະຕິ ໃຫ້ ສະຖານທີ່ບໍລິການອື່ນໆ ທີ່ມາເປີດບໍລິການຂັບໃຊ້ຢູ່ພາຍໃນ ສະຖານທີ່ບໍລິການສາທາລະນະ ເຊັ່ນ: ອຳນາດອາຫານ, ອຳນາດ ເປັນຕົ້ນ.
- ມີການລະບາຍອາກາດຊຶມຊີອຽລລະບາຍອາກາດບໍ່ອອກວ່າ 1 ໃນ 10 ຂອງຊຶມທີ່ຕ້ອງ ຫຼື ມີລະບົບລະບາຍ ອາກາດ ປະເພດ ອື່ນທີ່ມີລະບົບລະບາຍທີ່ທ່າງທົດແທນກັນໄດ້. ຖ້າຈຳລະເປັນຕ້ອງບໍ່ອອກອາກາດ ຕ້ອງມີການ ແລກປ່ຽນອາກາດ ຕະຫຼ່າງ ພາຍ ແລະ ລະບາຍອາກາດ ເຊັ່ນ: ຮັດລົມດູດອາກາດ ເປັນຕົ້ນ ໂດຍແນະນຳ ໃຫ້ກວດສອບອາກາດ ຕາມຕາຕະລາງ 1 ສ້າງຄູ່ມື:

ຕາຕະລາງ 1: ຄວາມຕ້ອງການໃນການລະບາຍອາກາດຂອງບາງສິ່ງທີ່ຢູ່ໂຮງແຮມ

ພື້ນທີ່ (Area)	ຄວາມສູງສູນໃນ ການເຄື່ອນທີ່ຂອງ ອາກາດຕໍ່ພື້ນທີ່ ທີ່ກ່ຽວ (Air movement relationship to adjacent area)	ອາກາດພາຍນອກ ແບ່ງອອກຕໍ່ຊົ່ວໂມງ (Minimum air changes of outdoor air per hour)	ການວັດແທກ ອາກາດຂຶ້ນຕໍ່ ລວມຕໍ່ຊົ່ວໂມງ (Minimum total air change per hour)	ຄວາມສູນສູນສູນ (Relative humidity)	ອຸນຫະພູມ (Temperature)
1. ການວັດ ແລະ ກວດສອບພື້ນທີ່ທຳອິດ					
1.1 ຕ້ອງບໍ່ຕິດ	ອອກ	3	15	30-60	20-23
1.2 ຕ້ອງກົດດູກ	ອອກ	3	15	30-60	20-23
1.3 ຕ້ອງສັດທັນ	-	2	6	30-60	21-24
1.4 ຕ້ອງມີລະບຽບ	-	2	6	30-60	21-24
1.5 ຕ້ອງມີລະບຽບ ເປັນ ເຕົາຕິດ	-	2	6	30-60	22-26

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ພື້ນທີ່ (Area)	ຄວາມສູງສູນໃນ ການເຄື່ອນທີ່ຂອງ ອາກາດຕໍ່ພື້ນທີ່ ທີ່ກ່ຽວ (Air movement relationship to adjacent area)	ອາກາດພາຍນອກ ແບ່ງອອກຕໍ່ຊົ່ວໂມງ (Minimum air changes of outdoor air per hour)	ການວັດແທກ ອາກາດຂຶ້ນຕໍ່ ລວມຕໍ່ຊົ່ວໂມງ (Minimum total air change per hour)	ຄວາມສູນສູນສູນ (Relative humidity)	ອຸນຫະພູມ (Temperature)
1.5 ຕ້ອງບໍ່ຕິດ	-	-	6	-	24
1.6 ຕ້ອງສັດທັນ	ອອກ	3	15	30-60	21-24
1.7 ຕ້ອງກົດດູກ ກະທຳລັບ ດ່າງປ່າ ສະລັບ	ເຂົ້າ	-	8	-	-
1.8 ຕ້ອງໃຊ້ກ້ອງ ສ້ອງ ເບິ່ງກະແລະວ່າໃຊ້	ເຂົ້າ	2	6	30-60	20-23
1.9 ຕ້ອງສ້ອງບ່າງຫຼອດ ປັດ	ເຂົ້າ	2	12	30-60	20-23
1.10 ຕ້ອງວັດຖຸເຮັດວຽກ	ເຂົ້າ	2	12	-	21-24
2. ສະບຽບ					
2.1 ຕ້ອງເອນເປັນຈັບ	-	2	6	-	21-24
2.2 ຕ້ອງສັດທັນ	ເຂົ້າ	-	10	-	-
2.3 ຕ້ອງໃຊ້ກ້ອງຕິດ	-	2	6	30-60	22-26
2.4 ຕ້ອງມີກົນລະຄຳ ສິ່ງເວດລົມດ້ວຍ ລະບົບ ກັບອາກາດ ກາດດ້ວຍ ອັບ (HEPA:)	ອອກ	2	12	-	24
2.5 ຕ້ອງແກ່ກາຍ ຕິດ ເຊື້ອກຸ່ມອາກາດ	ເຂົ້າ	2	12	-	21-24
2.6 ຕ້ອງກົດດູກ/ ຕ້ອງສັດທັນຕ້ອງ ສິ່ງເວດລົມ	-	2	6	-	21-24
3. ສູນ					
3.1 ຕ້ອງຖ່າຍລັງສີ (ຕັດກັບແຜ່ນ)	ອອກ	3	15	30-60	21-24
3.2 ຕ້ອງຖ່າຍລັງສີ (ກາຍເປັນລະດັບ ແລະ ການບໍ່ຕິດ)	-	-	6	-	24
3.3 ຕ້ອງມັງ ແລະ ຂະຫຍາຍ	ເຂົ້າ	-	10	-	-
4. ການຕິດ					
4.1 ຕ້ອງມີເຕາະຕິດ ໄມ	-	6	6	-	24

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ພື້ນທີ່ (Area)	ຄວາມສູງສູນໃນ ການເຄື່ອນທີ່ຂອງ ອາກາດຕໍ່ພື້ນທີ່ ທີ່ກ່ຽວ (Air movement relationship to adjacent area)	ອາກາດພາຍນອກ ແບ່ງອອກຕໍ່ຊົ່ວໂມງ (Minimum air changes of outdoor air per hour)	ການວັດແທກ ອາກາດຂຶ້ນຕໍ່ ລວມຕໍ່ຊົ່ວໂມງ (Minimum total air change per hour)	ຄວາມສູນສູນສູນ (Relative humidity)	ອຸນຫະພູມ (Temperature)
4.2 ຊີວະເກມີ	ອອກ	6	6	-	24
4.3 ຕ້ອງມັງກົວ	ເຂົ້າ	10	10	-	24
4.4 ເນີດເນີດອິດສະບາ	ເຂົ້າ	6	6	-	24
4.5 ຈຸດສຸຂີລະດັບ	ເຂົ້າ	6	6	-	24
4.6 ການເຮັດຕິດດ້ວຍ	ເຂົ້າ	6	6	-	24
4.7 ການປະວິພາວິທະ ທ	ເຂົ້າ	6	6	-	24
4.8 ສີຄູມວິທະຍາ	ອອກ	6	6	-	24
4.9 ຕ້ອງສັດທັນ	ເຂົ້າ	10	10	-	-
6. ຕ້ອງສັດທັນສິນ ຕາຍ	ເຂົ້າ	12	12	-	-
6. ຕ້ອງກັບອາກາດ ທີ່ບໍ່ອອກຄວາມ ເປັນ	ເຂົ້າ	10	10	-	21
7. ການປ່າ	ອອກ	4	4	-	-
8. ການບໍ່ຕິດ ແລະ ການບໍ່ຕິດ	-	-	-	-	-
8.1 ຕ້ອງກວດສອບ	-	6	6	-	24
8.2 ຕ້ອງປ່າ	ອອກ	4	4	-	-
8.3 ຕ້ອງບໍ່ຕິດ	-	6	6	-	24
8.4 ຕ້ອງບໍ່ຕິດ ທ່າງ ການປະສານ ແລະ ຕ້ອງບໍ່ຕິດດ້ວຍ	ເຂົ້າ	6	6	-	24
9. ຕ້ອງສັດທັນ	ເຂົ້າ	10	10	30-60	24

ແຫຼ່ງຂໍ້ມູນ: Guidelines for Environmental Infection Control in Health-Care Facilities, CDC, 2003

- ຕິດຕາມກວດກາ ແລະ ປະເມີນຄຸນນະພາບອາກາດຢູ່ພາຍໃນອາຄານ ໃຫ້ໄດ້ຕາມມາດຕະຖານສ້າງຄູ່ມື:

ຕາຕະລາງ 2: ມາດຕະຖານຄຸນນະພາບອາກາດຢູ່ພາຍໃນອາຄານ

ປັດໃຈຄຸນນະພາບອາກາດ	ຄ່າມາດຕະຖານທີ່ກຳນົດ	ໄລຍະເວລາ	ແຫຼ່ງຂໍ້ມູນ
ອຸນຫະພູມ (Temperature)	- Summer 23 to 28°C (74 to 82°F) - Winter 20 to 25.5°C (68 to	ຕະເລດເວລາ	ASHRAE Standard 55-2010 ISO 7730

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ປັດໃຈຄຸນນະພາບອາກາດ	ຄ່າມາດຕະຖານທີ່ກຳນົດ	ໄລຍະເວລາ	ແຫຼ່ງຂໍ້ມູນ
	78°F		
ຄວາມສູນສູນສູນ (Relative humidity)	30-65%	ຕະເລດເວລາ	ASHRAE Standard 55-2010 ISO 7730
ຄວາມໜາແໜ້ນ ຄາບອນໄດອກໄຊ (Carbon dioxide)	1800 mg/m ³ (1000 ppm)	8 ຊົ່ວໂມງ	Guideline for good indoor air quality in office premises. Institute of Environmental Epidemiology Ministry of the Environment, Singapore, 1996
ຄວາມໜາແໜ້ນ ຄາບອນໄອອກໄຊ (Carbon monoxide)	100 mg/m ³ 35 mg/m ³ 10 mg/m ³ 7 mg/m ³	15 minutes 1 ຊົ່ວໂມງ 8 ຊົ່ວໂມງ 24 ຊົ່ວໂມງ	WHO guidelines for indoor air quality: selected pollutants, 2010
ອະນຸພາກຂະໜາດນ້ອຍ (PM ₁₀)	25 µg/m ³ 10 µg/m ³	24 ຊົ່ວໂມງ 1 ປີ	WHO guidelines for indoor air quality: household fuel combustion, 2014
ອະນຸພາກຂະໜາດນ້ອຍ (PM _{2.5})	25 µg/m ³ 10 µg/m ³	24 ຊົ່ວໂມງ 1 ປີ	WHO guidelines for indoor air quality: household fuel combustion, 2014
ເຣດອນ (Radon)	2.7 ມິໂຄຊີວີເຊີ (Pico curie: pCi/L)	1 ປີ	WHO Handbook on Indoor Radon. A Public Health Perspective, 2009
ໂອໂຊນ (Ozone)	100 µg/m ³ 0.05 ppm	8 ຊົ່ວໂມງ	WHO Air quality guidelines for particulate matter, ozone, nitrogen dioxide and sulfur dioxide. Global update 2005. Summary of risk assessment
ແຜ່ໄມແຜ່ (Asbestos)	0.1 fiber/cc	8 ຊົ່ວໂມງ	OSHA 3095 1995(Revised)
ໄມໂຕເຈນອອກໄຊ	200 µg/m ³	1 ຊົ່ວໂມງ	

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ປັດໃຈຄວບຄຸມສະພາບອາກາດ	ຄ່າມາດຕະຖານທີ່ກຳນົດ	ໄລຍະເວລາ	ແຫຼ່ງຂໍ້ມູນ
(Nitrogen oxide)	40 µg/m ³	1 ປີ	WHO guidelines for indoor air quality: selected pollutants, 2010
ຟໍມາເລີໄດ (Formaldehyde)	0.1 mg/m ³ 120 µg/m ³	30 ນາທີ	WHO guidelines for indoor air quality: selected pollutants, 2010
ເຊື້ອຈຸລິນຊີ (Bacteria)	< 100 CFU (Colony forming unit)/m ³	ຕະເລດເວລາ	Hospital Air Borne Infection Control, 2012
ເຊື້ອເຜັດ (Fungi)	< 50 CFU (Colony forming unit)/m ³	ຕະເລດເວລາ	Hospital Air Borne Infection Control, 2012
ເຊື້ອເຜັດ (Aspergillus)	< 2 CFU/m ³	ຕະເລດເວລາ	WHO

- ສ້ອມສັງເກດການບໍ່ດຽວກັນກະທຳຢ່າງເປັນປົກກະຕິຕາມລະບົບແລະເຮັດຄວາມສະຫງົບອາກາດ.
- ✓ ຫ້າຄວາມສະອາດເຄື່ອງປັບອາກາດ ແລະ ເຄື່ອງອອກອາກາດ
 - ✓ ຕິດຕັ້ງເຄື່ອງອອກອາກາດ ຫຼື ເຄື່ອງອອກອາກາດເຮືອອອກອາກາດ ມີມາລະພິດ, ເຊື້ອຈຸລິນຊີ, ເຊື້ອເຜັດ ແລະ ສິ່ງປົນເປື້ອນໃນອາກາດອື່ນໆ
 - ✓ ກວດຫາການລະບອບອາກາດໃນແຜ່ນລະຫວ່າງ ແລະ ບັນທຸກຳໄຂໃຫ້ຖືກຕ້ອງໝາຍສິມ
 - ✓ ດວມບຸກກາດເຮັດເຄື່ອງອອກອາກາດ
 - ✓ ສ້ອມແບ່ງປັນປັກກະທຳເຄື່ອງປັບອາກາດໃນສ່ວນທີ່ກ່ຽວຂ້ອງກັບມູມລະອອງ ແລະ ເຊື້ອເຜັດເປັນປົກກະຕິ:
 1. ດ້ວຍການຖອດລັກຖ່າຍເຄື່ອງອອກອາກາດຢ່າງປົນເປື້ອນເດືອນລະ 2 ເທື່ອ
 2. ເຄື່ອງອອກອາກາດ ບ່າງປົນເປື້ອນເດືອນລະ 1 ເທື່ອ
 3. ຖອດລັກຖ່າຍເປັນປັດທາງພິມເປັນປ່າງເດືອນ 6 ເດືອນ 1 ຄັ້ງ
- ມີການປັບອຸນຫະພູມ ແລະ ຄວບຄຸມແສງສະຫວ່າງຢ່າງສູງສຸດ ແລະ ແນມເຫັນສິ່ງຕ່າງໆ ຢ່າງຊັດເຈນ ໂດຍ:
- ປະຕິບັດຕາມລຳດັບຄວາມສະຫວ່າງໃນແຜ່ນລະຫວ່າງທີ່ຕ່າງໆ ແລະ ໃນແຜ່ນລະຫວ່າງ ດັ່ງຕາຕະລາງ 3 ແລະ 4 ລຸ່ມນີ້:

ຕາຕະລາງ 3: ຄວາມດີຂອງການຄວບຄຸມແສງສະຫວ່າງໃນແຜ່ນລະຫວ່າງທີ່ສອງສະຖານທີ່ບໍລິການສາທາລະນະສູນ

ຮາງເຂົ້າ:	ວັກສະນະວຽກງານ	ຄວາມດີຂອງການຄວບຄຸມແສງສະຫວ່າງ (ລັກສະ: Lux)
<ul style="list-style-type: none"> ➢ ທາງເຂົ້າສູ່ຫ້ອງໂຮງ ຫຼື ຫ້ອງສູນກຳລັງ ➢ ບໍລິເວນໂຕະປະຊາຊົນ ຫຼື ບ່ອນຕິດຕໍ່ວຽກງານ ➢ ປະຕູທາງເຂົ້າໃຫຍ່ ➢ ບ່ອນຍາມ ➢ ຈຸດສືບຍົກວັດຖຸອຸປະກອນ, ຂີ້ເຫຍື້ອ, ປາ 	200	
	400	
	50	
	100	
	100	

ວັກສະນະວຽກງານ	ຄວາມດີຂອງການຄວບຄຸມແສງສະຫວ່າງ (ລັກສະ: Lux)
ພື້ນທີ່:	
<ul style="list-style-type: none"> ➢ ທາງບ່າງສຳລັບພື້ນທີ່ທີ່ສູນກະທຳເຮັດວຽກງານ ➢ ທາງບ່າງສຳລັບພື້ນທີ່ທີ່ສູນກະທຳເຮັດວຽກງານ ➢ ທາງສືບລິ້ງກັບໂຕ 	20 50 50
ຫ້ອງນຳອົບອົມ ແລະ ຫ້ອງປັບແກ້ໄຂ	300
ຫ້ອງນຳບໍລິການ:	
<ul style="list-style-type: none"> ➢ ຫ້ອງຄອມພິວເຕີບໍລິເວນຕົວໄປ ➢ ຫ້ອງຄອມພິວເຕີສຳລັບບັນທຸກຂໍ້ມູນ ➢ ບໍລິເວນສະແກງຂໍ້ມູນ (ຈັບ ແລະ ເຄື່ອງພິມ) ➢ ຫ້ອງອັດຕະສາມ ➢ ຫ້ອງປະຊຸມ 	400 600 600 300 300
ຮ້ານອາຫານ ຫຼື ສຳອາຫານ:	
<ul style="list-style-type: none"> ➢ ພື້ນທີ່ຕົວໄປ ➢ ບໍລິເວນໂຕະເຮັດເຢັນ ➢ ບໍລິເວນປຸງແຕ່ງອາຫານ ແລະ ຫ້າຄວາມສະອາດ 	200 300 300
ບໍລິເວນຫ້ອງອົບ ຫຼື ຫ້ອງອັດຕະສາມທີ່ຖືກຕັ້ງໂຮງ-ລິດເຄື່ອງ	100
ຫ້ອງນຳປິດ:	
<ul style="list-style-type: none"> ➢ ຫ້ອງສູນກຳລັງ ➢ ຫ້ອງນຳປິດ 	50 400
ຫ້ອງນຳ ຫຼື ລິດຖ່າຍ	100
ວຽກງານທີ່ກ່ຽວຂ້ອງກັບເສື້ອນນ້ຳ (Boiler): ໃຊ້ເຄື່ອງມືວັດແທກວຽກງານສ້ອມແບ່ງ	200 400
ຫ້ອງໄຟຟ້າ ແລະ ຫ້ອງທົດສອບ	800
ຫ້ອງຄຸ້ມຄອງສະຖານທີ່ບໍລິການ:	
<ul style="list-style-type: none"> ➢ ຫ້ອງປຸງເສື້ອນ ແລະ ບໍລິເວນເຮັດເຢັນມື້ນຳສິ່ງອື່ນໆ ➢ ຫ້ອງສູນກຳລັງ 	100 50
ສາງ:	
<ul style="list-style-type: none"> ➢ ຫ້ອງນຳປິດຕັ້ງຢູ່ບ່ອນສາທາລະນະ <ul style="list-style-type: none"> ○ ເປັນລະບົບລະບົບໄດ້ໂດຍບໍ່ມີການເຄື່ອນຍ້າຍ ○ ເປັນລະບົບລະບົບໄດ້ເຮືອກະທຳເຮັດເຢັນ ➢ ຫ້ອງນຳປິດຕັ້ງຢູ່ບ່ອນສາທາລະນະ ຫຼື ລະອຽດອ່ອນ <ul style="list-style-type: none"> ○ ເປັນລະບົບລະບົບໄດ້ໂດຍບໍ່ມີການເຄື່ອນຍ້າຍ ○ ເປັນລະບົບລະບົບໄດ້ເຮືອກະທຳເຮັດເຢັນ 	50 100 100 200

ແຫຼ່ງຂໍ້ມູນ: (CIE: International Commission on Illumination)

ຕາຕະລາງ 4: ຄ່າມາດຕະຖານຄວບຄຸມແສງສະຫວ່າງໃນແຜ່ນລະຫວ່າງຢູ່ໂຮງແຮມມາດຕະຖານ ຂອງຄະນະກຳມະການສາທາລະນະດ້ານແສງສະຫວ່າງ

ປະເພດຂອງວຽກງານ	ຄວາມດີຂອງການຄວບຄຸມແສງສະຫວ່າງ (ລັກສະ: Lux)
ສະແກນປັບປິດ:	
<ul style="list-style-type: none"> - ແສງສະຫວ່າງຕົວໄປ - ບ່ອນສອບຖາມ - ບ່ອນສຳນຽງສິ - ບໍລິເວນອ້ອມຂ້າງທີ່ມີລັດ 	100 300 200 5
ຫ້ອງກວດ ຫຼື ຫ້ອງວິເຄາະເຊື້ອພະຍາດ	
<ul style="list-style-type: none"> - ແສງສະຫວ່າງຕົວໄປ - ກວດສະເພາະ 	500 1000
ຫ້ອງນຳເປັນພິກ	
<ul style="list-style-type: none"> - ໄຂ່ທົດດຽງ - ບ່ອນສື່ງກວດການ - ຫ້ອງບອບພະຍາຍາມ 	50 750 300
ຫ້ອງວ່າລັດ	
<ul style="list-style-type: none"> - ແສງສະຫວ່າງຕົວໄປ - ສະເພາະທີ່ 	750 30 000
ຫ້ອງສື່ງຄຸກສິບ	
<ul style="list-style-type: none"> - ແສງສະຫວ່າງຕົວໄປ - ສະເພາະທີ່ 	750 10 000
ຫ້ອງປະຕິບັດວຽກງານ ແລະ ຫ້ອງຈຳຍາມ	
<ul style="list-style-type: none"> - ແສງສະຫວ່າງຕົວໄປ - ສະເພາະທີ່ 	500 750

- ແຫຼ່ງຂໍ້ມູນ: (CIE: International Commission on Illumination)
- ແນະນຳໃຫ້ຜູ້ປະຕິບັດວຽກງານ ເຂົ້າໃຈເຖິງບັດໃຈສ່ຽງຈາກແສງສະຫວ່າງ.
 - ກວດສາຍຕາເປັນໄລຍະ ກ່ອນ ແລະ ໃນເວລາທີ່ຕໍ່ມາ ແລະ ບ່າງເປັນປົກກະຕິ 1 ຄັ້ງ ມື້.
 - ນຳໃຊ້ ອຸປະກອນປ້ອງກັນຕາ ແລະ ສາຍຕາຕາມລັກສະນະວຽກງານທີ່ຈຳເປັນ.
- ມີການຄວບຄຸມແສງສະຫວ່າງເຮັດໂດຍ: ການກຳສ້າງ, ການສ້ອມແບ່ງຕ່າງໆ ຢູ່ພາຍໃນສະຖານທີ່ບໍລິການສາທາລະນະສູນ, ຕ້ອງບໍ່ໃຫ້ມີມາດຕະຖານເປັນຈຳເປັນ ແລະ ມາດຕະຖານ ແລະ ບໍ່ໃຫ້ເກີດຜົນກະທົບໃນທາງສືບຕໍ່ສິ່ງແວດລ້ອມ ແລະ ສູນຊົນໃຫ້ດຽງ ຊຶ່ງຄືອາດ:
- ມີການຄວບຄຸມແສງສະຫວ່າງໃນຊ່ອງເວລາກ່ຽວກັບ ແລະ ກາງຄືນ ໂດຍໃຫ້ໄດ້ຕາມມາດຕະຖານສູງຂອງຄວາມສະຫງົບສະຫອນສຳມະຊາດ ແລະ ສິ່ງແວດລ້ອມທີ່ກຳນົດໄວ້ໃນຕາຕະລາງ 5 ຂ້າງລຸ່ມນີ້:

ຕາຕະລາງ 5: ການຄວບຄຸມແສງສະຫວ່າງທີ່ບໍລິການສາທາລະນະສູນໃນຊ່ວງເວລາກ່ຽວກັບ ແລະ ກາງຄືນ

ສະຖານທີ່ບໍລິການສາທາລະນະສູນ	ຄ່າມາດຕະຖານເປັນໂດເຊັບ (Standard Value in dBA)		
	6.00-18.00 ມ	18.00-22.00 ມ	22.00-6.00 ມ
	50	45	40

ແຫຼ່ງຂໍ້ມູນ: ມາດຕະຖານສູນກຳລັງ, ກະຊວງຍຸດທະສາດສາທາລະນະ ແລະ ສິ່ງແວດລ້ອມ ປີ 2010

- ແນະນຳໃຫ້ຜູ້ປະຕິບັດວຽກງານ ຊຶ່ງເຖິງອັນຕະລາຍຈາກການໄດ້ເປັນສ່ຽງເກີນສະໜາດ.
- ກວດສາຍຕາເປັນໄລຍະ:
 - ✓ ກ່ອນເຂົ້າປະຕິບັດວຽກງານ ຊຶ່ງເປັນການກວດເພື່ອເລືອກຄືນໃຫ້ເໝາະສົມກັບວຽກງານ ທີ່ປະກອບດ້ວຍ: ການຖາມປະຫວັດ, ການກວດສຳຫຼາດໂດຍເປັນໃສ່ ການຊ່ອງຫຼື, ເຈັ້ງຫຼື ແລະ ລະດັບການໄດ້ຢືນ
 - ✓ ການກວດຕາເປັນໄລຍະ ແລະ ປົກກະຕິ ບ່າງປ້ອງປະ 1 ຄັ້ງ.
 - ສະໜັບສະໜູນໃຫ້ມີການໃຊ້ອຸປະກອນປ້ອງກັນສ່ວນກຸກຄືນຢ່າງໝາຍສິມໃນແຜ່ນລະຫວ່າງ.

➢ ມີການປັບອຸນຫະພູມ ແລະ ຄວບຄຸມແສງສະຫວ່າງໃນບາງສະຖານທີ່ ໃຫ້ໄດ້ມາດຕະຖານໃນຕາຕະລາງ 6 ຂ້າງລຸ່ມນີ້:

ຕາຕະລາງ 6: ການປັບອຸນຫະພູມ ແລະ ຄວບຄຸມແສງສະຫວ່າງໃນບາງສະຖານທີ່

ປະເພດຫ້ອງ	dBA
ຫ້ອງນຳເປັນ	35-45
ຫ້ອງປັບແກ້ໄຂ	30-40
ຫ້ອງວ່າລັດ	45-55
ສະຖານທີ່ທີ່ບໍ່ໄດ້ຮອງໂຮງພິ	40-50
ຫ້ອງວິເຄາະ	50-60
ຫ້ອງສື່ງຄຸກສິບ	45-55
ຫ້ອງທຳການ, ຫ້ອງກວດພະຍາດ	35-45
ຫ້ອງປະຊຸມ	30-40
ຫ້ອງທົດສອບເນັກຊວນຢູ່ໂຮງພິ	30-35

ແຫຼ່ງຂໍ້ມູນ: Noise in Health Care Facilities. Raffaele Marcolongo and Claudia Gliberti. 2015

➢ ມີການປັບອຸນຫະພູມ ແລະ ຄວບຄຸມຄວາມສູນກະທຳເຮັດວຽກງານທີ່ມີແຫຼ່ງສູນກະທຳເຮັດວຽກງານ ບ່າງໝາຍສິມເຊັ່ນ: ສະຖານທີ່ຊຶກ-ລິດ, ຫ້ອງວິດີໂອ, ຫ້ອງວິດີ ແລະ ບ່າງອື່ນ ໂດຍ:

- ປະຕິບັດຕາມຄ່າມາດຕະຖານລະດັບຄວາມສູນກະທຳເຮັດວຽກງານໃນຕາຕະລາງ 7 ດັ່ງລຸ່ມນີ້:

ວັກສະນະວຽກງານ	ຄ່າມາດຕະຖານ
ວຽກເປົ້າ	ບໍ່ເກີນຄ່າສະເລັ່ງອຸນຫະພູມແວດບັນໂກລ 34 °C (WBGT: Wet Bulb Globe Temperature)
ວຽກບານກາງ	ບໍ່ເກີນຄ່າສະເລັ່ງອຸນຫະພູມແວດບັນໂກລ 32 °C (WBGT: Wet Bulb Globe Temperature)
ວຽກພິກ	ບໍ່ເກີນຄ່າສະເລັ່ງອຸນຫະພູມແວດບັນໂກລ 30 °C (WBGT: Wet Bulb Globe Temperature)

- ມີອຸປະກອນບໍ່ຮັບຜິດຊອບ ແລະ ລະບົບສາຍຕາໃນໂອຊາຍ
- ມີພະນັກງານອົບຮົມຕອບຮັບການແຕ່ງໄປໃນການໃຊ້ເຄື່ອງມືປັບປຸງເມັດຄອບຄູ່ ແລະ ປະສົບການໂດຍໄດ້ຮັບການອົບຮົມຈາກຫົວໜ້າທີ່ອົບຮົມ.
- ມີການແນວນຳ ແລະ ໃຫ້ຄວາມຮູ້ໃຫ້ແກ່ພະນັກງານໃນທຸກລະດັບໃນການປະຕິບັດຕົນເອງເມື່ອເກີດສັກຖິໄພ.
- ມີວິນາຍເດືອນອັນຕະລາຍ ແລະ ມີເອກະສານຮັບຮອງຄວາມປອດໄພຂອງສານເກມີ ຖືກສະຖານທີ່ເກັບຮັກສາອຸປະກອນທາງການແພດ ແລະ ສານເກມີ ຫຼື ຈັດຖຸໄວໄພ ແກ່ເປັນສິດສ່ວນ, ຫ່າງຈາກແຫຼ່ງຄວາມອ້ອມ.
- ມີແຜນບ້ອນຮັກສາ ແລະ ຄວບຄຸມສັກຖິໄພ ເຊັ່ນ: ເສັ້ນທາງທີ່ໄພ, ລະບົບໄພສູງເສີນ, ການກວດກາ, ການອົບຮົມ ແລະ ການມີກຸ້ມຄຸມຢ່າງເໝາະສົມ.
- ມີແຜນອົບຮົມກົມເຈັບແລະມີໂຫດການສູນເສີນຈາກໄພໄຟຮົ່ວ ຫຼື ເກີດຈາກຜົນກະທົບຈາກການປ່ຽນແປງດິນຊ້ອຍາກ.

ມາດຕາ 19 ມາດຕະຖານດ້ານການຄວບຄຸມສິດ ແລະ ແມງໄມ້ທີ່ເປັນສາທາລະນະສຸກ
 ມີການບ້ອນຮັກສາ ຫຼື ບົກບ້ອງສຸຂະພາບຂອງຕົນເຈັບ, ພະນັກງານ ແລະ ຜູ້ກ່ຽວຂ້ອງອື່ນໆ ຈາກສັດ ແລະ ແມງໄມ້ທີ່ເປັນສາທາລະນະສຸກຢູ່ພາຍໃນສະຖານທີ່ທີ່ມີການສາທາລະນະສຸກ ເປັນຢ່າງດີ.

- ຕົວຊີ້ວັດ : ສະຖານທີ່ບໍ່ມີການສາທາລະນະສຸກທາງແຫ່ງ ຕ້ອງ:**
- ສຳຫລັດລັດສີ່ຫ່ວງແມ່ກ ຫຼື ສະແຫວງການດ່າງໆ ໂດຍຊອກຫາຄ່ອງອອບຂອງສິດ ແລະ ແມງໄມ້ທີ່ເປັນສາທາລະນະສຸກ ເຊັ່ນ: ຫູ, ແມງງົບ, ແມງສາບ ແລະ ບຸງ
 - ມີລະບົບກວດກາ, ບ້ອນຮັກສາ, ຄວບຄຸມ ແລະ ກຳຈັດແຫຼ່ງພາຍໃນລວມທັງຕົວອ້ອມ, ຕົວແກ່ຂອງສິດ ແລະ ແມງໄມ້ ທີ່ເປັນສາທາລະນະສຸກ ເປັນປົກກະຕິ
 - ຫ້າມບໍ່ໃຫ້ມີສິດລົງທຽມປະເພດໃນບໍລິເວນສະຖານທີ່ບໍ່ມີການສາທາລະນະສຸກເຖິງຄວາມ ຍິກເຊິ່ງການລົງທຽມສິດການຄ້າເຮັດວິຊາ ແຕ່ຕ້ອງມີການຄວບຄຸມດູແລ່ເປັນຢ່າງດີ

ມາດຕາ 20 ມາດຕະຖານດ້ານຄຸ້ມຄອງສານ ແລະ ການສົ່ງເສີມອະນາໄມ
 ມີການຄຸ້ມຄອງ ແລະ ສົ່ງເສີມດ້ານສຸຂະພາບອະນາໄມເປັນປົກກະຕິ ໂດຍນຳໃຊ້ເຄື່ອງມືໂຄສະນາສຸຂະພາບສຳລັບລວມທັງພະນັກງານໄດ້ຍິກລະດັບ, ອົບຮົມ, ມີເຄືອອຸປະກອນຄວບຄຸມສະດວກ ແລະ ຈັດສັນກຽມປະມານຢ່າງພຽງພໍໃຫ້ແກ່ສະຖານທີ່ບໍ່ມີການສາທາລະນະສຸກ.

- ຕົວຊີ້ວັດ : ສະຖານທີ່ບໍ່ມີການສາທາລະນະສຸກທາງແຫ່ງ ຕ້ອງ:**
- ຍົກລະດັບ ແລະ ດຳເນີນການອົບຮົມໃຫ້ແກ່ພະນັກງານຂອງຕົນແຂວງເປັນປົກກະຕິກ່ຽວກັບການຄຸ້ມຄອງສິດ, ການອະນາໄມ-ສົ່ງເສີມອະນາໄມ, ອົບຮົມ, ມີເຄືອອຸປະກອນ ແລະ ຄວບຄຸມການຕິດເຊື້ ແລະ ວຽກງານວິຊາການອື່ນໆ ທີ່ກ່ຽວຂ້ອງ.
 - ແນວນຳຄົນເຈັບ ແລະ ຜູ້ທີ່ກ່ຽວຂ້ອງອື່ນໆ ກ່ຽວກັບຄວາມຮູ້ສື່ນຳການທາງດ້ານອະນາໄມ ແລະ ບ້ອນຮັກສາ ຫຼື ການອຸດອນດ້ານການຕິດເຊື້ອພະຍາດຢູ່ສະຖານທີ່ບໍ່ມີການສາທາລະນະສຸກ.
 - ນຳໃຊ້ອຸປະກອນສື່ສານ ໂຄສະນາ ດ້ວຍຫຼາຍຮູບແບບ.
 - ຕອບສະໜອງເຄື່ອງອຳນວຍຄວາມສະດວກ, ລັດຖະປະກອນອົບຮົມໃຫ້ພຽງພໍ.
 - ຈັດສັນກຽມປະມານໃຫ້ພຽງພໍໃຫ້ແກ່ການເດືອນໄຫວວຽກງານການສົ່ງເສີມສຸຂະພາບ ແລະ ບ້ອນຮັກສາພະຍາດ.

ມາດຕາ 21 ມາດຕະຖານດ້ານລະບົບແກ້ໄຂ ແລະ ອຸປະກອນຄວາມດັນ
 ມີການບ້ອນຮັກສາ, ດູແລ່ປັບປຸງສັກຖິໄພແກ້ໄຂຄວາມດັນລວມທັງການນຳໃຊ້ຢ່າງປອດໄພ.

- ຕົວຊີ້ວັດ : ສະຖານທີ່ບໍ່ມີການສາທາລະນະສຸກທາງແຫ່ງ ຕ້ອງ:**
- ມີບາດບັດເປັນເປົ້າໝາຍສຳລັບຄວາມດັນ, ບ້ອນຮັກສາການແຜກ ແລະ ມີສາຍສັດບ້ອນຮັກສາເລີ່ມ. ຖ້າມີການເຕືອນຍ້າຍຖັງ ຕ້ອງມີລິດຖັງອົບຮົມດ້ວຍສາຍສັດ.
 - ກວດສອບດູແລ່ອຸປະກອນທີ່ໃຊ້ເປັນເປົ້າໝາຍ ຈາກຜູ້ຄວບຄຸມປະຈຳທີ່ມີຄຸນຄ່າທີ່ມີໃບປະກາດ ຫຼື ຜ່ານການອົບຮົມ ຂົບ ຂົນ ມີສະຖານບ້ອນຮັກສາ
 - ກວດສອບຖັງອົບຮົມຂົນສົ່ງດ້ວຍແກ້ໄຂສອດຄ່ອງໃນລິບອອກໄຊເປັນປົກກະຕິ, ບໍ່ໃຫ້ມີອອຍອິດໂດຍໜ່ວຍງານທີ່ໃຫ້ການກວດສອບທີ່ມີປະສົບການ.
 - ມີສະຖານທີ່ເກັບມື້ນຸ່ງແກ້ໄຂທີ່ປອດໄພ ແລະ ເກັບຮັກສາເປັນສິດສ່ວນ, ມີສາຍສັດບ້ອນຮັກສາເລີ່ມ.
 - ເວລາໃຊ້ວຽກງານ ຕ້ອງຕັ້ງໃນຕໍ່າແຫ່ງທີ່ສົມດັ່ງ, ແຂງແຮງ, ຫ່າງຈາກແຫຼ່ງຄວາມອ້ອມ ແລະ ແຜ່ໄພ.

ມາດຕາ 22 ມາດຕະຖານດ້ານການຄຸ້ມຄອງສຸຂະພາບ ແລະ ຄວາມປອດໄພຂອງພະນັກງານ
 ເປົ້າໝາຍ ແລະ ບົນບຸນສຸຂະພາບແວດລ້ອມໃນການທ່າງານ, ເປົ້າໝາຍສຸຂະພາບຂອງບຸກຄະລາກອນ, ສົ່ງເສີມສຸຂະພາບດ້ວຍ ການບ້ອນຮັກສາ ແລະ ຄວບຄຸມສະພາບ.

- ຕົວຊີ້ວັດ : ສະຖານທີ່ບໍ່ມີການສາທາລະນະສຸກທາງແຫ່ງ ຕ້ອງ:**
- ເປົ້າໝາຍ ແລະ ບົນບຸນສຸຂະພາບແວດລ້ອມໃນການທ່າງານ:
 - ປະເມີນບົດໃຈສ່ຽງ ແລະ ລັກສະນະວຽກງານທີ່ມີຄວາມສ່ຽງສູງສຸດຂອງສຸຂະພາບ
 - ກວດກາ ແລະ ປະເມີນລະດັບຄ່າສ່ຽງສ່ຽງແວດລ້ອມໃນການທ່າງານ
 - ອອກແບບການກວດສຸຂະພາບຄວາມສ່ຽງສູງສຸດສຳລັບສະຖານທີ່
 - ສ້າງສະບັບການ ແລະ ແກ້ໄຂສະພາບແວດລ້ອມໃນການທ່າງານ
 - ເປົ້າໝາຍສຸຂະພາບຂອງບຸກຄະລາກອນ:
 - ກວດສຸຂະພາບກ່ອນເຂົ້າທ່າງານ
 - ກວດສຸຂະພາບປະຈຳທີ່ສູນພະນັກງານທົ່ວໄປ
 - ສຳລັບພະນັກງານທີ່ໄດ້ລວງກຸ່ມຄວາມສ່ຽງສູງ ຄວນກວດສຸຂະພາບຢ່າງນ້ອຍ 2 ຄັ້ງ/ປີ ຕາມສູນແລະນຳຂອງກົມອະນາໄມ ແລະ ສົ່ງເສີມສຸຂະພາບ ກະຊວງສາທາລະນະສຸກ.
 - ຈັດທະນາລະບົບລາຍງານການເຈັບເປັນ ແລະ ອຸປະຕິເຫດຈາກການທ່າງານ
 - ສົ່ງເສີມສຸຂະພາບດ້ວຍການບ້ອນຮັກສາ ແລະ ຄວບຄຸມສະພາບ:
 - ສ້າງກຸ່ມບ້ອນຮັກສາພະຍາດໃຫ້ກົມບຸກຄະລາກອນ
 - ສົ່ງເສີມສຸຂະພາບ ແລະ ສ້າງຄິດເຖິງຄວາມປອດໄພໃນການທ່າງານ
 - ຄວບຄຸມ ແລະ ບ້ອນຮັກສາພະຍາດ

ພາກທີ IV

ການຕິດຕາມກວດກາ ແລະ ປະເມີນຜົນ

- ມາດຕາ 23** ສະແຫວງການສາທາລະນະສຸກໃນແຕ່ລະຂັ້ນ ຕ້ອງຖືເອົາການອະນາໄມ ສະຖານທີ່ບໍ່ມີການສາທາລະນະສຸກ ເປັນພາກສ່ວນໜຶ່ງຂອງວຽກງານການເຄື່ອນໄຫວ, ຕິດຕາມສູງຖັງ, ກວດກາ ແລະ ປະເມີນຜົນທົ່ວໄປຂອງວຽກງານການອະນາໄມຢູ່ໃນເຄື່ອງເຮັດທີ່ຕິດພັນກັບສິດສຸຂະພາບ
- ມາດຕາ 24** ສະຖານທີ່ບໍ່ມີການສາທາລະນະສຸກ ຕ້ອງຕິດຕາມສູງຖັງກວດກາ ແລະ ປະເມີນຜົນການເຄື່ອນໄຫວວຽກງານອະນາໄມ-ສົ່ງເສີມອະນາໄມໃນເຄື່ອງເຮັດທີ່ຕິດພັນກັບສິດສຸຂະພາບ ແລະ ເປັນປົກກະຕິ 1 ຄັ້ງ ຕໍ່ອາທິດ
- ມາດຕາ 25** ຄະນະກຳມະການຄຸ້ມຄອງອະນາໄມ ຖືກສະຖານທີ່ບໍ່ມີການສາທາລະນະສຸກ ຂຶ້ນເມືອງ ແລະ ສະແຫວງການທີ່ກ່ຽວຂ້ອງ ຕ້ອງລົງຕິດຕາມສູງຖັງກວດກາ ແລະ ປະເມີນຜົນການເຄື່ອນໄຫວວຽກງານອະນາໄມ-ສົ່ງເສີມອະນາໄມສະຖານທີ່ບໍ່ມີການສາທາລະນະສຸກ ທີ່ຂຶ້ນກັບຕົນເປັນເປົ້າໝາຍ ແລະ ເປັນປົກກະຕິ 1 ຄັ້ງ/ເດືອນ.
- ມາດຕາ 26** ຄະນະກຳມະການຄຸ້ມຄອງອະນາໄມ ຖືກສະຖານທີ່ບໍ່ມີການສາທາລະນະສຸກ ຂຶ້ນແຂວງ ແລະ ສະແຫວງການທີ່ກ່ຽວຂ້ອງ ຕ້ອງລົງຕິດຕາມສູງຖັງກວດກາ ແລະ ປະເມີນຜົນການເຄື່ອນໄຫວວຽກງານອະນາໄມ-ສົ່ງເສີມອະນາໄມສະຖານທີ່ບໍ່ມີການສາທາລະນະສຸກ ທີ່ຂຶ້ນກັບຕົນເປັນເປົ້າໝາຍ ແລະ ເປັນປົກກະຕິ 1 ຄັ້ງ/ເດືອນ.
- ມາດຕາ 27** ຄະນະກຳມະການຄຸ້ມຄອງເສັ້ນເຫຍື້ອສະຖານທີ່ບໍ່ມີການສາທາລະນະສຸກ ຢູ່ຂັ້ນສູນກາງ ແລະ ສະແຫວງການທີ່ກ່ຽວຂ້ອງ ຕ້ອງລົງຕິດຕາມສູງຖັງ ກວດກາ ແລະ ປະເມີນຜົນການເຄື່ອນໄຫວວຽກງານອະນາໄມ-ສົ່ງເສີມອະນາໄມສະຖານທີ່ບໍ່ມີການສາທາລະນະສຸກ ທີ່ຂຶ້ນກັບຕົນເປັນເປົ້າໝາຍ ແລະ ເປັນປົກກະຕິ 1 ຄັ້ງ/4 ເດືອນ.
- ມາດຕາ 28** ໃນແຕ່ລະຂັ້ນເອກຈາກດ້ານການຕິດຕາມສູງຖັງກວດກາ ແລະ ປະເມີນຜົນແບບປົກກະຕິແລ້ວ ຍັງສາມາດເຮັດການຕິດຕາມສູງຖັງກວດກາສະພາບແວດລ້ອມການທີ່ເກີດຂຶ້ນ.

ພາກທີ V

ຂໍ້ຕົກລົງ, ການບ້ອນຮັກສາ ແລະ ການລົງໂທດ

- ມາດຕາ 29: ຂໍ້ຕົກລົງ**
 ຫຼາກຊື່ຕົກລົງກ່ຽວຂ້ອງກັບຂໍ້ຕົກລົງສະບັບນີ້ ຕ້ອງສອດຄ່ອງກັບ ພວດທີ 6 ຂອງກົດໝາຍວ່າດ້ວຍການອະນາໄມ, ກົມອະນາໄມ ແລະ ສົ່ງເສີມສຸຂະພາບ (ສະບັບປັບປຸງ) ມາດຕາ 47 ແລະ 48, ລົງວັນທີ 21 ເດືອນຕົ້ນວາ ປີ 2011.
- ມາດຕາ 30: ການບ້ອນຮັກສາ ແລະ ການລົງໂທດ**
 ການບ້ອນຮັກສາ ແລະ ການລົງໂທດກ່ຽວຂ້ອງກັບຂໍ້ຕົກລົງ ສະບັບນີ້ຕ້ອງສອດຄ່ອງກັບ ພວດທີ 6 ຂອງກົດໝາຍ ວ່າດ້ວຍການອະນາໄມ, ກົມອະນາໄມ ແລະ ສົ່ງເສີມສຸຂະພາບ (ສະບັບປັບປຸງ) ມາດຕາ 56, 57, 58, 59, 60, 61 ແລະ 62, ເລກທີ 08/ສພຊ, ລົງວັນທີ 21 ເດືອນຕົ້ນວາ ປີ 2011.

ພາກທີ VI

ບົດບັນຍັດສຸດທ້າຍ

- ມາດຕາ 31 : ການຈັດຕັ້ງປະຕິບັດ**
 ມອບໃຫ້ ກົມອະນາໄມ ແລະ ສົ່ງເສີມສຸຂະພາບ, ກົມບັນຍັດ ເປັນຈຳການໃນການຈັດຕັ້ງປະຕິບັດຂໍ້ຕົກລົງສະບັບນີ້ຢ່າງຖືກຕ້ອງ ໂດຍປະສານງານກັບຫຼາກສ່ວນທີ່ກ່ຽວຂ້ອງ.
- ມາດຕາ 32 : ຜົນສັກສິດ**
 ຂໍ້ຕົກລົງສະບັບນີ້ ມີຜົນສັກສິດດັບແຕ່ ວັນທີ່ລົງວາຍເຊັ່ນເປັນຕົ້ນໄປ. ຫຼາກຊື່ຕົກລົງໃນເມື່ອກ່ອນທີ່ສັດຕິກັບຂໍ້ຕົກລົງສະບັບນີ້ ແມ່ນຖືກລົບລ້າງ.

ລັດຖະມົນຕີ

ສສ ດຣ. ບຸນກອງ ສິຫາວິງ

Annex 10: Sharps Waste Management Guidelines, Department of Planning and Cooperation, Ministry of Health, issued on 10 October 2019.

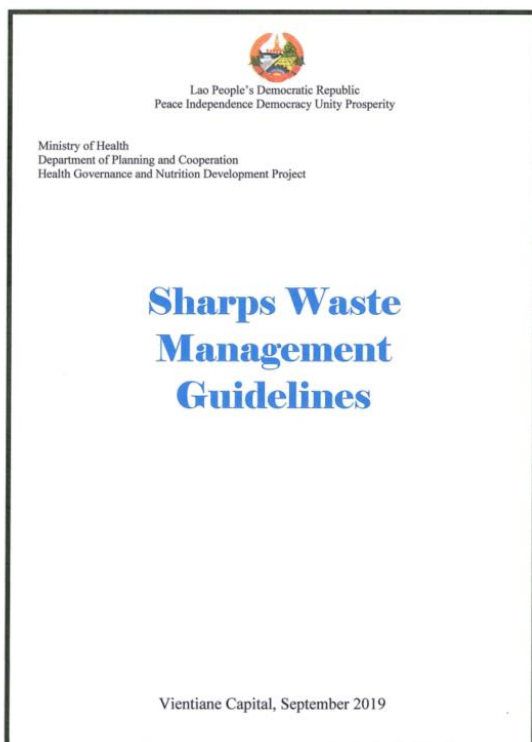


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Foreword

In order to make waste disposal of rubbish out of the craft is properly carried out according to the law. The goal is to avoid harmful effects on environmental health and ensure safety location of services across the country.

On the one hand, the development of the Immunization Law Act No. 093/NA dated on June 25th, 2018, article 30 refers to the destruction of vaccines and immunization equipment. The destruction of immunization equipment such as syringes and the impotent immunization needles and used needles have to follow the principle and international standard by using specific incinerator with the heat over 800 degrees Celsius and other stipulated in other regulation.

At the same time, Health Governance and Nutrition Development Project (HGNDP), Department of Planning and Cooperation (DPC), together with the Department of Hygiene and Health Promotion (DHHP) are created this instruction to guide the relevant stakeholders, particularly the executives who are actual working in this area has been realized and understood, including the proper implementation of this task in the technical filed simultaneously potential impacts on the environment and health.

We are hoped this instruction will greatly benefit the improvement of the waste management especially the sharps waste management instruction from public health facilities will likely be shared. Hand-over of all parties involved in improving this work has been a great success.

Vientiane Capital, Dated...../11 OCT 2019.....
Director General of DPC



ທ. ຄຳພັດ ມະນີວິງ

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I. Sharps Waste Overview

I.1 Definition and generation of sharps waste

Between 75% and 90% of the waste produced by healthcare providers is comparable to domestic waste and usually called "non-hazardous" or "general health-care waste". The remaining 10-25% of health-care waste is regarded as "hazardous waste" including sharps waste, infectious waste, pathological waste, pharmaceutical waste, cytotoxic waste, chemical waste, radioactive waste.

Sharps are items that could cause cuts or puncture wounds, including needles, hypodermic needles, scalpels and other blades, knives, infusion sets, saws, broken glass and pipettes. Whether or not they are infected, such items are usually considered highly hazardous health-care waste and should be treated as if they were potentially infected (WHO, 2013).

Table 1: Examples of sharps waste from different sources

Sources	Sharps waste
Medical ward	Hypodermic needles, intravenous set needles, broken vials, and ampoules
Operating theatre	Needles, intravenous sets, scalpels, blades, saws
Laboratory	Needles, broken glass, Petri dishes, slides and cover slips, broken pipettes
Vaccination campaigns	Needles and syringes
Physicians' and dental offices	Needles and syringes, broken ampoules and vials
Home health care	Lancets and insulin injection needles

I.2 Risks associated with sharps waste

Sharps represent a double risk. They may not only cause physical injury but also infect these wounds if they are contaminated with pathogens. There is concern about infection with human immunodeficiency virus (HIV) and hepatitis viruses B and C, for which there is strong evidence of transmission from injury by syringe needles contaminated by human blood.

Healthcare workers, cleaning personnel and waste handlers in healthcare facilities are the main groups at risk of sharps injury. It is estimated that more than two million health-care workers are exposed to percutaneous injuries with infected sharps every year (Pruss-Ustun et al., 2005). Many injuries are caused by recapping of hypodermic needles before discarding to sharp containers and by unsafe handling and disposal of sharps waste. In the year 2000, sharps injuries to health-care workers were estimated to have caused about 66 000 hepatitis B (HBV), 16 000 hepatitis C (HCV) and 200-5000 HIV infections among health-care workers. For health-care workers, the fractions of these infections that are due to percutaneous occupational exposure to HBV, HCV and HIV are 37%, 39% and 4%, respectively.

Scavengers on waste disposal sites are also at significant risk from used sharps. The risk of a sharps exposure among patients and the public is much lower. It was reported that the unsafe reuse of injection equipment could lead to outbreaks of HIV and HBV in some locations (WHO, 2013).

II. Healthcare worker safety

2.1 Prevention of needle stick injuries

Needle-stick injuries can happen at any time, particularly during and immediately after an injection. This risk is increased when health workers recap needles or walk around carrying used

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needles, and when sharps waste is managed unsafely, leaving people and/or animals exposed to used needles and syringes.

The following is precaution from getting needle stick injuries:

- Don't touch the shaft, the bevel and the adapter of the needle
- Don't recap the needle
- Don't leave the needle in the top of vaccine vial
- Don't carry used syringes and needles around the work site for any reason
- Don't manually sort needles and syringes
- Discard needles and syringes in safety box and/or sharp container
- Handle, store, transport, treat and dispose sharps waste properly (see chapters 3 - 7)
- Use personal protective equipment properly

2.2 Use of personal protective equipment (PPE)

The type of PPEs used will depend to an extent upon the risk associated with the sharps waste, but the following should be made available to all personnel who collect or handle waste:

- Disposable gloves: protect medical staff from exposure to blood
- Heavy-duty gloves: protects any cuts on hands and helps protect against needle sticks
- Industrial boots: protect waste workers from sharp injuries and accidental spills to the foot
- Industrial aprons: protect waste workers from accidental spills to clothes
- Goggles: protect the eyes from accidental splashes
- Masks: protect waste workers from respiratory infections hazards and particulates from burning waste
- Helmets, with or without visors: protect waste workers from accidental spills to the hair.

Figure 1: Examples of PPEs for a healthcare waste worker in Vietnam



Photo credit: Le Minh Sang/World Bank

2.3 Post-exposure prophylaxis

Post-exposure prophylaxis should be offered, and initiated as early as possible within the first few hours and no later than 72 hours after exposure, to all individuals with exposure that has the potential for HIV, HBV, HCV transmission. Critical steps to take following a needle stick injury are as follows:

- Treat the exposure site: Flush the wound with tap water, let the wound bleed for a short time 3 – 5 minutes, do not squeeze; clean the wound thoroughly with soap and water; disinfect wound by disinfectants (alcohol 70%) in at least 5 minutes.
- Report to the manager and complete the report form: Indicate the date, time and the context of exposure, describe the wound and assess the level of risk.
- Assess the risk of transmission:
 - Determine the HIV, HBV, HCV status of the source of exposure
 - Determine the HIV, HBV, HCV status of the exposed person
- Take post-exposure prophylaxis medicine if needed

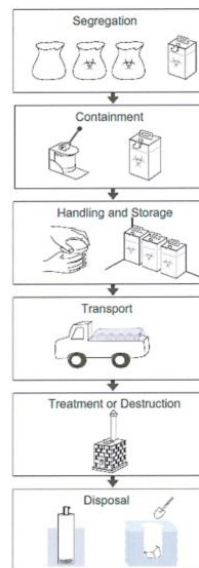
4

- Carry out follow-up testing and monitoring for exposed person

III. Sharps waste management planning

Planning defines the key actions for improving sharps waste management, assignment of roles and responsibilities, and allocation of resources.

Figure 2: Key steps in sharps waste management



Source: PATH

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The following are some common responsibilities for managing sharps waste:

Managers

- Obtain and be familiar with national waste management policies.
- Develop facility waste management plan (goal, budget, personnel, roles, supervision, training, reporting).
- Ensure supply of safety boxes, needle removers, or other sharps containers; designate appropriate and secure storage for used sharps.
- Identify and budget for final disposal method including transport and fees.
- Create climate of support for needle stick injury reporting.
- Develop protocol for management of needle stick injury.
- Advocate for health worker safety.

Injection Providers

- Follow waste management policies.
- Follow color-coded waste segregation system.
- Place sharps containers properly.
- Immediately dispose of sharps in closed container.
- Record keeping—record number of filled sharps containers, identify supply needs, report stock outs.
- Store sharps waste in secure location.

Waste Handlers

- Know color-coding system.
- Collect filled sharps containers.
- Ensure waste is securely stored until disposal.
- Use protective equipment when handling sharps.
- Provide waste to waste collection vehicle or service.

Waste Carriers

- Maintain segregation.
- Remove waste from facility.
- Ensure a clean environment at the facility.
- Safely transport waste to final disposal site.

Incinerator or autoclave operators:

- Follow incinerator/autoclave operations procedure.
- Use protective equipment when handling waste.
- Ensure supply of fuel.
- Record weight and type of waste received.
- Ensure payments received, as appropriate.
- Follow regular maintenance schedule for incinerator or autoclave.
- Ensure regular transport of ash to landfill.

V. Containment, handling and storage of sharps waste

5.1 Containment

Since sharps can cause injuries that leave people vulnerable to infection, both contaminated and uncontaminated sharps should be collected in a puncture-proof and impermeable container that is difficult to break open after closure. Sharp containers or safety boxes should be yellow colour coded, marked "sharps waste" with biohazard symbol. Safety boxes may be made of cardboard, plastic or metal. Low-cost options include the reuse of plastic bottles or metal cans. If this is to be done, the original labels should be removed or obscured, and the containers should be clearly relabeled as "Sharps containers".

Cardboard safety box. For each immunization post there must be one cardboard safety box. Safety box is a special type of box for dropping the used AD syringes after use. Cardboard safety boxes require proper assembly before use, many have picture instructions printed on the side, as shown in Figure 1.

Figure 4: Safety box assembly



Photo credit: Le Minh Sang/World Bank

Puncture resistant plastic safety boxes. These plastic boxes are puncture resistant and slightly more expensive than cardboard Safety boxes. Supplies might be more difficult to find for small and medium-sized health care facilities.

Figure 5: Examples of plastic safety box available in Luang Prabang



Photo credit: Le Minh Sang/World Bank

IV.

Segregation of sharps waste

- Segregation should be carried out by the producer of the waste as close as possible to its place of generation to separate sharps waste, infectious waste and general waste.
- Sharps waste is discarded in the safety box or sharp containers. Safety boxes should be placed within reach of the staff administering injections so that needles and syringes can be disposed of immediately in the safety box without recapping.
- Posters showing the type of waste that should be disposed of in each container should be posted on walls to guide staff and reinforce good habits, as show in the Figure 3.



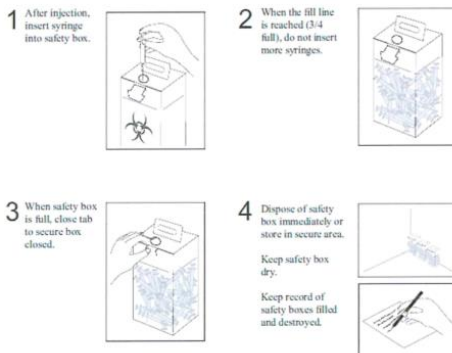
Figure 3: Instruction for healthcare waste segregation

Source: Vietnam Ministry of Health

5.2 Guidance for safe handling and storage of safety box:

- After giving the injection, used syringe put immediately into the safety box. A five-liter safety box can hold about 100 syringes and needles.
- Safety boxes should be placed within reach of the staff administering injections so that needles and syringes can be disposed of immediately.
- Don't handle or shake the safety box unnecessarily. Never squeeze, sit or stand on safety box.
- When the safety box is not in use, close the opening on the top.
- Safety boxes should be closed when they are three quarters full and send it for burning in incineration.
- Keep safety box in a dry, safe and secure location, away from medical supplies and out of the reach of the children and general people (a locked room is best).
- Store safety boxes no more than one week (or according to facility guidelines).
- Take extra care when carrying safety boxes to disposal sites. Hold the box by the handle on top.

Figure 6: Instruction for use of safety box



Source: PATH

5.3 Central storage of sharps waste

Hospital should establish a central storage of sharps waste and infectious waste that should meet the following requirements:

- Be located away from fresh food stores and food preparation areas and patient wards
- Has a roof, has an impermeable and hard-standing floor with good drainage;
- Has easy access for staff and waste vehicles but be lockable to prevent access from unauthorized people,
- Be inaccessible to animals and insects;
- Be marked "infectious waste" with biohazard symbol;
- Has water supply, washing basin, lighting and ventilation;
- Has a supply of cleaning equipment, waste bags and containers, spillage containment equipment located conveniently close to the storage area.

Storage containers for sharps waste should meet the following requirements:

- Have lid and thick, rigid wall;
- Be made of high density plastic;
- Be yellow color coded;
- Be marked "sharps waste" with bio-hazard symbol

Figure 7: Example of sharps waste storage in Vietnam



Photo credit: Le Minh Sang/World Bank

VI. Transport of sharps waste

6.1 Transport within health facility

Sharps waste and infectious waste should be collected daily (or as frequently as required) and transported to the designated central storage site. Collection times should be fixed. Hazardous waste, should never be transported by hand due to the risk of accident or injury from infectious material or incorrectly disposed sharps. Sharps waste and non-sharp infectious waste should be transported within premises by wheeled trolleys, containers or carts, which are not used for any other purpose. Means for transport of sharp and infectious waste should be easy to load and unload, have no sharp edges that could damage waste bags or containers during loading and unloading, be easy to clean, be yellow color coded and marked "infectious waste" with biohazard symbol.

Figure 8: different means for transport of sharps waste within health facility

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6.2 Transport to outside treatment and disposal facility

Sharps waste and infectious waste can be transported to outside treatment and disposal facility. Transporting hazardous healthcare waste on the public streets away from a healthcare facility should comply with national regulation on hazardous waste management. The minimum measures for transporting sharps waste to outside treatment and disposal facility are as follows:

- The vehicle is able to carry wastes in a closed or covered container, keeping safety boxes protected from rain, leakage and spillage.
- Vehicle and containers are labelled according to the type of waste that is being transported.
- Transport staff receives appropriate training about risks and handling of hazardous waste as well as emergency response to an accident or incident during transportation.
- Transport documentation (waste tracking note) is prepared, carried by transport staff and kept by health facility. Documentation should include the following information: waste classes, sources, date, destination, number of safety boxes/containers or volume, etc.
- Transport vehicles and containers are maintained and cleaned regularly

Figure 9: Examples of vehicles for transporting sharps waste in Vietnam



VII. Treatment of sharps waste

Today there are no systems without disadvantages and the final choice of the best technology available is dependent on local conditions rather than global policy. This document introduces three applicable methods for treatment of sharps waste in Laos including needle remover/cutter, incineration, and autoclaving and shredding.

7.1 Needle remover or needle cutter

A manually operated needle remover/cutter comprises a removing/cutting device and a needle container which allows health workers to make used syringes safe and harmless at the point of use immediately after administering an injection. Needles or needle residues are stored

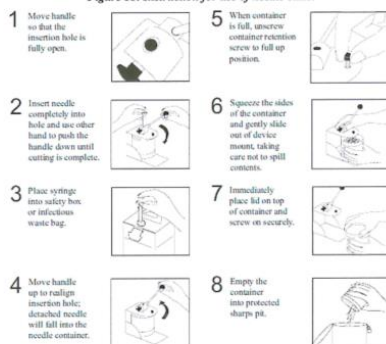
11

until the needle container is filled up to its designed maximum fill line, at which point the container must be removed, capped, and either disposed of or emptied.

Figure 10: Examples of needle remover and needle cutters



Figure 11: Instruction for use of needle cutter



Source: PATH

7.2 Incineration

Incineration is a high-temperature burning process that eliminates pathogens, destroys combustible waste and reduces waste volume. The Immunization Law No. 093/NA requires to use specific incinerator with the heat over 800 degrees Celsius to destroy needles and syringes according to international principles and standards.

Dual-chamber incinerator can meet the requirement set-forth in the Immunization Law. It comprises the primary chamber to burn waste at medium temperature of 800-900°C and the secondary chamber to burn gases produced in the primary chamber at high temperature of 1100-1600°C. Several provinces in Laos have installed pyrolytic incinerators for healthcare waste

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treatment in the centralized model. Health centers and district hospitals are recommended to transport sharps waste to these incinerators for treatment.

Figure 12: Example of dual-chamber incinerator for healthcare waste treatment



Single-chamber, drum and brick incinerators cannot meet the best available technology requirements of the Stockholm Convention on Persistent Organic Pollutants, of which Laos is signatory. Emissions of toxic and persistent organic pollutants (dioxin, furans, etc) from these small-scale incinerators may result in human exposure at levels associated with adverse health risks. When small-scale incinerators are used, the health facility should ensure that only sharps waste and infectious waste are incinerated and avoid burning PVC plastics and other chlorinated waste. Other key elements associated with design, construction, siting, operational and management of incinerators should be promoted to minimize occupational and public health risks.

Figure 13: Examples of single chamber and brick incinerators



Photo credit: Le Minh Sang/World Bank

Key elements for proper operation of incinerator are as follows:

- Clear operation procedures posted near the incinerator.
- Trained operator.
- Reliable segregation system so only infectious and nonpolluting materials are incinerated.
- Reliable transport system to get waste to the incinerator.
- Ash pit to safely dump the incinerator ash.
- Maintenance schedule.

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- Adequate supply of fuel.
- **Critical maintenance steps are as follows:**
A qualified official must inspect the incinerator every six months.
- Masonry inspection and repair: check for loose bricks and cracks in mortar interior and exterior; repair or replace damaged bricks.
- Metal inspection and repair: check doors, hinges, grate and chimney cap; replace if bent or damaged.
- Chimney: clean soot from inside of chimney.
- Site maintenance: clear brush from area around incinerator.
- Ash pit: if ash pit is full, cover and dig new pit

7.3 Autoclaving and Shredding

Autoclaving: is a low-heat thermal process that uses steam at high pressure and temperature to disinfect waste. The operation of autoclaves requires the proper combination of temperature/pressure and exposure time to achieve disinfection. In the past, a minimum recommended temperature exposure time criterion of 121 °C for 30 minutes under pressure of 205 kPa or 2.05 bar was suggested. Recently, temperature exposure time of 134 °C for 60 minutes is recommended for treating prions. Autoclaving is environmentally safe.

Shredding: since sharps waste from an autoclave retains its physical appearance, a mechanical process such as shredding or compaction is used to make them unrecognizable. Shredding cuts sharps into small pieces, making them safe for handling and disposal and reducing the volume of waste.

Figure 14: Example of autoclaving and shredding in Tanzania



Source: UNDP and GEF

A typical operation for an autoclave comprises the following steps:

- Waste collection
- Pre-heating
- Waste loading
- The entry (or charging) door is closed, sealing the chamber.
- Air evacuation

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- Steam treatment
- Steam discharge
- Unloading
- Documentation

After autoclaving, disinfected waste is fed into shredder, making them non-hazardous and safe for disposal in a municipal landfill. Shredding before disinfection can only be done in a closed system to avoid releasing any pathogens into the air. Integrated steam-based systems, which incorporate internal shredding combine steam treatment with shredding before, during or after steam treatment

Autoclaves and shredders can last for many years if properly maintained. Healthcare facilities should work with equipment vendors and manufacturers to develop a detailed preventive maintenance schedule. A typical preventive maintenance schedule of autoclave involves the following:

- Daily maintenance by operator: check for leaks, cleanliness of the chamber, filter screen and door seal
- Weekly maintenance by operator: check indicator lights, compare temperature & pressure gauges with recordings
- Monthly maintenance by operator: check door gasket or O-ring, conduct microbiological tests (by lab personnel)
- Quarterly maintenance by the engineer: checking valves, pipes, joints, strainers, drains; checking control system, interlocks and electricals; testing air removal efficiency
- Annual maintenance by the engineer: check for corrosion and wear, check thermocouples, water level indicators, gauges, relief valves and other safety devices, and control functions

VIII. Disposal of sharps waste

Sharps waste can be disposed in disposal in concrete vault, disposal in protected sharp pit or barrel, disposal in controlled bury pit. Proper use of these facilities may prevent needle stick injuries to health care workers and the community.

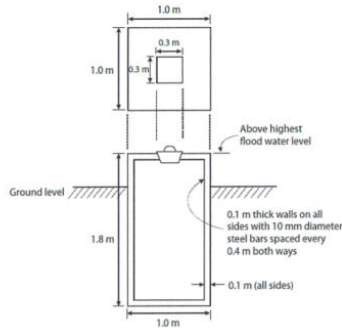
8.1 Burial of sharps waste in concrete vault

The following procedures for constructing and using a concrete vault are recommended:

- Identify the appropriate site, which locates away from the groundwater supply sources.
- Dig a pit (minimum size of 1mx1mx1.8m depth), enough to accommodate sharps and syringes for an estimated period of time without reaching the groundwater level.
- Construct concrete walls and slabs of the vault, following the design drawing below. Provide slab with manhole for easy deposition of collected sharps and syringes. The manhole should be above the soil surface to overcome infiltration of surface water.
- Deposit the collected safety boxes inside the concrete vault.
- Install a fence around the concrete vault to prevent unauthorized access

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Figure 15: Design of a concrete vault



Source: Emmanuel, Ferrer & Ferrer (2004)

8.2 Burial of removed needles in protected sharps pit or barrel

Where needle removers or needle cutters are used, removed needles can be disposed in a protected sharp pit or barrel.

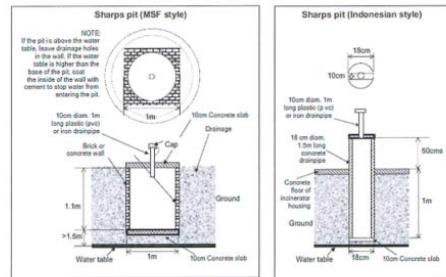
8.2.1 Protected sharp pit

The following procedures for constructing and using a protected sharp pit are recommended:

- Identify the appropriate site, which locates away from the groundwater supply sources.
- Dig a pit (minimum size of 1mx1mx1m depth), enough to accommodate sharps and syringes for an estimated period of time without reaching the groundwater level.
- Construct brick or concrete walls and slabs of the vault, following the design drawing below. Provide slab with hole and drainpipe for deposition of removed needles.
- Lid of drainpipe should be kept closed when not in use.
- Deposit the needles into the opening in the top of the sharps pit. A one cubic meter pit will safely contain over 1 million used needles when correctly used.
- Install a fence around the concrete vault to prevent unauthorized access

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Figure 16: Design of protected sharp pits



Source: PATH

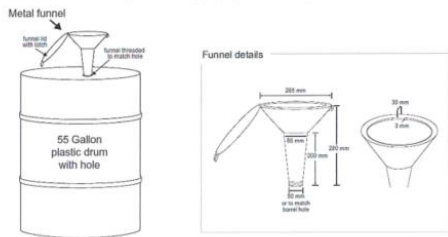
8.2.2 Design, construction and use of a protected sharps barrel

The following procedures for constructing and using a protected sharp pit are recommended:

- Manufacture a funnel: identify a manufacturer to make the funnel following the design drawings below.
- Select a barrel: barrels should be plastic, as metal barrels could rust over time.
- Identify an appropriate site for the barrel, which should be dry, secure, and convenient.
- Attach the funnel to the sharps barrel: screw the metal funnel into the hole on top of barrel.
- Rubber cement or other sealant may be used to help secure connection if needed.
- Funnel lid should be kept closed and locked when not in use.
- Deposit the needles into the opening in the top of the barrel. A barrel will safely contain over 150,000 used needles used needles when correctly used.
- Install a fence around the concrete vault to prevent unauthorized access

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Figure 17: Design of a protected sharp barrel



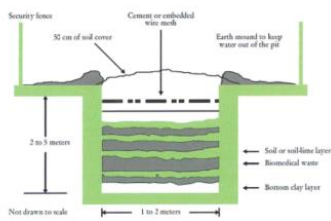
Source: PATH

8.3 Safe burial of sharps waste in controlled bury pit

This is the minimal approach to sharps waste disposal, which should be used only in remote and underdeveloped areas. Even in difficult circumstance, the health facility should establish the following basic principles:

- Locates the burial site away from the groundwater supply sources
- Restrict access to the disposal site by unauthorized persons
- Line the burial site with a material of low permeability, such as clay, dung and river silt, if available, to prevent pollution of shallow groundwater and nearby wells.
- Bury sharps waste and infectious waste only
- Each layer of waste should be covered by a layer of soil to prevent odors, rodents and insects.

Figure 18: Design of controlled bury pit



Source: World Bank

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Figure 19: Examples of controlled bury pits in health facilities in Luang Prabang



Photo credit: La Mith Song/World Bank

8.4 Encapsulation of sharps waste

Disposal of untreated sharps waste in municipal landfills is not advisable. However, if the healthcare facility has no other option, the sharps waste should be contained through encapsulation, which involves filling containers with waste, adding an immobilizing material, and sealing the containers. This process is appropriate for establishments for the disposal of sharps but not a long-term solution. The main advantage of the process is its effectiveness in reducing the risk of scavengers gaining access to the hazardous health-care waste (WHO, 2003).

The encapsulation process is described as follows:

- Fill containers with sharps waste up to three quarters level. Use either cubic boxes made of high-density polyethylene or metallic drums.
- Add an immobilizing material (such as plastic foam, bituminous sand, cement mortar, or clay material)
- Seal the container after the medium has dried
- Dispose the block containing sharps into landfill sites.

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**ພາກທີ I
ພາກສະເໜີ**

1.1 ສະພາບລວມ

ການພັດທະນາເສດຖະກິດ-ສັງຄົມ ແລະ ການປົກປັກຮັກສາສິ່ງແວດລ້ອມ ແມ່ນເປົ້າໝາຍໜຶ່ງທີ່ສຳຄັນຂອງການພັດທະນາແບບຍືນຍົງ ຂອງ ສປປ ລາວ ເພື່ອປັບປຸງຄຸນນະພາບຊີວິດທີ່ດີຂຶ້ນຂອງປະຊາຊົນ ແລະ ການຫຼຸດຜົນອອກຈາກຄວາມທຸກຍາກ. ໄປຄຽງຄູ່ກັບການພັດທະນາ ເສດຖະກິດ-ສັງຄົມ ໄດ້ມີການເພີ່ມຂຶ້ນ ຂອງບັນດາກິດຈະການໃນຂົງເຂດອຸດສາຫະກຳ, ພະລັງງານ, ບໍ່ແຮ່, ກະສິກຳ ແລະ ປ່າໄມ້ ທີ່ມີການນຳໃຊ້ເຄມີເຂົ້າໃນຂະບວນການຜະລິດ ແລະ ມີທ່າອ່ຽງທີ່ຈະເພີ່ມຂຶ້ນໄປເລື້ອຍໆ ສິ່ງກາຍເປັນສາເຫດຕົ້ນຕໍ ທີ່ພາໃຫ້ເກີດສິ່ງເສດເຫຼືອເຄມີເປັນພິດ ແລະ ອັນຕະລາຍ ທີ່ສົ່ງຜົນກະທົບຕໍ່ ສຸຂະພາບ, ຊີວິດຂອງບັນ, ຂີດ ແລະ ສິ່ງແວດລ້ອມ.

ເນື່ອງຈາກ ສປປ ລາວ ໄດ້ມີນະໂຍບາຍ ແລະ ວິໄລທິດ ເພື່ອສ້າງເປັນປະເທດອຸດສາຫະກຳທີ່ຍືນຍົງ ແລະ ກະສິກຳສະອາດ, ຄຸນນະພາບສິ່ງແວດລ້ອມທີ່ດີ ແລະ ເປັນປະເທດທີ່ໜ້າທ່ອງທ່ຽວ ແລະ ເຫັນໄດ້ມີນະໂຍບາຍສຳຄັນກ່ຽວກັບ ລັດຖະບານໄດ້ມີນະໂຍບາຍໃນການປົກປັກຮັກສາສິ່ງແວດລ້ອມ ດ້ວຍການສ້າງລະບຽບການ ກ່ຽວກັບການປົກປັກຮັກສາສິ່ງແວດລ້ອມ, ການຄຸ້ມຄອງເຄມີ ເວົ້າລວມ, ເວົ້າສະເພາະໄດ້ສ້າງຂໍ້ຕົກລົງ ວ່າດ້ວຍການຄຸ້ມຄອງ ແລະ ຕິດຕາມ ກວດກາ ການບໍາບັດ, ກຳຈັດ ສິ່ງເສດເຫຼືອເຄມີເປັນພິດ ແລະ ອັນຕະລາຍ. ຍ້ອນວ່າໃນ ສປປ ລາວ ໄດ້ເຂົ້າເປັນສາມາດສັນຕິສັນຍາສາກົນ ກ່ຽວກັບການຄຸ້ມຄອງເຄມີ ແລະ ສິ່ງເສດເຫຼືອອັນຕະລາຍ ເພື່ອຄຸ້ມຄອງສິ່ງເສດເຫຼືອດັ່ງກ່າວ. ການສ້າງຄູ່ມືແນະນຳສະບັບນີ້ ຈະເປັນເຄື່ອງມື ໃນການຈັດຕັ້ງປະຕິບັດ ແລະ ຜັນຂະຫຍາຍນະໂຍບາຍ, ກົດໝາຍ ແລະ ນິຕິກຳດັ່ງກ່າວ ໃຫ້ມີປະສິດທິພາບ ແລະ ປະສິດທິຜົນ.

1.2 ຈຸດປະສົງ

- ເພື່ອເອິດໃຫ້ຄູ່ປະກອບການ ແລະ ບຸກຄົນທີ່ກ່ຽວຂ້ອງກັບກິດຈະການໃນຂົງເຂດອຸດສາຫະກຳ, ພະລັງງານ, ບໍ່ແຮ່, ກະສິກຳ ແລະ ປ່າໄມ້ ມີຄວາມຮູ້, ຄວາມເຂົ້າໃຈ ແລະ ເປັນສໍາເລັດໃນການຄຸ້ມຄອງສິ່ງເສດເຫຼືອເຄມີເປັນພິດ ແລະ ອັນຕະລາຍ;
- ເພື່ອປ້ອງກັນ ແລະ ຫຼຸດຜ່ອນ ຜົນກະທົບຈາກ ສິ່ງເສດເຫຼືອເຄມີເປັນພິດ ແລະ ອັນຕະລາຍ.

1.3 ຫຼັກການຄຸ້ມຄອງສິ່ງເສດເຫຼືອເຄມີເປັນພິດ ແລະ ອັນຕະລາຍ

ການຄຸ້ມຄອງສິ່ງເສດເຫຼືອເຄມີເປັນພິດ ແລະ ອັນຕະລາຍ ໃຫ້ປະຕິບັດຕາມຫຼັກການ ດັ່ງນີ້:

- ຮັບປະກັນຄວາມສອດຄ່ອງກັບກົດໝາຍ, ແຜນພັດທະນາ ເສດຖະກິດ-ສັງຄົມ ແຫ່ງຊາດ, ສັນຍາສາກົນ ແລະ ສົນທິສັນຍາກົນ ທີ່ ສປປ ລາວ ເປັນພາຄີ ໂດຍຮັບປະກັນບໍ່ໃຫ້ມີຜົນກະທົບຕໍ່ ສຸຂະພາບ, ຊີວິດ, ຊັບສິນ, ສິ່ງແວດລ້ອມ ແລະ ສັງຄົມ ໃນການດຳເນີນທຸລະກິດ ແລະ ການນຳໃຊ້ເຄມີ;
- ນຳໃຊ້ບົດແຈ້ງ ແລະ ປະສົບປະການຈາກພາຍໃນ, ພາຍນອກ ແລະ ສາກົນ ເພື່ອມາຮຽນໃຊ້ໃນການຄຸ້ມຄອງສິ່ງເສດເຫຼືອເຄມີເປັນພິດ ແລະ ອັນຕະລາຍ;
- ຕ້ອງພັດທະນາຊັບພະຍາກອນມະນຸດ, ນຳໃຊ້ບຸກຄະລາກອນ ແລະ ພະນັກງານທີ່ມີຄວາມຮູ້ຄວາມສາມາດ ແລະ ມີສິນຖານຄວາມຮູ້ທາງດ້ານ ຊີວະ, ເຄມີ, ວິສະວະກຳເຄມີ ແລະ ວິສະວະກຳສິ່ງແວດລ້ອມ ເຂົ້າໃນການຈັດຕັ້ງປະຕິບັດວຽກງານການຄຸ້ມຄອງສິ່ງເສດເຫຼືອເຄມີເປັນພິດ ແລະ ອັນຕະລາຍ;
- ດັບກຳຂໍ້ມູນ, ຕິດຕາມກວດກາ ແລະ ອຸກຄູ່ສິ່ງເສດເຫຼືອເຄມີເປັນພິດໃນການຫຼຸດຜ່ອນ ແລະ ຄຸ້ມຄອງສິ່ງເສດເຫຼືອເຄມີເປັນພິດ ແລະ ອັນຕະລາຍ ຢ່າງຕໍ່ເນື່ອງ ແລະ ປະສານສົມທົບກັບຂະແໜງການທີ່ກ່ຽວຂ້ອງທັງສູນກາງ ແລະ ທ້ອງຖິ່ນ ເພື່ອເອິດໃຫ້ການຈັດຕັ້ງປະຕິບັດການຄຸ້ມຄອງດຳເນີນໄປດ້ວຍດີ.

**ພາກທີ II
ການບັນທຶກຂໍ້ມູນ ແລະ ສັນຍາລັກ ສິ່ງເສດເຫຼືອເຄມີເປັນພິດ
ແລະ ອັນຕະລາຍ**

2.1 ການບັນທຶກຂໍ້ມູນສິ່ງເສດເຫຼືອເຄມີເປັນພິດ ແລະ ອັນຕະລາຍ

ໃນການຄຸ້ມຄອງສິ່ງເສດເຫຼືອເຄມີເປັນພິດ ແລະ ອັນຕະລາຍ ທີ່ເກີດຈາກກິດຈະການ ໃນອົງກອນອຸດສາຫະກຳ, ພະລັງງານ, ບໍ່ແຮ່, ກະສິກຳ ແລະ ປ່າໄມ້ ຕ້ອງມີການບັນທຶກຂໍ້ມູນພື້ນຖານ ດັ່ງນີ້:

- ຊື່ສາມັນ/ຊື່ການຄ້າ, ແຫຼ່ງກຳເນີດ/ສະຖານທີ່ຜະລິດ/ຜູ້ຜະລິດ;
- ສ່ວນປະສົມ, ສູດ ແລະ ໝວດເລກເຄມີ;
- ຄຸນລັກສະນະທາງວັດຖຸ ແລະ ທາງເຄມີ, ລະດັບຄວາມເປັນພິດ;
- ວັນຜະລິດ, ວັນໝົດອາຍຸ;
- ຂໍ້ມູນອື່ນທີ່ຈຳເປັນ.

2.2 ສັນຍາລັກສິ່ງເສດເຫຼືອເຄມີເປັນພິດ ແລະ ອັນຕະລາຍ

ການເກັບຮັກສາສິ່ງເສດເຫຼືອເຄມີເປັນພິດ ແລະ ອັນຕະລາຍ ຕ້ອງມີການຕິດສະຫຼາກ ຫຼື ບ້າບທີ່ມີສັນຍາລັກ ທີ່ສະແດງໃຫ້ຮູ້ວ່າແມ່ນວັດຖຸ ຫຼື ເຄມີ ທີ່ເປັນອັນຕະລາຍ ແລະ ເປັນພິດ ສັນຍາລັກເດືອນແມ່ນນຳໃຊ້ 4 ລະບົບ ຄື:

1. ສັນຍາລັກ ຕາມລະບົບຂອງສະຫະພາບເອີຣົບ (European Economic Community "EEC");
2. ສັນຍາລັກ ຕາມລະບົບຂອງຄະນະສະຫະປະຊາຊາດເພື່ອການສົ່ງອອກ ດ້ານການຂົນສົ່ງວັດຖຸອັນຕະລາຍ (United Nation Committee of Export on the Transport of Dangerous Goods "UN");
3. ສັນຍາລັກ ເກືອບຄວາມເປັນອັນຕະລາຍ ສະມາຄົມປ້ອງກັນອັກຄີໄນແຫ່ງຊາດ (Nation Fire Protection Association "NFPA");

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	ຫາດທີ່ເປັນພິດ ໝາຍເຖິງ ເຄມີໃດໜຶ່ງຊຶ່ງປະຕິກິລິຍາທາງເຄມີຂອງມັນກໍ່ໃຫ້ເກີດຜົນກະທົບຕໍ່ສະບວນການມີຊີວິດເປັນເຫດໃຫ້ເສຍຊີວິດ, ບາດເຈັບ, ອຳນະພາດຊຶ່ງຕາວ ຫຼື ຖາວອນ.
	ສານອັນຕະລາຍ ແມ່ນສານທີ່ຫາກດົມ, ກິນ ຫຼື ສຳຜິດອາດຈະເກີດອັນຕະລາຍຕໍ່ສຸຂະພາບຢ່າງຮ້າຍແຮງ ພາໃຫ້ເຈັບປ່ວຍກະທັນຫັນ ຫຼື ຊໍ້າເຮືອ.
	ສານທີ່ເປັນອັນຕະລາຍຕໍ່ສິ່ງແວດລ້ອມ ແມ່ນສານທີ່ປ່ອຍອອກສູ່ສິ່ງແວດລ້ອມໃດໜຶ່ງ ຈະເຮັດໃຫ້ເກີດຄວາມເສຍຫາຍ ຕໍ່ອົງປະກອບຂອງສິ່ງແວດລ້ອມນັ້ນ.

2. ສັນຍາລັກ ຕາມລະບົບຂອງຄະນະສະຫະປະຊາຊາດເພື່ອ ການສົ່ງອອກ ດ້ານການຂົນສົ່ງວັດຖຸອັນຕະລາຍ United Nation Committee of Export on the Transport of Dangerous Goods (UN)	
ສັນຍາລັກ	ຄວາມໝາຍຂອງສັນຍາລັກ
	ສານລະເບີດ ແມ່ນສານທີ່ຢູ່ໃນພາວະແຮງ, ແຫຼວ ຫຼື ສານທີ່ສາມາດເກີດປະຕິກິລິຍາທາງເຄມີດ້ວຍໄຕມັນເອງ ຊຶ່ງເຮັດໃຫ້ເກີດແກ້ສທີ່ມີຄວາມດັນ ແລະ ຄວາມຮ້ອນຢ່າງໄວ ພາໃຫ້ເກີດການລະເບີດໄດ້.

5






4. ສັນຍາລັກ ເກືອບຄວາມເປັນອັນຕະລາຍ ຕາມລະບົບເອກະພາບສາກົນທົ່ວໂລກ (Global Harmonize System of Classification and Labelling of Chemicals "GHS").

ລາຍລະອຽດຂອງສັນຍາລັກໃນແຕ່ລະ ລະບົບ ມີດັ່ງນີ້:

European Economic Community (EEC)	United Nation Committee of Export on the Transport of Dangerous Goods (UN)	Nation Fire Protection Association (NFPA)	Global Harmonize System of Classification and Labelling of Chemicals (GSH)
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1. ສັນຍາລັກ ຕາມລະບົບຂອງສະຫະພາບເອີຣົບ European Economic Community (EEC)	
ສັນຍາລັກ	ຄວາມໝາຍຂອງສັນຍາລັກ
	ເຄມີທີ່ລະເບີດໄດ້ ໝາຍເຖິງ ເຄມີເມື່ອເກີດປະຕິກິລິຍາ ຫຼື ຈະປ່ອຍພະລັງງານຢ່າງຫຼວງຫຼາຍ ຊຶ່ງກໍ່ໃຫ້ເກີດລະເບີດ.
	ຫາດໄວໄຟ ໝາຍເຖິງ ຫາດທີ່ສາມາດຕິດໄຟໄດ້ງ່າຍເມື່ອໄດ້ຮັບຄວາມຮ້ອນ ຫຼື ປະກາຍໄຟ ແລະ ສາມາດລຸກໄໝ້ໄດ້ເອງ ຊຶ່ງມີທັງ ຫາດອາຍ, ຫາດແຫຼວ ແລະ ຫາດແຮງ.
	ເຄມີກັດເວ້ອາຍ ໝາຍເຖິງ ເຄມີທີ່ສາມາດກັດເວ້ອາຍຢ່າງລູນແຮງຕໍ່ຜິວໜັງ ແລະ ໂລຫະ ທີ່ມີຄວາມເປັນກົດ ບໍ່ເກີນ 2 ຫຼື ມີຄວາມເປັນຕ່າງ ແຕ່ 11,5-14.

4

		ແກ້ສໄວໄຟ ແມ່ນຫາດທີ່ເປັນອາຍເສີມບູນມີຄວາມດັນ 101.3 kPa ທີ່ອຸນຫະພູມ 20°C ແລະ ສາມາດຕິດໄຟເມື່ອປະສົມກັບອາກາດ 13% ຫຼື ຕໍ່າກວ່າ 13% ຫຼື ມີລະດັບຄວາມກວ້າງທີ່ສາມາດຕິດໄຟໄດ້ 12% ຫຼື ຫຼາຍກວ່ານັ້ນ.
	ແກ້ສບໍ່ໄວໄຟ ແລະ ບໍ່ເປັນພິດ ໝາຍເຖິງ ແກ້ສ ມີຄວາມດັນບໍ່ສູງ 280 kPa ທີ່ອຸນຫະພູມ 20°C ຫຼື ໃນພາວະເປັນຫາດແຫຼວໃນອຸນຫະພູມຕໍ່າ.	
	ຫາດແຫຼວໄວໄຟ ແມ່ນຫາດແຫຼວ ທີ່ມີແປວໄຟ (Flash Point) ຕໍ່າກວ່າ 60,5°C ຈາກການທົດສອບແປວໄຟ ດ້ວຍວິທີແບບປິດ (Closed-cup Test) ແລະ ບໍ່ເກີນ 65,6°C ຈາກການທົດສອບ, ແປວໄຟດ້ວຍວິທີແບບເປີດ (Opened-cup Test).	
	ຫາດແຮງໄວໄຟ ເປັນຫາດທີ່ຕິດໄຟໄດ້ເອງໃນສະພາບປົກກະຕິ ຫຼື ເກີດຄວາມຮ້ອນສູງ, ຈາກການປະຕິກິລິຍາກັບອາກາດ, ນໍ້າ ຫຼື ມີການສຽດສີ ທີ່ພາໃຫ້ເກີດຄວາມຮ້ອນ.	

6

	<p>ສານອຳກຸຣິໄດແມ່ນທາດແຂງ, ທາດແຫຼວ ທີ່ບໍ່ສາມາດເກີດໄຟ ດ້ວຍຕົວມັນເອງ ຫຼື ທາດແຂງ, ທາດແຫຼວທີ່ບໍ່ສາມາດມີອິດທິຊົງເຈນສອງອາຕອມ ທີ່ຊ່ວຍໃຫ້ຈັດຕັ້ງອື່ນເກີດການລຸກໄໝ້ ຫຼື ເກີດການລະເບີດຢ່າງຮຸນແຮງ.</p>
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3. ສັນຍາລັກ ເດືອນຄວາມເປັນອັນຕະລາຍ ຂອງສະມາຄົມປ້ອງກັນອັກຄີໄຟແຫ່ງຊາດ Nation Fire Protection Association (NFPA)

ຕາຕະລາງ ອະທິບາຍຄວາມໝາຍຂອງສັນຍາລັກ ລະບົບ Nation Fire Protection Association (NFPA)

ສີແດງ ສະແດງເຖິງ ລະດັບ ຄວາມໄວໄຟ (Flammability)	ສີຟ້າ ສະແດງເຖິງ ຄວາມເປັນ ອັນຕະລາຍຕໍ່ ສຸຂະພາບ (Health)	ສີເຫຼືອງ ສະແດງເຖິງ ການ ເກີດປະຕິກິລິຍາ (Reactivity)	ສີຂາວ ສະແດງເຖິງຄຸນ ລັກສະນະຂອງເຕ ມີ (Special notice)
<p>ມີ 5 ລະດັບຄື:</p> <ul style="list-style-type: none"> - ລະດັບ 0 ບໍ່ໄດ້ໄຟ; - ລະດັບ 1 ຈິດໄຟໃຖ່ ໃນອຸນຫະ ຄຸນສູງກວ່າ 93,3°C ຫຼື 200°; - ລະດັບ 2 ຈິດໄຟໃຖ່ ໃນອຸນຫະຄຸນສູງກວ່າ 93,3°C ຫຼື 200°; 	<p>ມີ 5 ລະດັບຄື:</p> <ul style="list-style-type: none"> - ລະດັບ 0 ບໍ່ເປັນອັນຕະລາຍຕໍ່ສຸຂະພາບ; - ລະດັບ 1 ອັນຕະລາຍຕໍ່າ; - ລະດັບ 2 ອັນຕະລາຍປານກາງ; 	<p>ມີ 5 ລະດັບຄື:</p> <ul style="list-style-type: none"> - ລະດັບ 0 ມີຄວາມສະຫງ່າ; - ລະດັບ 1 ບໍ່ສະຫງ່າເມື່ອໄດ້ສືບຄວາມອື່ອນ; - ລະດັບ 2 ການປ່ຽນແປງທາງເຄມີຢ່າງຮຸນແຮງ; 	<p>ສະແດງເຖິງຄຸນລັກສະນະຂອງເຕມີ ເປັນຕົ້ນອາຊິດ, ດັງ, ກິດເບື້ອຍ, ສານອຳກຸຣິໄດ, ກຳມັນຕະພາບລັງສີ ຫຼື ບໍ່ໃຫ້ຖືກໄມ້.</p>

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 <p>Corrosion</p>	ກັດເນື້ອເນື່ອງໜັງ ແລະ ໄລຫະ
 <p>Environmental Hazard</p>	ອັນຕະລາຍຕໍ່ສິ່ງແວດລ້ອມທາງນ້ຳ
 <p>Health Hazard</p>	ອັນຕະລາຍຕໍ່ສຸຂະພາບ
 <p>Gas Cylinder</p>	ທາດອາຍພາຍໃຕ້ຄວາມດັນ
 <p>Exclamation Mark</p>	ລະບົງ

2.3. ສະຫຼາກຕິດພາຊະນະບັນຈຸ ສິ່ງເສດເຫຼືອເຕມີເປັນພິດ ແລະ ອັນຕະລາຍ

ພາຊະນະບັນຈຸ ສິ່ງເສດເຫຼືອເຕມີເປັນພິດ ແລະ ອັນຕະລາຍ ຕ້ອງຕິດສະຫຼາກໃສ່ເພື່ອສະແດງເຖິງລັກສະນະຄວາມອັນຕະລາຍໃນພາຊະນະບັນຈຸສິ່ງປະກອບດ້ວຍສັນຍາລັກຕ່າງໆ ເຊັ່ນ: ສັນຍາລັກເດືອນ, ຂໍ້ຄວາມເດືອນອັນຕະລາຍ, ຂໍ້ຄວາມເດືອນໃຫ້ລະບົງ, ໂຕຊີບອກຜະລິດຕະພັນ, ຂໍ້ມູນໂອ້ງງານຜະລິດ ແລະ ຂໍ້ມູນອື່ນທີ່ຈຳເປັນ.

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- ລະດັບ 3 ຈິດໄຟໃຖ່ໃນອຸນຫະ ຄຸນຕໍ່າກວ່າ 37,3°C ຫຼື 100°;	- ລະດັບ 3 ອັນຕະລາຍສູງ;	- ລະດັບ 3 ອາດເກີດການລະເບີດເມື່ອໄດ້ສືບຄວາມອື່ອນ ຫຼື ການກະຕຸ້ນ;
- ລະດັບ 4 ຈິດໄຟໃຖ່ ໃນອຸນຫະຄຸນຕໍ່າກວ່າ 22,7°C ຫຼື 73°.	- ລະດັບ 4 ອັນຕະລາຍເຖິງອັນເສຍຊີວິດ.	- ລະດັບ 4 ອາດເກີດການລະເບີດ.

4. ສັນຍາລັກ ເດືອນຄວາມເປັນອັນຕະລາຍ ຕາມລະບົບເອກະພາບສາກົນທົ່ວໂລກ Global Harmonize System of Classification and Labelling of Chemicals (GSH)

ສັນຍາລັກ	ຄວາມໝາຍຂອງສັນຍາລັກ
 <p>Flammable</p>	ໄວໄຟ
 <p>Explosion hazard</p>	ລະເບີດ
 <p>Flame over circle</p>	ອຳກຸຣິໄດ

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ລະບົບຂອງສະຫຼາກກ່ຽວກັບສິ່ງເສດເຫຼືອເຕມີເປັນພິດ ແລະ ອັນຕະລາຍທີ່ຄວນຮູ້ມີດັ່ງນີ້:

ສະຫຼາກສານເຕມີຕາມລະບົບ Global Harmonize System of Classification and Labelling of Chemicals (GSH)



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**ພາກທີ III
ສະຖານທີ່ເກັບຮັກສາ ແລະ ຂໍ້ຄວນລະວັງ**

3.1 ສະຖານທີ່ເກັບຮັກສາ

ສະຖານທີ່ເກັບຮັກສາສິ່ງເສດເຫຼືອເກມີເປັນພິດ ແລະ ອັນຕະລາຍ ດ້ອງມີເງື່ອນໄຂ ດັ່ງນີ້:

- ຢູ່ຫ່າງຈາກບໍລິເວນອຸມຊົນ ທີ່ມີປະຊາຊົນອາໄສຢູ່ໜ່ວຍໜຶ່ງ, ຫ່າງໄກຈາກບໍລິເວນແມ່ນໍ້າ, ແຫຼ່ງນໍ້າ, ຫ່າງຈາກບໍລິເວນທີ່ມີໄຟຖ້ວມ, ເຂດພູມສັນຖານ, ແລະ ແຫຼ່ງອັນຕະລາຍອື່ນໆ ທີ່ເກີດຈາກພາບນອກສະຖານທີ່;
- ມີເສັ້ນທາງທີ່ສະດວກໃນການຂົນສົ່ງ ແລະ ສາມາດແກ້ໄຂເຫດການສູກເສີນ;
- ມີສິ່ງອໍານວຍຄວາມສະດວກຢ່າງພຽງພໍ;
- ບໍ່ຄວນສ້າງສຳນັກງານ, ຫ້ອງການ, ອໍານອາຫານ ແລະ ອື່ນໆ ຢູ່ໃນສະຖານທີ່ເກັບມ້ຽງສິ່ງເສດເຫຼືອເກມີເປັນພິດ ແລະ ອັນຕະລາຍ.

3.2 ອາຄານເກັບຮັກສາສິ່ງເສດເຫຼືອເກມີເປັນພິດ ແລະ ອັນຕະລາຍ

ອາຄານເກັບຮັກສາສິ່ງເສດເຫຼືອເກມີເປັນພິດ ແລະ ອັນຕະລາຍ ດ້ອງມີເງື່ອນໄຂ ດັ່ງນີ້:

- ພື້ນທີ່ຂອງອາຄານ ດ້ອງມີການເຮັດຄວາມສະອາດເປັນປະຈໍາ, ພື້ນທີ່ດັ່ງກ່າວ ດ້ອງມີຂັ້ນອ້ອມຮອບສະຖານທີ່ຢ່າງແໜ້ນໜາ, ມີຄວາມໜຶ້ນຄັງ ແລະ ດ້ອງບົວລະບົດຮັກສາໃຫ້ຢູ່ໃນສະພາບດີ;
- ມີການແຍກ ແລະ ເກັບມ້ຽງເພື່ອອັບປະກັນບໍ່ໃຫ້ມີການຮົ່ວໄຫຼອອກສູ່ພຳນະຊາດ;
- ມີການເວນຍາມ ເພື່ອຕິດຕາມກວດກາຢ່າງເປັນປົກກະຕິ ພ້ອມທັງຕິດຕັ້ງອຸປະກອນປ້ອງກັນອັກຄີໄໝ ໃຫ້ພຽງພໍ;
- ອາຄານເກັບຮັກສາແຕ່ລະຫຼັງດ້ອງຕັ້ງຢູ່ຫ່າງກັນ ເພື່ອຄວາມສະດວກໃນການເຄື່ອນຍ້າຍ, ປ້ອງກັນ ແລະ ສະກັດກັ້ນອັກຄີໄໝ ແລະ ການແກ້ໄຂເຫດສູກເສີນ.

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- ວັດສະດຸທີ່ນໍາໃຊ້ໃນການສ້າງຝາເກັບມ້ຽງ ຄວນບໍ່ຕິດໄຟໄດ້ງ່າຍ ເຊັ່ນ: ໄຍໄລຫະ ຫຼື ໄຍແກ້ວ.



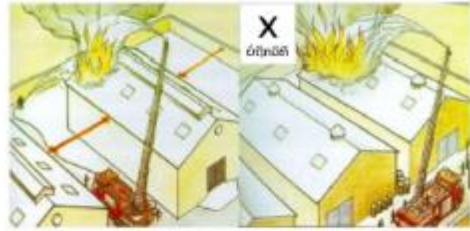
ຮູບພາບ 2 ຝາສາງເກັບມ້ຽງ

3.3.2 ພື້ນສາງເກັບມ້ຽງ

ພື້ນສາງເກັບມ້ຽງຄວນອອກແບບ ແລະ ສ້າງ ດັ່ງນີ້:

- ດ້ອງບໍ່ດູດຊຶມອາກາດແຫຼ່ງຕ່າງໆ;
- ດ້ອງຄາບພຽງ, ບໍ່ມີນ, ບໍ່ມີອ່ອນແຕກແຕງ, ອະນາໄມງ່າຍ;
- ສາມາດປ້ອງກັນການຮົ່ວໄຫຼ ຂອງສິ່ງເສດເຫຼືອເກມີເປັນພິດ ແລະ ອັນຕະລາຍ.

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ຮູບພາບ 1 ສະຖານທີ່ເກັບມ້ຽງ ເກມີເປັນພິດ ແລະ ອັນຕະລາຍ

3.3 ສາງເກັບມ້ຽງສິ່ງເສດເຫຼືອເກມີເປັນພິດ ແລະ ອັນຕະລາຍ

ສາງເກັບມ້ຽງສິ່ງເສດເຫຼືອເກມີເປັນພິດ ແລະ ອັນຕະລາຍ ຄວນອອກແບບ ແລະ ສ້າງໃຫ້ເໝາະສົມສໍາລັບເກັບມ້ຽງສິ່ງເສດເຫຼືອດັ່ງກ່າວ ແລະ ຖືກຕ້ອງຕາມເຕັກນິກການກໍ່ສ້າງທີ່ກຳນົດໄວ້ໃນລະບຽບການສະເໜະ ໂດຍຈັດໃຫ້ມີທາງອອກສູກເສີນພຽງພໍ, ພື້ນທີ່ເກັບຄວນມີການຈຳກັດ ໂດຍແບ່ງອອກເປັນຫ້ອງ ຫຼື ເປັນສິດສ່ວນ ເພື່ອເກັບມ້ຽງ ສິ່ງເສດເຫຼືອເກມີເປັນພິດ ແລະ ອັນຕະລາຍ ແຕ່ລະປະເພດ ແລະ ເກມີທີ່ບໍ່ສາມາດເກັບຄວມກັນໄດ້, ວັດສະດຸກໍ່ສ້າງອາຄານຄວນເປັນສະນິດທີ່ບໍ່ໄວໄຟ, ໂຄງສ້າງອາຄານຄວນເຮັດດ້ວຍເບຕົງເສີມເຫຼັກ, ຖ້າເປັນໂຄງເຫຼັກຕ້ອງຫຸ້ມຫໍ່ດ້ວຍວັດສະດຸກັນຄວາມອ້ອມ.

3.3.1 ຝາສາງເກັບມ້ຽງ

ການສ້າງຝາສາງເກັບມ້ຽງຄວນເອົາໃຈໃສ່ ດັ່ງນີ້:

- ຝາສາງດ້ານນອກ ດ້ອງສ້າງໃຫ້ແຂງແຮງ ດ້ວຍເບຕົງເສີມເຫຼັກ ຫຼື ແຜ່ນໄລຫະທີ່ອັນຫນາຕໍ່ການລຸກໄໝ້;
- ຝາສາງດ້ານໃນ ດ້ອງມີຄວາມຫັນທານຕໍ່ການລຸກໄໝ້ຢ່າງໜ້ອຍ 60 ນາທີ ຫຼື ວິທີການອື່ນທີ່ສາມາດປ້ອງກັນການລຸກໄໝ້ໄດ້;

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ຮູບພາບ 3 ພື້ນສາງເກັບມ້ຽງ

3.3.3 ຫຼັງຄາສາງເກັບມ້ຽງ

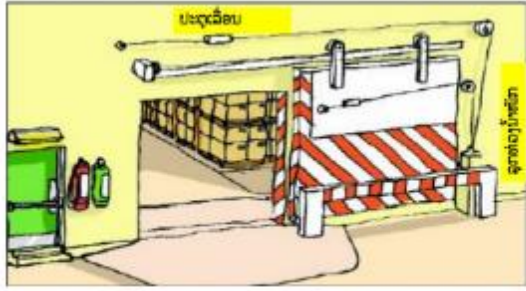
ຫຼັງຄາສາງເກັບມ້ຽງຄວນອອກແບບ ແລະ ສ້າງ ດັ່ງນີ້:

- ສາມາດເກັບມືນໄດ້, ມີລະບົບລະບາຍອາກາດ ແລະ ຄວາມອ້ອມໄດ້ດີ;
- ໂຄງສ້າງຂອງຫຼັງຄາຄວນນໍາໃຊ້ວັດສະດຸທີ່ບໍ່ຕິດໄຟ ເປັນຕົ້ນ ໄມ້ເນື້ອແຂງ ຫຼື ວັດສະດຸຊະນິດພິເສດ;
- ວັດສະດຸທີ່ໃຊ້ມຸງ ຄວນມີນໍ້າໜັກເບົາ, ສາມາດຍຸບໂຕໄດ້ເມື່ອເກີດໄຟໄໝ້ ເພື່ອຊ່ວຍໃນການລະບາຍຄວາມອ້ອມ ແລະ ຄວັນອອກໄຟໄດ້. ຖ້າເປັນຫຼັງຄາແຂງ ຄວນມີລະບົບລະບາຍອາກາດຢ່າງໜ້ອຍ 2 ສ່ວນອ້ອມ ຂອງພື້ນທີ່ຫຼັງຄາ;
- ລະບົບລະບາຍອາກາດ ດ້ອງເປີດໄວ້ຖ້າວອນ ແລະ ເປີດໄດ້ດ້ວຍມື ຫຼື ເປີດອັດຕະໂນມັດ ໃນເວລາໄຟໄໝ້ ເພື່ອຊ່ວຍໃນການລະບາຍຄວັນ ແລະ ຄວາມອ້ອມ.

3.3.4 ປະຕູກັນໄຟ

ປະຕູກັນໄຟ ດ້ອງທົນໄຟໄດ້, ທົນຄວາມອ້ອມ ແລະ ສາມາດເປີດໄດ້ອັດຕະໂນມັດເມື່ອເກີດໄຟໄໝ້ ແລະ ບໍ່ມີສິ່ງກົດຂວາງ.

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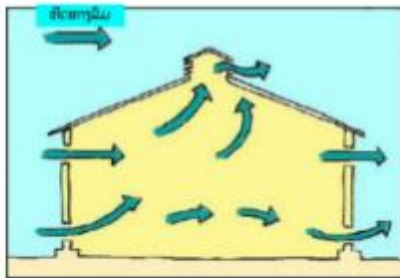
ຮູບພາບ 4 ປະຕູກັ້ນໄຟ

3.3.5 ທາງອອກສຸກເສີນ

ສະຖານທີ່, ອາຄານ ແລະ ສາງເກັບມ້ຽນ ສິ່ງເສດເຫຼືອເຕມິເປັນພິດ ແລະ ອັນຕະລາຍ ຕ້ອງມີການສ້າງທາງອອກສຸກເສີນ ເພື່ອຮັບມືກັບເຫດການສຸກເສີນອື່ນໆໂດຍ ທີ່ອາດຈະເກີດຂຶ້ນ ຮັບປະກັນບໍ່ໃຫ້ມີຄົນຕິກຕ້າງຢູ່ໃນອາຄານ. ທາງອອກສຸກເສີນ ຕ້ອງອອກແບບ ແລະ ສ້າງຕາມເງື່ອນໄຂ ດັ່ງນີ້:

- ມີເຄື່ອງໝາຍທາງອອກສຸກເສີນທີ່ເຫັນໄດ້ຊັດເຈນ;
- ສາມາດເປີດງ່າຍ ແລະ ເຫັນໄດ້ໃນຄວາມມືດ ຫຼື ມືດລືນໜາແໜ້ນ;
- ສາມາດເປີດໄດ້ສອງທາງ.

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ຮູບພາບ 6 ການລະບາຍອາກາດ

3.3.7 ການລະບາຍນໍ້າ

ສະຖານທີ່, ອາຄານ ແລະ ສາງເກັບມ້ຽນ ຕ້ອງຮັບປະກັນໃຫ້ມີລະບົບການລະບາຍນໍ້າທີ່ດີ ໂດຍມີທໍ່ລະບາຍ ນໍ້າແບບປິດ ເພື່ອປ້ອງກັນບໍ່ໃຫ້ນໍ້າທີ່ບັນເປື້ອນຈາກເຕມິ ແລະ ນໍ້າທີ່ໃຊ້ມອດໄຟ ໃຫ້ລົງສູ່ແຫຼ່ງນໍ້າ ພ້ອມກັນນັ້ນ ຕ້ອງແຍກລະບົບລະບາຍນໍ້າໃນອາຄານ ອອກຈາກລະບົບລະບາຍນໍ້າບັນ.

3.3.8 ແສງສະຫວ່າງ ແລະ ອຸປະກອນໄຟຟ້າ

ສະຖານທີ່, ອາຄານ ແລະ ສາງເກັບມ້ຽນ ຕ້ອງມີແສງສະຫວ່າງ ແລະ ອຸປະກອນໄຟຟ້າໃຫ້ພຽງພໍ ເພື່ອຮັບປະກັນຄວາມປອດໄພ ໃນການເກັບຮັກສາສິ່ງເສດເຫຼືອເຕມິເປັນພິດ ແລະ ອັນຕະລາຍ. ການຕິດຕັ້ງອຸປະກອນໄຟຟ້າ ຕ້ອງປະຕິບັດ ດັ່ງນີ້:

- ຫຼີກເວັ້ນການຕິດຕັ້ງໄຟຟ້າແບບຊິ່ວຄາວ ແຕ່ຖ້າມີຄວາມຈໍາເປັນຄວນຕິດຕັ້ງໃຫ້ໄດ້ມາດຕະຖານ;
- ອຸປະກອນໄຟຟ້າຕ້ອງຕິດຕັ້ງໃນຈຸດທີ່ປອດໄພ ຫຼີກເວັ້ນການວາງອຸປະກອນໄຟຟ້າໃນບໍລິເວນທີ່ມີນໍ້າ ຫຼື ປຽກ;

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ຮູບພາບ 5 ທາງອອກສຸກເສີນ

3.3.6 ການລະບາຍອາກາດ

ສະຖານທີ່, ອາຄານ ແລະ ສາງເກັບມ້ຽນ ຕ້ອງຮັບປະກັນໃຫ້ມີການລະບາຍອາກາດ ໂດຍປະຕິບັດຕາມເງື່ອນໄຂ ດັ່ງນີ້:

- ຕ້ອງມີລະບົບລະບາຍອາກາດທີ່ດີ ສາມາດລະບາຍອອກໄດ້ຫຼາຍຫົກທາງ;
- ການລະບາຍອາກາດ ຕ້ອງໃຫ້ພຽງພໍ, ມີຊ່ອງລະບາຍອາກາດຢູ່ເທິງຫຼັງຄາ, ຝາອາຄານທີ່ຕໍ່ລົງມາຈາກຫຼັງຄາ ແລະ ບໍລິເວນໃກ້ຂຶ້ນຕີນ.

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- ຄວນຕໍ່ສາບຕີນ ເພື່ອປ້ອງກັນໄຟຟ້າລົດຈັງຈອນ.

3.3.9 ຄວາມຮ້ອນ

ໂດຍທົ່ວໄປສາງເກັບມ້ຽນສິ່ງເສດເຫຼືອເຕມິເປັນພິດ ແລະ ອັນຕະລາຍ ຕ້ອງມີອາກາດທີ່ບໍ່ຮ້ອນ, ແຕ່ເມື່ອມີຄວາມຈໍາເປັນ ຕ້ອງຮັກສາລະບາຍ ໃຫ້ບ່ອນເກັບຮັກສາມີຄວາມຮ້ອນ ເພື່ອປ້ອງກັນສານແຂງຕົວ ຕ້ອງປະຕິບັດ ດັ່ງນີ້:

- ການໃຊ້ລະບົບຄວາມຮ້ອນຕ້ອງເປັນແບບບໍ່ສໍາພັດກັບຄວາມຮ້ອນໂດຍກົງ ແລະ ເປັນວິທີທີ່ປອດໄພ ເຊັ່ນ: ອາຍນໍ້າ, ນໍ້າຮ້ອນ ແລະ ລົມຮ້ອນ;
- ແຫຼ່ງໃຫ້ຄວາມຮ້ອນ ຕ້ອງຢູ່ພາຍນອກອາຄານທີ່ເກັບສິ່ງເສດເຫຼືອເຕມິເປັນພິດ ແລະ ອັນຕະລາຍ;
- ເຄື່ອງເຮັດຄວາມຮ້ອນ ຫຼື ທ່ອຍນໍ້າ ຕ້ອງຕິດຕັ້ງໃນບໍລິເວນທີ່ບໍ່ເຮັດໃຫ້ຄວາມຮ້ອນສໍາພັດໂດຍກົງກັບສານເຕມິ.

3.3.10 ອຸປະກອນມອດໄຟ

ສະຖານທີ່, ອາຄານ ແລະ ສາງເກັບມ້ຽນ ຕ້ອງຮັບປະກັນໃຫ້ມີອຸປະກອນມອດໄຟ ໂດຍປະຕິບັດ ດັ່ງນີ້:

- ຖັງດັບໄຟມີຂະໜາດ ແລະ ຈໍານວນທີ່ເໝາະສົມກັບປະລິມານສິ່ງເສດເຫຼືອເຕມິເປັນພິດ ແລະ ອັນຕະລາຍ ທີ່ເກັບມ້ຽນ ແລະ ຕ້ອງໄດ້ຮັບການກວດກາ ຫຼາກ 6 ເດືອນ; ຕ້ອງຕິດຕັ້ງໃນສະຖານທີ່ ທີ່ເໝາະສົມພ້ອມທັງມີແຜນຜັງ ທີ່ສະແດງດ້າແຫ່ງຂອງຖັງດັບໄຟອື່ນໆ;
- ຕ້ອງເຄື່ອນຍ້າຍງ່າຍ ແລະ ສະດວກຕໍ່ການນໍາໃຊ້;
- ຕ້ອງມີປ້າຍສີແດງ ເພື່ອບອກທາງໄປຫາບ່ອນເກັບອຸປະກອນ.

3.3.11 ລະບົບນໍ້າມອດໄຟ

ສະຖານທີ່, ອາຄານ ແລະ ສາງເກັບມ້ຽນ ຕ້ອງຮັບປະກັນໃຫ້ມີລະບົບນໍ້າມອດໄຟ ໂດຍປະຕິບັດ ດັ່ງນີ້:

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- ລະບົບທີ່ຈະຈາຍນ້ຳມອດໄຟ ຕ້ອງຕິດຕັ້ງໃນຕໍາແໜ່ງທີ່ສາມາດສືບຕໍ່ນໍ້າໄດ້ຢ່າງກະຈາຍ, ຄວບຄຸມພື້ນທີ່ ແລະ ມີໄລຍະຫ່າງລະຫວ່າງທີ່ວິໄນນໍ້າແຕ່ລະຈຸດປະມານ 50 ແມັດ ໂດຍເອີ້ນກັບຄວາມຍາວຂອງສາຍ ແລະ ຄວາມຕື່ມຂອງນໍ້າ;
- ສາຍສົ່ງນໍ້າຕ້ອງມີຄວາມຍາວພຽງພໍທີ່ຄວບຄຸມໄຟໄດ້ ແລະ ສາມາດໃຊ້ໄດ້ທັນທີເມື່ອມີເຫດການອຸກເຜີຍ;
- ສາຍສົ່ງນໍ້າ ແລະ ບົ່ງສືດນໍ້າ ຄວນເປັນແບບດຽວກັນບຸລະກອນທີ່ໃຊ້ ໃນໜ່ວຍປ້ອງກັນໄຟຂອງຕ້ອງຖິ້ມນີ້;
- ປະລິມານນໍ້າທີ່ໃຊ້ມອດໄຟ ຕ້ອງມີພຽງພໍໃນການມອດໄຟຢ່າງໜ້ອຍ 2 ຊົ່ວໂມງ, ການອອກແບບ ແລະ ຕິດຕັ້ງລະບົບມອດໄຟ ຕ້ອງໄດ້ຮັບການອັບຮອງຈາກວິສະວະກອນ ຫຼື ໜ່ວຍງານທີ່ກ່ຽວຂ້ອງ.

3.4 ຂໍ້ຄວນລະວັງໃນການເກັບມ້ຽນສິ່ງເສດເຫຼືອເຄມີເປັນພິດ ແລະ ອັນຕະລາຍ

ໃນການເກັບຮັກສາ ສິ່ງເສດເຫຼືອເຄມີເປັນພິດ ແລະ ອັນຕະລາຍ ຄວນລະວັງດັ່ງນີ້:

- ບໍ່ຄວນເກັບໄວ້ໃນພາຣະນະທີ່ມີຄວາມສູງກວ່າການເກີດອຸບັດຕິເຫດໄດ້ງ່າຍ;
- ບໍ່ຄວນເກັບມ້ຽນສິ່ງເສດເຫຼືອເຄມີເປັນພິດ ແລະ ອັນຕະລາຍ ຮ່ວມກັບສິ່ງເສດເຫຼືອອື່ນໄປ;
- ບໍ່ຄວນຖິ້ມປະປຶບກັນ ອາດຈະເຮັດໃຫ້ເກີດມີປະຕິກິລິຍາ ແລະ ເກີດການລຸກໄໝ້ໄດ້;
- ບໍ່ຄວນນໍາໃຊ້ພາຣະນະບັນຈຸທີ່ໃຊ້ແລ້ວ ກັບມາໃຊ້ຄືນໃໝ່.

- ຕ້ອງມີອຸປະກອນສຸກເສີນ ເພື່ອປ້ອງກັນອັກຄີໄຟ ແລະ ມີເສັ້ນທາງໜີໄຟ;
- ສະຖານທີ່ເກັບຮັກສາຕ້ອງມີຝາສາງທີ່ທຽບແໜ້ນ ເພື່ອປ້ອງກັນໃນກໍລະນີໄຟໄໝ້ ແລະ ປ້ອງກັນການຮົ່ວຊິມ;
- ການຈັດວາງພາຣະນະບັນຈຸສິ່ງເສດເຫຼືອເຄມີເປັນພິດ ແລະ ອັນຕະລາຍ ບໍ່ຄວນສູງກວ່າ 3 ແມັດ.

4.3 ຫຼັກການເກັບຮັກສາພາຍນອກອາຄານ

ການເກັບຮັກສາສິ່ງເສດເຫຼືອເຄມີເປັນພິດ ແລະ ອັນຕະລາຍພາຍນອກອາຄານ ຕ້ອງປະຕິບັດຕາມຫຼັກການ ດັ່ງນີ້:

- ບໍ່ຄວນເກັບສິ່ງເສດເຫຼືອເຄມີເປັນພິດ ແລະ ອັນຕະລາຍ ຢູ່ເຂດທີ່ມີອາກາດຮ້ອນ ເພື່ອຫຼີກລ້ຽງບໍ່ໃຫ້ສໍາຜັດກັບອຸນຫະພູມສູງ;
- ບໍ່ໃຫ້ມີການປົນເຍື່ອນລົງສູ່ດິນ ແລະ ນໍ້າ;
- ເຂດພື້ນທີ່ເກັບຮັກສາ ຕ້ອງມີການປົກຫຸ້ມດ້ວຍວັດສະດຸທີ່ທົນທານຕໍ່ນໍ້າ ແລະ ຄວາມຮ້ອນ, ບໍ່ຄວນໃຊ້ຢ່າງປົກຫຸ້ມເພາະຈະເນື້ອຍຸ່ນ ເມື່ອອາກາດຮ້ອນ;
- ຕ້ອງມີລະບົບຄວບຄຸມລະບາຍນໍ້າ;
- ຕ້ອງໄດ້ຮັບການກວດກາເປັນປົກກະຕິກ່ຽວກັບບັນຫາການຮົ່ວໄຫຼ;
- ເພື່ອຫຼີກລ້ຽງການເກີດຄວາມຮ້ອນ ຄວນເກັບຮັກສາໄວ້ໃນທີ່ໄລ່ງ ແລະ ອາກາດປອດໄປງ ແຕ່ຕ້ອງມີລະບົບປ້ອງກັນການຮົ່ວໄຫຼ ທີ່ເກັບຮັກສາໄວ້ໃນອາຄານຕ່າງໆ ແລະ ມີແຜນປ້ອງກັນການມອດໄຟ ຕໍ່ທາດເຄມີທີ່ເປັນທາດແຫຼວທີ່ໄວໄຟສູງ, ສ່ຽງຕໍ່ການລະເບີດ.

ພາກທີ IV

ວິທີ ແລະ ຫຼັກການ ເກັບຮັກສາສິ່ງເສດເຫຼືອເຄມີເປັນພິດ ແລະ ອັນຕະລາຍ

4.1 ວິທີເກັບຮັກສາ

ການເກັບຮັກສາສິ່ງເສດເຫຼືອເຄມີເປັນພິດ ແລະ ອັນຕະລາຍ ຕ້ອງປະຕິບັດຕາມວິທີດັ່ງນີ້:

- ຕັດແຍກໂດຍບໍ່ໃຫ້ປະປຶບກັນ ແລະ ມີໄລຍະຫ່າງກັນ;
- ໃນກໍລະນີເກັບມ້ຽນໃນອາຄານ ຕ້ອງມີຄຸນສົມບັດຝາຢ່າງແໜ້ນໜາ ແລະ ສາມາດທົນຕໍ່ຄວາມຮ້ອນຢ່າງໜ້ອຍ 90 ນາທີ;
- ໃນກໍລະນີເກັບມ້ຽນພາຍນອກອາຄານ ຕ້ອງມີການແຍກເກັບຮັກສາໄວ້ໃນພາຣະນະບັນຈຸ ທີ່ສາມາດທົນຕໍ່ໄຟໄໝ້ໄດ້ 90 ນາທີ ໂດຍໃຫ້ມີໄລຍະຫ່າງຂອງແຕ່ລະພາຣະນະບັນຈຸຢ່າງໜ້ອຍ 5 ແມັດ ເພື່ອປ້ອງກັນການເີດໄຟ.

4.2 ຫຼັກການເກັບຮັກສາໃນອາຄານ

ການເກັບຮັກສາສິ່ງເສດເຫຼືອເຄມີເປັນພິດ ແລະ ອັນຕະລາຍໃນອາຄານ ຕ້ອງປະຕິບັດຕາມຫຼັກການ ດັ່ງນີ້:

- ແຍກເກັບຮັກສາ ຕາມປະເພດຄວາມເປັນອັນຕະລາຍ ໂດຍພິຈາລະນາໃສ່ຂໍ້ມູນພື້ນຖານ ແລະ ວາງລຽງຕາມລຳດັບຕົວອັກສອນ;
- ບໍ່ຄວນວາງສາຍເຄມີຊ້ອນກັນເປັນແນວດັ້ງ;
- ສິ່ງລະບຽບສະເພາະໃນການຍົກສິ່ງ ເຄື່ອນຍ້າຍ ສິ່ງເສດເຫຼືອເຄມີເປັນພິດ ແລະ ອັນຕະລາຍ, ກ່ອນເຂົ້າ-ອອກ ຕ້ອງຮັບອະນຸຍາດເພື່ອປ້ອງກັນຄວາມສ່ຽງ;
- ກວດຫາດູນລຶກສະນະ, ປະລິມານ ແລະ ດູນນະພາບ ຂອງພາຣະນະບັນຈຸຫຼືມຸ່ມ ທີ່ເພື່ອຮັບປະກັນໃຫ້ຢູ່ໃນສະພາບດີ;
- ຕ້ອງມີແຜນຜັງທີ່ສະແດງໃຫ້ເຫັນການກຳນົດສະຖານທີ່, ປະເພດຂອງກຸ່ມສິ່ງເສດເຫຼືອເຄມີເປັນພິດ ແລະ ອັນຕະລາຍ;



ຮູບພາບ 7 ການເກັບຮັກສາສິ່ງເສດເຫຼືອເຄມີເປັນພິດ ແລະ ອັນຕະລາຍຢູ່ພາຍນອກອາຄານ

ພາກທີ V
ມາດຕະການປ້ອງກັນສິ່ງເສດເຫຼືອເຄມີເປັນພິດ ແລະ ອັນຕະລາຍ

ການເກັບສິ່ງເສດເຫຼືອເຄມີເປັນພິດ ແລະ ອັນຕະລາຍ ຕ້ອງຮັບປະກັນມາດຕະການ ດັ່ງນີ້:

1. ການປະຕິບັດໃນສາງເກັບຮັກສາ;
2. ການຄັດແຍກເກັບຮັກສາ;
3. ການປ້ອງກັນການຮົ່ວໄຫຼ;
4. ການກຳຈັດສິ່ງເສດເຫຼືອເຄມີເປັນພິດ ແລະ ອັນຕະລາຍ;
5. ອຸປະກອນເບື້ອງຕົ້ນທີ່ຈຳເປັນໃນການປ້ອງກັນ.

5.1 ການປະຕິບັດໃນສາງເກັບຮັກສາ

ການປະຕິບັດໃນສາງເກັບຮັກສາສິ່ງເສດເຫຼືອເຄມີເປັນພິດ ແລະ ອັນຕະລາຍ ຕ້ອງໄດ້ຮັບການຄວບຄຸມຢ່າງໃກ້ຊິດ ຈາກຜູ້ທີ່ໄດ້ຮັບການຝຶກອົບຮົມ ແລະ ມີປະສົບການໃນການເກັບມ້ຽນ ໂດຍມີການກຳນົດຂອບເຂດ ແລະ ແນວທາງການຮັບຜິດຊອບຢ່າງຊັດເຈນ.

ເພື່ອຫຼຸດຜ່ອນຄວາມສ່ຽງ ຈາກພາຊະນະບັນຈຸສິ່ງເສດເຫຼືອເຄມີເປັນພິດ ແລະ ອັນຕະລາຍ ຕ້ອງເກັບມ້ຽນຕາມຄຳແນະນຳຕ່າງໆ. ພະນັກງານທີ່ຮັບຜິດຊອບກ່ຽວກັບການເກັບຮັກສາ ຕ້ອງປະຕິບັດ ດັ່ງນີ້:

- ໃຫ້ຄຳແນະນຳໃນການເຮັດວຽກເພື່ອຄວາມປອດໄພ ແລະ ຄວາມຖືກຕ້ອງກ່ຽວກັບອຸປະກອນ ແລະ ວິທີການເກັບຮັກສາ;
- ຂໍ້ມູນກ່ຽວກັບຄວາມປອດໄພ ສຳລັບປະເພດສິ່ງເສດເຫຼືອເຄມີເປັນພິດ ແລະ ອັນຕະລາຍທຸກຊະນິດທີ່ເກັບໄວ້;
- ໃຫ້ຄຳແນະນຳ ແລະ ຂຶ້ນຕອນຕ່າງໆ ເພື່ອສຸຂະພາບບໍ່ໃດ ແລະ ຄວາມປອດໄພ;
- ໃຫ້ຄຳແນະນຳ ແລະ ວິທີການຮັບມື, ຜກໂຂ ໃນເວລາເກີດເຫດສູກເສີນ.

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- ນຳໃຊ້ຖັງປະເພດໃຫຍ່, ມີຄວາມທົນທານ ແລະ ຕິດກາໝາຍ ເພື່ອໃຊ້ເຮັດເຄື່ອງໝາຍ ຫຼື ສັນຍາລັກໃສ່ຖັງ;
- ນຳໃຊ້ ພາຫະນະ, ຊວັນ, ພອຍກວາດ ແລະ ນຳຢາອະນາໄມ ດາຍຮົ່ວໄຫຼຂອງສິ່ງເສດເຫຼືອເຄມີເປັນພິດ ແລະ ອັນຕະລາຍ;
- ນຳໃຊ້ ດິນຊາຍ, ດິນ, ອີເລືອຍ ເພື່ອດູດຊຶມຕາຍຮົ່ວໄຫຼຂອງສິ່ງເສດເຫຼືອເຄມີເປັນພິດ ແລະ ອັນຕະລາຍ.

ອຸປະກອນທີ່ກ່າວມາຂ້າງເທິງ ຕ້ອງໄດ້ມີການກວດກາ ແລະ ຮັກສາຢ່າງລະອຽດ ແລະ ເປັນປົກກະຕິ ເພື່ອຮັບປະກັນໃຫ້ໃຊ້ງານໄດ້ດີ, ບໍ່ມີສິ່ງປົນເປື້ອນ ແລະ ໄດ້ຮັບການອະນາໄມໃນເວລາທີ່ໃຊ້ແຕ່ລະຄັ້ງ. ຕ້ອງມີການລາຍງານຜົນຂອງການກວດກາທຸກຄັ້ງ. ໃນກໍລະນີ ສິ່ງເສດເຫຼືອເປັນຫາດແຫຼວໄວໄຟ ແລະ ຂອງແຫຼວ Oxidize ມີການຮົ່ວໄຫຼບໍ່ຄວນໃຊ້ ດິນຊາຍ, ອີເລືອຍ ດູດຊຶມ ແຕ່ໃຫ້ປະຕິບັດຕາມຄຳແນະນຳຂອງຜູ້ຜະລິດ.



ຮູບພາບ 9 ເຄື່ອງມືທີ່ຈຳເປັນໃນການປ້ອງກັນການຮົ່ວໄຫຼ ສິ່ງເສດເຫຼືອເຄມີເປັນພິດ ແລະ ອັນຕະລາຍ

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5.2 ການຄັດແຍກເກັບຮັກສາ

ການຄັດແຍກເກັບຮັກສາ ຕ້ອງປະຕິບັດດ້ວຍການເກັບກຳຂໍ້ມູນກຸ່ມສິ່ງເສດເຫຼືອເຄມີເປັນພິດ ແລະ ອັນຕະລາຍ ທີ່ແຕກຕ່າງກັນແຍກອອກເປັນສິດສິວນໃນອາຄານດຽວກັນ ຫຼື ຄັດແຍກ ແລະ ເກັບຮັກສາ ຕາມຄຸນລັກສະນະທາງກາຍະພາບ ແລະ ກຸ່ມເຄມີ ແຕກຕ່າງກັນຖືກເກັບຮັກສາໄວ້ຕ່າງຫາກໃນອາຄານດຽວ ໂດຍຕ້ອງມີຝ່າກັນເພື່ອປ້ອງກັນອັກຄີໄພ ແລະ ການປົນເປື້ອນ.



ຮູບພາບ 8 ການຄັດແຍກເກັບຮັກສາສິ່ງເສດເຫຼືອເຄມີເປັນພິດ ແລະ ອັນຕະລາຍ

5.3 ການປ້ອງກັນການຮົ່ວໄຫຼ

ໃນເວລາເຄື່ອນຍ້າຍສິ່ງເສດເຫຼືອເຄມີເປັນພິດ ແລະ ອັນຕະລາຍ ຕ້ອງລະມັດລະວັງບໍ່ໃຫ້ພາຊະນະບັນຈຸ ເສຍຫາຍຈາກການເຄື່ອນຍ້າຍແບບບໍ່ຖືກວິທີ, ຂາດຄວາມລະມັດລະວັງ ຊຶ່ງຈະເປັນສາເຫດເຮັດໃຫ້ມີການຮົ່ວໄຫຼ ເພື່ອປ້ອງກັນການຮົ່ວໄຫຼຂອງສິ່ງເສດເຫຼືອດັ່ງກ່າວ ຕ້ອງປະຕິບັດ ດັ່ງນີ້:

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ຮູບພາບ 10 ການປ້ອງກັນການຮົ່ວໄຫຼ ສິ່ງເສດເຫຼືອເຄມີເປັນພິດ ແລະ ອັນຕະລາຍ ແບບຖືກວິທີ ແລະ ແບບບໍ່ຖືກ

5.4 ການກຳຈັດສິ່ງເສດເຫຼືອເຄມີເປັນພິດ ແລະ ອັນຕະລາຍ

ສິ່ງເສດເຫຼືອເຄມີເປັນພິດ ແລະ ອັນຕະລາຍ ລວມທັງພາຊະນະບັນຈຸຜຸ່ມທີ່, ແຜ່ນຂອງສິນຄ້າທີ່ຫຼືຍຫຼ່ຽມ ຕ້ອງຖືກກຳຈັດດ້ວຍວິທີທີ່ປອດໄພ ແລະ ບໍ່ສົ່ງຜົນກະທົບຕໍ່ສິ່ງແວດລ້ອມ. ເຖິງແມ່ນວ່າປະລິມານທີ່ຮົ່ວໄຫຼໜ້ອຍໜຶ່ງ ບໍ່ຄວນປ່ອຍລົງສູ່ພຳດິນ ຫຼື ປ່ອຍອອກທາງຕໍ່ລະບາຍນ້ຳ, ຕ້ອງໄດ້ຮັບການບຳບັດກ່ອນທີ່ ຈະປ່ອຍອອກ. ພາຊະນະບັນຈຸທີ່ປົນເປື້ອນ ຕ້ອງມີເຕັກນິກ ແລະ ວິທີການໃນການຈັດເກັບ ແລະ ກຳຈັດ ຢ່າງປອດໄພ ແລະ ບໍ່ສົ່ງຜົນກະທົບຕໍ່ສິ່ງແວດລ້ອມ ໂດຍໃຫ້ສອດຄ່ອງກັບກົດໝາຍ ແລະ ລະບຽບການ.

5.5 ອຸປະກອນເບື້ອງຕົ້ນທີ່ຈຳເປັນໃນການປ້ອງກັນ

ອຸປະກອນທີ່ຈຳເປັນ ເພື່ອປ້ອງກັນອັນຕະລາຍຈາກສິ່ງເສດເຫຼືອເຄມີເປັນພິດ ແລະ ອັນຕະລາຍເບື້ອງຕົ້ນ ຕ້ອງໄດ້ຮັບການກວດກາຜົນປະຈຳ ແລະ ຕ້ອງໄດ້ຮັບການຮັກສາໃຫ້ຢູ່ໃນສະພາບທີ່ໃຊ້ໄດ້ຕະຫຼອດເວລາ ພ້ອມທັງບຳລຸງຮັກສາທຸກໆຄັ້ງ ແລະ ເກັບຮັກສາໄວ້ເປັນຢ່າງດີ. ອຸປະກອນເບື້ອງຕົ້ນທີ່ຈຳເປັນ ໃນການປ້ອງກັນປະກອບມີດັ່ງນີ້:

- ສະຖານທີ່ລ້າງໂຕໃນເມື່ອເກີດເຫດສູກເສີນ;
- ອຸປະກອນລ້າງຕາ;
- ກະເປົາປະຖິ້ມພະຍາບານ;

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- ຝຸກມືດ້ວຍເຈ້ຍ;
- ຜ້າທີ່ມີໃຊ້ຄຸນຄ່າດີເພີ່ງ;
- ແສງສະຫວ່າງສູງກວນ ແລະ ສະຫຼາກສະຫ້ອນແສງໃນເວລາເຫດການສູງກວນ.



ຮູບພາບ 11 ອ່າງລ້າງຕາ ແລະ ລັງຄົນໃນເວລາໄດ້ຮັບບາດເຈັບ

5.6 ຊຸບະກອນປ້ອງກັນໂຕ

ໃນການເກັບຮັກສາສິ່ງເສດເຫຼືອເຄມີເປັນພິດ ແລະ ອັນຕະລາຍ ຜູ້ທີ່ຮັບຜິດຊອບ ວຽກງານດັ່ງກ່າວ ຕ້ອງນຳໃຊ້ຊຸບະກອນປ້ອງກັນໂຕ ດັ່ງນີ້:

1. ຊຸບະກອນປ້ອງກັນໂຕ;
2. ເຄື່ອງມືປ້ອງກັນຕົວ;
3. ແວ່ນຕາ ແລະ ໜ້າກາກ;
4. ເຄື່ອງປ້ອງກັນຫູ;
5. ຖົງມືປ້ອງກັນ;
6. ຕົ້ນປ້ອງກັນ;

5.6.1 ຊຸດປ້ອງກັນການປະຕິບັດວຽກ

ໃນເວລາປະຕິບັດວຽກງານການເກັບຮັກສາສິ່ງເສດເຫຼືອເຄມີເປັນພິດ ແລະ ອັນຕະລາຍ ຕ້ອງສວມໃສ່ຊຸດການປະຕິບັດວຽກທຸກຢ່າງ ເພື່ອປ້ອງກັນ:

1. ການສຳພັດສານເຄມີ;
2. ການຕິດເຊື້ອ ເຄມີ, ຄວາມເຢັນ ແລະ ຂອງມືດົມ;

5.6.3 ແວ່ນຕາ ແລະ ໜ້າກາກປ້ອງກັນຕາ

ເພື່ອປ້ອງກັນຕວງກາ ໃນເວລາປະຕິບັດວຽກງານຕ້ອງສວມໃສ່ແວ່ນຕາ ຫຼື ໜ້າກາກທີ່ເຮັດດ້ວຍປາລາສະຕິກໃສ່, ບັງເຫັນໄດ້ຊັດເຈນ, ສາມາດປ້ອງກັນແຮງກະແຊກ, ຂອບແວ່ນຕາມີນ້ຳໜັກເກົາ. ສຳລັບໜ້າກາກເຮັດດ້ວຍແກ້ວສີ ສາມາດປັບຄວາມແຈ້ງ ຂອງແສງໃຫ້ຜູ້ໃນລະດັບບໍ່ເປັນອັນຕະລາຍຕໍ່ສາຍຕາ ກອບມີນ້ຳໜັກເກົາ ແລະ ບໍ່ຕິດໄຟ ງ່າຍ.



ຮູບພາບ 14 ເຄື່ອງປ້ອງກັນຕາ ແລະ ໃບໜ້າ

5.6.4 ເຄື່ອງປ້ອງກັນຫູ

ເຄື່ອງປ້ອງກັນຫູ ແບ່ງອອກເປັນ 2 ແບບ ດັ່ງນີ້:

- ແບບສູບໃສ່ຫູ ຫຼຸດຜ່ອນສຽງ (Ear plugs) ແມ່ນເຄື່ອງມືທີ່ນຳໃຊ້ຈັດສະດູ ເປັນຕົ້ນ ປາລາສະຕິກຜ່ອນ, ຢາງ, ສຳລັບ ນິ້ວມືໃຊ້ຢາງປາລາສະຕິກຫຼາຍທີ່ສຸດ ສາມາດຫຼຸດຜ່ອນສຽງໄດ້ປະມານ 15 ດີເຊັບ (ປະເພດ A).



ຮູບພາບ 15 ປັກໃສ່ຫູຫຼຸດຜ່ອນສຽງ (Ear plug)

- ຄອບຫູຫຼຸດຜ່ອນສຽງ (Ear muffs) ຊຸບະກອນປ້ອງກັນຫຼຸດຜ່ອນສຽງຊະນິດ ຄອບໃບຫູທັງ 2 ຂ້າງ ບາງຊະນິດມີລຳໂມງໄວ້ຕິດຕໍ່ປະສານງານໃນສະຖານທີ່

3. ການປົນເປື້ອນຈາກຜູ້ທີ່ດວງໄປຍັງຂະບວນການວິເຄາະ.



ຮູບພາບ 12 ຊຸດປ້ອງກັນ

5.6.2 ເຄື່ອງມືປ້ອງກັນຕົວ

ໃນເວລາປະຕິບັດວຽກ ຕ້ອງມີເຄື່ອງມືປ້ອງກັນຕົວທຸກຢ່າງ ໂດຍຕ້ອງສວມໃສ່ ໝວກກັນກະທົບທີ່ມີລັກສະນະແຂງ, ມີນ້ຳໜັກບໍ່ເກີນ 424 ກຼາມ, ເຮັດດ້ວຍວັດສະດຸ ທີ່ບໍ່ແມ່ນໄວຫະ ແລະ ຕ້ອງມີຄວາມທົນທານ ຕໍ່ການກະທົບຢາງແຮງ, ພາຍໃນພື້ນຮອງ ໝວກຕ້ອງເຮັດດ້ວຍ ໜັງ ຫຼື ປລາສະຕິກ ເພື່ອປ້ອງກັນແຮງກະທົບໃສ່ຕົວ.



ຮູບພາບ 13 ໝວກນິ້ວໄພ ປ້ອງກັນການກະທົບ

ທີ່ມີສຽງດັງ ເຮັດດ້ວຍປາລາສະຕິກ ຫຼື ຢາງ ແລະ ວັດຖຸອື່ນ ສາມາດຫຼຸດຜ່ອນ ສຽງໄດ້ບໍ່ເກີນ 25 ດີເຊັບ (ປະເພດ A).



ຮູບພາບ 16 ຄອບຫູຫຼຸດຜ່ອນສຽງ (Ear muffs)

5.6.5 ຖົງມືປ້ອງກັນ

ໃນເວລາເຮັດວຽກຕົວຈິງ ຕ້ອງສວມໃສ່ຖົງມືປ້ອງກັນ ທີ່ມີລັກສະນະທົນທານຕໍ່ ເຄມີເປັນພິດ ແລະ ອັນຕະລາຍ ບໍ່ໃຫ້ເຄມີດັ່ງກ່າວສາມາດຊຶມຜ່ານເຂົ້າສູ່ມືໄດ້.



ຮູບພາບ 17 ຖົງມື

5.6.6 ເກັບປ້ອງກັນ

ເກັບທີ່ໃຊ້ສວມໃສ່ໃນການປ້ອງກັນ ຄວນເປັນເກັບຫົວເຫຼັກ ທີ່ມີຄວາມທົນທານ ຕໍ່ສິ່ງເສດເຫຼືອເຄມີເປັນພິດ ແລະ ອັນຕະລາຍ ພື້ນບໍ່ມີນ ແລະ ສາມາດປ້ອງກັນທາງ ແຫຼ່ງຕົວໄວໄພ ມີຄຸນສົມບັດປ້ອງກັນໄຟຟ້າສະຫຼັດ.



ຮູບພາບ 18 ເກີບປ້ອງກັນ