## I. INTRODUCTION

The Department of Chemistry of FMIPA IPB was established in 1983 (Decree of the Minister of Education and Culture No. 0546/O/1983), and the Undergraduate Chemistry Study Program of FMIPA IPB was opened in 1989 (SK No 47/DIKTI/KEP/1989). The Department of Chemistry, as the unit that supports higher education in chemistry at IPB, has provided Bachelor of Chemistry, Master of Chemistry, and Doctor of Chemistry education programs. The Bachelor's study program received formal recognition from LAMSAMA with an "Excellent" grade. The Master's study program received formal recognition of implementation competency with an "A" grade from BAN-PT. Meanwhile, the Chemistry Doctoral Study program has been accredited "very good". In 2019, the undergraduate study program was internationally accredited by the Royal Society of Chemistry (RSC) of the United Kingdom.

In organizing educational programs, the Department of Chemistry has a vision, mission, and goals referring to the vision, mission, and goals of FMIPA, which align with the vision, mission, and goals of IPB. The vision of the Department of Chemistry is to make the Bachelor of Chemistry and Postgraduate Study Program the leading study program in Indonesia and Southeast Asia in developing human resources and science and technology with primary competencies in the application of chemistry and playing a significant role in the development of agriculture, marine, and tropical biosciences. Meanwhile, the vision, mission, and goals of the department are reduced to the vision, mission, and goals of the Bachelor of Chemistry Study Program. The vision of the Bachelor of Chemistry Study Program is to make the Bachelor of Chemistry Study Program the leading study program in Indonesia in developing human resources and science and technology with the primary competency of applying chemistry and playing a significant role in agricultural development.

In organizing educational programs, the Department of Chemistry has a vision, mission, and goals referring to the vision, mission, and goals of FMIPA, which align with the vision, mission, and goals of IPB. The Vision of the Chemistry Department occupies a building on Jalan Tanjung, Dramaga Campus, Bogor. The Chemistry Building consists of 2 wings and three floors. On Floor 1, there are two divisions, namely the analytical chemistry division and the organic chemistry division. Then, on Floor 2, there are two other divisions: inorganic and physical chemistry. Each division has two laboratories: an educational laboratory and a research laboratory. The Secretariat of the Department of Chemistry is on the 3rd floor; apart from that, there is one chemical instrument laboratory. Apart from the chemistry building on Jalan Tanjung, the Chemistry Department also has a room in the Animal Husbandry Faculty Building, Wing 9, 5th floor, used for postgraduate program education operations.

## II. SAFETY POLICY

KEMENTERIAN PENDIDIKAN, KEBUDAYAAN, RISET DAN TEKNOLOGI
**INSTITUT PERTANIAN BOGOR**
FAKULTAS MATEMATIKA DAN ILMU PENGETAHUAN ALAM


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**OCCUPATIONAL HEALTH AND SAFETY POLICY**
**DEPARTMENT OF CHEMISTRY**
**IPB UNIVERSITY**

The Department of Chemistry, IPB University stated that occupational health and safety (OHS) is our priority and we will integrate it with all our activities.

We are committed to:
Providing a safe and healthy place for activities for the academic community, visitors, and stakeholders.

To fulfill the above commitments:

1. We will comply with government regulations and other applicable regulations relating to OHS.
2. We will prevent work-related diseases and injuries by providing facilities and infrastructure that meet OHS requirements.
3. We will manage OHS aspects in every activity, eliminating dangers and reducing risks to prevent accidents, and other negative impacts.
4. We will consult and encourage the participation of the academic community in resolving OHS problems, targets, and objectives
5. We will set OHS targets and objectives based on existing risks and opportunities and carry out regular reviews to continuously improve the OHS system.``

The entire academic community, visitors, and stakeholders must act in following established policy.
This policy is established for all parties within the scope of the OHS system of The Departement of Chemistry, IPB University.

Bogor, March 22nd 2024

SIGN HERE

Prof. Dr. Dra. Dyah Iswantini, MSc.Agr

## III. PURPOSE

This document provides key information on the practices and procedures that shall be implemented to maintain a safe workplace and ensure compliance with government regulation, IPB University regulation, and other applicable regulations relating to OHS management system.

## IV. SCOPE

4.1 This OHS Manual applies to all parties (staff, students, visitor, stakeholders) who work in and visit to The Department of Chemistry, IPB University that have chemical and/or hazards related to chemical laboratory activities.

4.2 This OHS Manual does not include specific requirements for work with radioactive materials or biological agents. Specific procedures for work with these materials are addressed via IPB University's Manual and Procedures.

## V. OHS COMMITTEE ORGANIZATION STRUCTURE

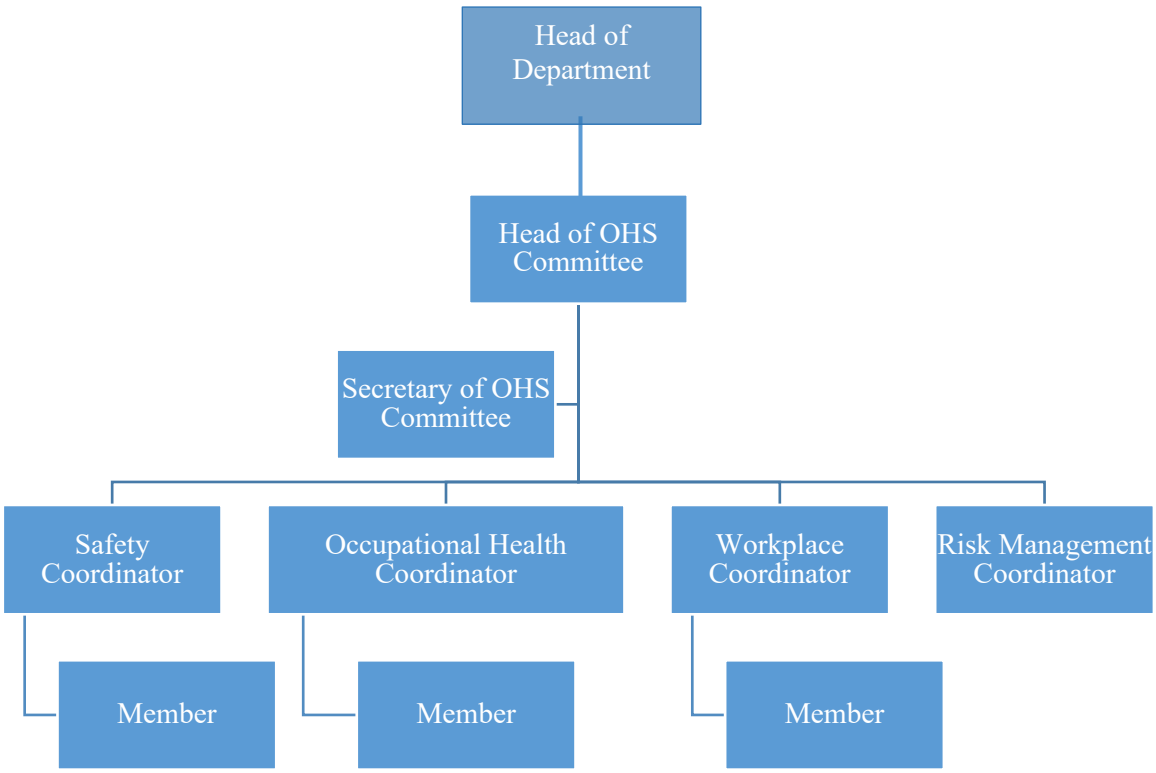


Figure 1. OHS Committee Organization Structure

| | | |
|---|---|---|
| Head of Department | : | Prof. Dr. Dra. Dyah Iswantini, MSc.Agr |
| Head of OHS Committee | : | Dr. Henny Purwaningsih, SSi, MSi |
| Secretary of OHS Committee | : | Kusnaeni |
| Safety Coordinator | : | Dr. Deden Saprudin, MSi |
| Occupational Health Coordinator | : | Dr. M. Khotib, MSi |
| Workplace Coordinator | : | Zulfan Arif, SSi, MSi |
| Risk Management Coordinator | : | Dr. Zaenal Abidin, MSc.Agr |
| Member of Safety Team | : | Rohmat Ismail, Amd |
| Member of Occupational Health Team | : | Riska Amelia, SSi |
| Member of Workplace Team | : | Kurniawati, SSi, MSi |

## VI. ROLES AND RESPONSIBILITIES

6.1 Head of Department accepts the responsibility for impressing upon all parties (staff, students, visitors, and stakeholders) that safety and injury prevention is a high priority at the Department of Chemistry, IPB University, and that all regulations, rules, and policies will be followed. The Head of Department will assure that:

- Operations are consistent with the requirement of the OHS manual and policy statement
- All staff training and education are on-going
- All staff involvement are on going
- Recommendation of OHS Committee are reviewed and suitably acted upon
- Monitors the follow-up on recommendations made to improve performance and prevent accidents from occurring again
- Resources necessary to provide for safety, health, and environmental compliance are available

6.2 The OHS Committee is comprised of staff who have at least one, if not a combination, of the following qualifications:

- Represents staff for each division at The Department of Chemistry
- OHS certified from government and/or Personnel Certification Body
- Knowledgeable of facility maintenance and operations
- Knowledgeable in safety, health, environmental, and security issues

6.3 The OHS Committee will meet monthly to review areas of improvement, risk and institutional liability, emergency management/preparedness, security and facility maintenance/operations activities and other appropriate topics.

6.4 Head of OHS Committee job duties and responsibilities center around safety goals and include the following:

- Planning health and safety program and protocols
- Ensuring compliance with OHS Manual and other related regulations
- Handling risk assessments to gather information on safety issues
- Verifying that employees consistently follow safety protocols
- Analyzing health and safety data for management review meeting
- Reviewing current safety training and recommends revisions, improvement, and updates
- Submitting recommendations for improvements and additions to The OHS Committee including emergency preparedness, accident prevention, general safety, and risk assessment
- Reviewing and recommending changes to regular activities

6.5 Safety Coordinator job duties and responsibilities center around safety goals and include the following:

- Creating safety awareness and carry out safety meeting, fire drill exercise, safety induction and safety training to existing staff and new staff
- Collaborating with other coordinator to develop, prepare and implement safety policies and procedures
- Evaluating the effectiveness of safety and security programs
- Carrying out project inductions, safety talks and team meetings
- Developing training program for staff and students about health and safety standards
- Helping to prepare Job Safety Analysis (JSA) for the department's work activities
- Stopping operations and activities that could harm to staff and equipment
- Investigating hazard reports and ensuring that they are completed and corrective actions undertaken
- Identifying opportunities to minimize workplace injuries, accidents, and health problems.
- Performing other related duties as assigned

6.6 Occupational Health Coordinator job duties and responsibilities center around safety goals and include the following:

- Coordinating the occupational health programs to promote and ensure awareness of all parties (lectures, staff, students, and stakeholders)
- Collaborating with other coordinator to develop, prepare and implement occupational health policies and procedures
- Evaluating the effectiveness of occupational health programs
- Developing training program for staff and students about occupational health standards
- Performing as First Aid Officer

- Performing other related duties as assigned

6.7 Workplace Coordinator job duties and responsibilities center around safety goals and include the following:

- Monitoring safety awareness and preparing safety meeting, fire drill exercise, safety induction and safety training to existing employees and new employees
- Monitoring the implementation OHS programs in the workplace.
- Submitting a Monthly Safety Report and Safety Performance
- Maintaining a diary detailing safety activity(s), hazardous works, housekeeping, safety instruction, etc. in place.
- Ensuring all workplace in a safe condition
- Implementing all procedures and practices as stipulated in the safety policy
- Giving assistance for safety before & during internal/external's audit by ensuring all related documents at site is updated from time to time.
- Performing other related duties as assigned

6.8 OHS Risk Management Coordinator job duties and responsibilities center around safety goals and include the following:

- Designing and implementing OHS risk management process for the Department of Chemistry, which includes an analysis of the financial impact on the department when risks occur
- Performing an OHS risk assessment: Analysing current OHS risks and identifying potential OHS risks that are affecting the Department of Chemistry
- Performing an OHS risk evaluation: Evaluating the department's previous handling of OHS risks, and comparing potential risks with criteria set out by the department such as costs and legal requirements
- Establishing the level of OHS risk the department are willing to take
- OHS risk reporting tailored to the relevant audience. (Educating the Management about the most significant risks to the business; ensuring business heads understand the risks that might affect their departments; ensuring individuals understand their own accountability for individual risks)
- Building OHS risk awareness amongst staff by providing support and training within the department
- Performing other related duties as assigned

6.9 All Staff and Students are responsible for the following:

- Working in a safe manner without risk to themselves, others or the environment
- Complying with the OHS Plan including all Job Safety Analysis
- Reporting all works to member of OHS Committee including working alone and off-hours working
- Reporting all incidents to the Workplace Coordinator
- Reporting all injuries and illnesses to the designated First Aid Officer
- Reporting any OHS hazards to the Workplace Coordinator
- Providing suggestion, through agreed consultation methods, on how to improve OHS issues
- Seeking assistance if unsure of OHS rules
- Reporting any faulty tools or plant to the Workplace Coordinator
- Complying with laboratory/workplace rules
- Correctly using all personal protective equipment; and
- Complying with emergency and evacuation procedures.

6.10. Visitors and Minors in the Laboratory

- Staff, teaching assistants, graduate and undergraduate students, visitors, and stakeholders are not allowed in restricted areas or in laboratories at any time.
- Only authorized persons should be permitted in laboratory. “Authorized” in this case means someone who has a valid reason to be there, such as the students working in the lab, maintenance personnel performing work, or a person who has permission of lab supervisor or person in charge to be there.
- Persons wishing to bring minors into their work areas require special permission from the department and must conduct a hazard assessment and implement appropriate corrective measures prior to bringing them.
- All visitors must make an appointment before they come to the Department of Chemistry and not permitted to enter the laboratory. In all cases, visitors should be made aware of hazards in the lab, emergency procedures in the event of spill, fire or alarm, and provided with appropriate personal protective equipment as necessary.
- Children are only permitted in the Department of Chemistry laboratories as part of study tours and visits. In these instances, the tour leader or other knowledgeable personnel must exercise careful, direct supervision at all times.

## VII. EMERGENCY PROCEDURES

### 7.1 Emergency Action Plans

7.1.1 Each unit or laboratory shall (with the assistance of OHS Committee, if necessary):

- Identify designated evacuation assembly point(s)
- Develop procedures to account for all personnel upon evacuation
- Identify any special needs regarding evacuation and work with IPB's Office to develop a plan of action; and,
- Make the emergency action plan available to all personnel.

7.1.2 Principal Investigators shall ensure emergency evacuation and severe weather procedures training is completed by lab personnel and documented.

7.1.3 Lab personnel shall:

- Become familiar with the emergency action plan for the laboratory and/or department;
- Notify the coordinator of any special needs that could impact evacuation or sheltering in place;
- Upon evacuation, check-in with OHS or Laboratory procedure.

### 7.2 Emergency Reporting Procedures

7.2.1 IPB's Security Unit shall be called for all emergencies.

- IPB University Emergency Numbers

| | | |
|---|---|---|
| 1. | Fire Fighting Unit | 0251-8629084 |
| 2. | Campus Security Unit | 0251-8629084 |
| 3. | IPB's Clinic | 0251-8629084 |
| 4. | Police Office of Darmaga | 0251-8624107 |
| 5. | Karya Bakti Pratiwi Hospital | 0251-8626868 |
| 6. | Medika Darmaga Hospital | 0251-8308900 |

7.2.2 Person who near an accident location must report serious work-related accidents. Diseases and dangerous incidents to Workplace Coordinator or Safety Coordinator.

7.2.3 When reporting an emergency, provide the following information:

- Location of emergency event
- Name of victims if any
- Name of caller
- Phone number when caller can be reached during response.
- The details of what and how the incident occurred

**7.3 Accidents**

7.3.1 Any injury at work - including minor injuries - should be recorded. An accident report should be filled out immediately or no more than 24 hours following an accident or incident even if the injury caused by the accident is minor.

7.3.2 A formal investigation into the causation of the accident should be conducted by safety coordinator as early as possible. This includes taking witness statements and taking photos of the area where the incident happened. It's also important to carry out an enquiry into what caused a machinery fault (if a mechanical fault caused the injury).

7.3.3 If medical attention is required, First Aid Officer or other coordinators report to IPB's clinic for assistance

7.3.4 Medical Providers

| Personnel Status | Work Hours | Off-Hours Work |
|---|---|---|
| Students (graduate or undergraduate) enrolled in a class | IPB's Clinic | Hospital near Darmaga Campus |
| Students in a research and educational lab as part of a class | IPB's Clinic | Hospital near Darmaga Campus |
| All Staff | IPB's Clinic | Hospital near Darmaga Campus |
| Stakeholders (Visitors and Vendors) | IPB's Clinic | Hospital near Darmaga Campus |

**7.4 Fires**

7.4.1 Individuals are not required to fight fires; but trained personnel who choose to do so may fight small, incipient stage fires (no bigger than a wastepaper basket)

- Call Safety coordinator or other safety team before using the fire extinguisher and if possible activate the building fire alarm system.
- Fire that is large or spreading: Activate the fire alarm to alert building occupants. Call fire fighting unit of IPB University.
- If possible, shut down any equipment that may add fuel to the fire.
- Do not turn off any hoods in the immediate area, as they will tend to keep the area free from smoke and fumes

7.4.2 If evacuation is necessary:

- Close the door behind you to prevent the fire's spread.

- Evacuate the building and await the arrival of Fire Fighting Unit. Be prepared to inform them of the exact location, details of the fire, and chemicals that are stored in the area
- Do not re-enter the building until you are told to do

### 7.5 Emergency Laboratory Contact Information Sign

7.5.1 Each laboratory or office room at The Department of Chemistry shall post an emergency Laboratory Contact Information Sign outside or near all entry doors of laboratory or office.

7.5.2 The purpose of the sign is to provide an easily recognizable and consistent means of displaying essential information about the status and contents of laboratories/room, primarily for the benefit of emergency responders.

7.5.3 The sign is to be completed and posted on the outside of all doors leading into areas where there are potential hazards. Update the information on the signs as changes occur in the lab/office.

## VIII. EMERGENCY EQUIPMENT

### 8.1 Fire Extinguishers

8.1.1 Fire extinguishers shall be provided about 125 cm from the bottom of the floor directly above the one or group of light fire extinguishers concerned.

8.1.2 Access shall be maintained and the location shall be conspicuously marked.

8.1.3 The fire extinguisher type and size shall be selected for the appropriate hazards. If the lab does not have a fire extinguisher and one is needed

### 8.2 Fire Alarms

Fire alarm shall be provided along normal paths of travel, along exit routes.

### 8.3 Safety Showers and Eyewashes

8.3.1 A highly visible sign shall be installed near the safety showers and eyewashes.

8.3.2 Location:

- All of the units shall be within 10 seconds of hazard. For strong corrosives, eyewash shall be immediately adjacent.
- All of the travel path to the units shall be free of obstructions. Example: A doorway prohibiting immediate use of equipment is not permitted.

8.3.3 Inspections

- Lab personnel conduct inspections:
- Eyewashes – monthly to ensure flow, eye pieces covered and not blocked. These inspections shall be documented.
- Safety showers – monthly to ensure access is not blocked.

8.3.4 Reporting a problem

- It is the responsibility of the Safety Coordinator or their designee to initiate a work order for any safety shower or eyewash that is not properly working and to follow-up on the work orders. If the safety shower or eyewash is not functioning, immediately contact the safety coordinator

## IX. SAFETY PROCEDURES

### 9.1 General Safety Procedure

The following are general safety procedures in the laboratory at Department of Chemistry. The procedure cover what all personnel should know in the event of an emergency, proper signage, lab safety equipment, safely using laboratory equipment, and basic common-sense rules.

1. Be sure to read all fire alarm and lab safety symbols and signs and follow the instructions in the event of an accident or emergency.
2. Ensure to fully aware of facility's/building's evacuation procedures.
3. Know where lab's safety equipment—including first aid kit(s), fire extinguishers, eye wash stations, and safety showers—is located and how to properly use it.
4. Know emergency phone numbers to use to call for help in case of an emergency.
5. Open flames should never be used in the laboratory unless there is a permission from a qualified supervisor.
6. Be aware of where lab's exits and fire alarms are located.
7. An area of 36" diameter must be kept clear at all times around all fire sprinkler heads.
8. If there is a fire drill, be sure to turn off all electrical equipment and close all containers.
9. Always work in properly-ventilated areas.
10. Do not chew gum, drink, eat, or apply lip balm or cosmetics while working in the lab.
11. Laboratory glassware should never be used as food or beverage containers.
12. When use glassware, be sure to check it for chips and cracks. Notify that lab supervisor of any damaged glassware so it can be properly disposed of or recycled.
13. Never use lab equipment without a permission or trained by your supervisor to operate.
14. If an instrument or piece of equipment fails during use, or isn't operating properly, report the issue to a technician right away. Never try to repair an equipment problem on your own.
15. If you are the last person to leave the lab, make sure to lock all the doors and turn off all ignition sources.
16. Do not work alone in the lab.
17. Never leave an ongoing experiment unattended.
18. Never lift any glassware, solutions, or other types of apparatus above eye level.
19. Never purposefully smell or taste chemicals.

20. Do not pipette by mouth.
21. Make sure you always follow the proper lab safety procedures for disposing of lab waste.
22. Report all injuries, accidents, and broken equipment or glass right away, even if the incident seems small or unimportant.
23. If you have been injured, yell out immediately and as loud as you can to ensure you get help.
24. In the event of a chemical splashing into your eye(s) or on your skin, immediately flush the affected area(s) with running water for at least 20 minutes.
25. If you notice any unsafe lab conditions, let your supervisor know as soon as possible.

**9.2. Dress Code Safety Rules**

a) Always tie back hair that is chin-length or longer and as needed.
b) Make sure that loose clothing or dangling jewellery is removed, or avoid wearing it in the first place.
c) Never wear sandals or other open-toed shoes in the lab. Footwear must always cover the foot completely.
d) Never wear shorts or skirts in the lab.
e) When working with Bunsen burners, lighted splints, matches, etc., acrylic nails are not allowed.

**9.3 Chemical Safety Rules**

Since almost every lab uses chemicals of some sort, chemical lab safety rules are a must. Following these policies helps all staff and students avoid spills and other accidents, as well as damage to the environment outside of the lab. These rules also set a clear procedure for employees to follow in the event that a spill does occur to ensure it is cleaned up properly and injuries are avoided.

a) Every chemical should be treated as though it were dangerous.
b) Do not allow any solvent to come into contact with your skin.
c) All chemicals should always be clearly labelled with the name of the substance, its concentration, the date it was received, and the name of the person responsible for it.
d) Before removing any of the contents from a chemical bottle, read the label twice.
e) Never take more chemicals from a bottle than you need for your work.
f) Do not put unused chemicals back into their original container.
g) Chemicals or other materials should never be taken out of the laboratory.
h) Chemicals should never be mixed in sink drains.
i) Flammable and volatile chemicals should only be used in a fume hood.
j) If a chemical spill occurs, clean it up right away.
k) Ensure that all chemical waste is disposed of properly.

### 9.4 Personal Protection Safety Rules

Unlike laboratory dress code policies, rules for personal protection cover what all staff and students must be wearing in the lab to protect themselves from various lab hazards, as well as basic hygiene rules to follow to avoid any sort of contamination.

a) When working with equipment, hazardous materials, glassware, heat, and/or chemicals, always wear safety glasses or goggles, and additionally use a face shield as needed.
b) When handling any toxic or hazardous agent, always wear the appropriate gloves that resist the specific chemicals you're working with.
c) When performing laboratory experiments, you must always wear a lab coat.
d) Before leaving the lab or eating, always wash your hands.
e) After performing an experiment, you should always wash your hands with soap and water.
f) When using lab equipment and chemicals, be sure to keep your hands away from your body, mouth, eyes, face, and items you'll handle after removing your gloves (e.g., your phone, laptop).

### 9.5 Housekeeping Safety Rules

Laboratory housekeeping rules apply to most facilities and deal with the basic upkeep, tidiness, and maintenance of a safe laboratory.

a) Always keep work area(s) tidy and clean.
b) Make sure that all lab safety equipment, like eyewash stations, emergency showers, fire extinguishers, and exits are always unobstructed and accessible.
c) Only materials you require for your work should be kept in your work area. Everything else should be stored safely out of the way.
d) Only lightweight items should be stored on top of cabinets; heavier items should always be kept at waist height to avoid bending and lifting.
e) Solids should always be kept out of the laboratory sink.
f) Any equipment that requires air flow or ventilation to prevent overheating should always be kept clear.

### 9.6 Chemical Hygiene Rules

#### 9.6.1 Chemical Inventory

Maintain the lowest possible inventory of hazardous chemicals. An accurate record of the chemicals on site is required by the lab standard. The chemical inventory should detail the type and amount of each substance store in a lab facility. Safety data sheets should be available for each substance. Unused or excess chemicals should be properly discarded.

#### 9.6.2 Chemical Spills and Accident Response

Safety coordinator should handle small spills and releases of known materials in accordance with laboratory safe operating procedure. For emergency, instances involving extremely hazardous or reactive materials, or large spills and leaks, evacuate and call

safety officer from a safe location. If possible, confine the spill or leak before evacuating the laboratory.

9.6.3 Chemical Storage

Chemicals ideally should be stored by compatibility. Segregate acids from bases, and inorganic oxidizing acids from organic acids, flammables, and combustibles. Air/water reactive chemicals must be kept dry, and cyanides should be stored away from acids. All containers must be properly labeled. Volatile toxic substances must be stores in volatile storage cabinets adequate to the purpose. When volatiles must be stored in a cooled atmosphere, explosion-prof refrigerators, or similar specially designed equipment must be used.

9.6.4 Chemical Handling

The use of poly coated bottles or using bottle carriers for transporting chemicals that are regular glass containers in encouraged. Close caps securely and avoid storing chemical containers in hard-to-reach areas. Pour chemicals carefully, and never add water to concentrated acid. Metal containers and non-conductive containers (e.g. glass or plastic) holding more than five gallons (18.9 L) must be grounded when transferring flammable liquids.

9.6.5 Chemical Transport

Transport and handling should be done in accordance with related standard and regulation as well as in conjunction with a review of applicable safety data sheet sections. Individuals transporting chemical must be familiar with the material's hazard. Chemicals should be transported in secondary containment. Never transport non-compatible chemicals in the same secondary containment. Transport gas cylinders only with the valve covers screwed on and when securely attached to a compressed gas chart. Use appropriate personal protective equipment. Transport should be done a fashion that minimizes exposure and risk for spill, fire, or injury.

9.6.6 Gas Cylinder Storage

Gas cylinder must be stored in well-ventilated areas with their protective caps screwed on and the cylinder secured (e.g. strapped or chained in an upright position) to reduce the chance of the cylinder being knocked over. Do not store empty and full cylinders together. Storage of large quantities of cylinders mut be done in an approved gas cylinder storage area. Use only approved gas gauges. For guidance regarding storage and use of flammable gas cylinder.

9.6.7 Labelling

All chemicals' containers must be labeled. All labels must be clear and legible, include chemical/product name and information related to relevant hazards. Chemical formulas and abbreviations alone are acceptable for the purpose of best communicating hazards to laboratory workers and aiding the safety coordinator, first aid officers, and fire workers

that may be required to enter laboratory during emergencies. Labels on incoming containers must not be removed od defaced. Reference of GHS label elements and pictograms for information about incoming chemicals label. Waste chemical containers must be clearly marked “hazardous waste” indicating specific name of waste chemical and date when full.

9.6.8 Chemical Waste Disposal

- All faculty, students, and staff who generate hazardous waste must complete the “Chemical Safety for Laboratories” training. All lab wastes containing chemical constituents are presumed by the Indonesian’s rules to be regulated hazardous wastes.
    a) The OHS Standard has determined that certain dilute mixtures are not hazardous wastes.
    b) If, due to your own knowledge and experience, you believe your waste may be non-hazardous, but it is not on the list, contact Workplace or Safety Coordinator for a waste determination.
- Reagent chemical containers that are in good condition and have a readable original manufacturer’s label are considered surplus chemicals. Lab personnel must affix a surplus sticker before requesting pickup by DUI Office, but do not need a hazardous waste tag.
- Do not dispose of hazardous chemicals or solutions containing hazardous chemicals in any sink or floor drain. Aqueous solutions containing only acids or bases and no toxic metals may be disposed in the drain if the pH is greater than 5.5 and less than 11.0. The first rinseate from chemically contaminated glassware must be collected as hazardous waste. Subsequent rinseates may be disposed of in the drain.
- Do not dispose of any hazardous materials in the solid waste containers (e.g. trash cans or dumpsters) that go to the landfill.
- Chemical waste must be under the control of the person generating the waste at all times, and must not be stored in general traffic locations, such as halls, or other areas with general public access.
- Common areas may be used for collection of laboratory hazardous waste under the following restrictions:
    a) No maintenance or other non-lab waste may be accumulated.
    b) No more than 55 gallons may be accumulated.
    c) The area must be as close as practical to the waste-generating locations.
    d) Access must be restricted to trained and authorized personnel.
- Do not accumulate waste containers in the lab for more than nine months.
- Waste containers must be chemically compatible with the waste.
- Always keep containers tightly closed, except when transferring waste. If using a funnel, it must be removed and replaced with a tight-fitting lid as soon as you have finished adding the waste.
- All wastes must be secondarily-contained while in storage.

- Never accumulate more than 55 gallons of chemical waste at any time.

## X. PERSONNEL TRAINING

All personnel (lectures, laboratory staff, office staff, and students) shall be trained on the hazards present in their work area before the start of work.

- Refer to the Training Matrix and Needs Assessment.
- This includes training criteria and frequency. Some topics require annual refresher training (e.g., Laboratory Fundamentals Safety Training).
- The training is provided by the OHS Committee or qualified designee.
- The training shall include: Physical and health hazards of chemicals in the work area;
    b) Handling of hazardous materials - acquisition to disposal
    c) Fire extinguisher training
    d) The use of personal protective equipment
    e) Interpretation of a Safety Data Sheet (SDS) and where to find SDSs
    f) Emergency procedures
    g) Personal hygiene
    h) Signs and symptoms associated with exposure associated to hazardous chemicals used in the laboratory.
- Safety Coordinator or qualified designees are required to provide lab specific training when personnel start working and any time there is a change of work that introduces a new hazard. This training shall be documented and records maintained by Secretary of OHS Committee.

## XI. PERSONAL PROTECTIVE EQUIPMENT

### 11.1 Purpose

- Use of Personal Protective Equipment (PPE) is to protect personnel from risk of injury or death by creating a barrier against workplace hazards.
- Personal protective equipment is not a substitute for appropriate engineer or administrative controls or prudent work practices but shall be used in conjunction with these controls to ensure the safety and health of personnel.

### 11.2 Type of PPE

PPE when personnel are in The Department of Chemistry with hazards includes the following:

- Eye protection – This includes safety glasses, goggles, or face shield on the equipment by the manufacturer.
- Long pants or skirt (to the ankle).
- Shirt with the equivalent or greater coverage of a T-shirt.
- Closed-toe shoes with substantial soles.
- These requirements apply to all individuals when inside a laboratory. This includes laboratory personnel, visitors, students, service personnel, etc.

- The PPE requirements may be adjusted as needed to fit individual laboratory circumstances:
  - The PPE may be upgraded as designated by OHS Committee
  - The Safety Coordinator may also relax the PPE (except the shoe and shirt requirement) when:
    a) All hazards requiring PPE have been eliminated or mitigated via engineering controls
    b) The Safety Coordinator or designee requests a review of the PPE Hazard Assessment by the OHS Committee for the change. The OHS Committee will review the PPE Hazard Assessment.
    c) If the change is approved, the Safety Coordinator or designee shall post the modified PPE requirement.

**11.3 Eye Protection**

- Safety glasses and chemical splash googles shall comply with OHS Standard
- Safety glasses, goggles, or face shields shall always be worn when eye hazards are present.
- When performing activities such as using microscope, safety glasses do not need to be worn.
- Chemical splash goggles shall be used when a chemical splash hazard exists.
  a) Goggles can be worn over regular eyeglasses.
  b) Goggles equipped with indirect vents are recommended to prevent fogging. Direct venting goggles shall not be used where there is a
  c) chemical splash hazard.
  d) Face shields shall be worn when maximum protection from flying particles and harmful liquids is necessary. These shall be used in conjunction with goggles or safety glasses.

**11.4 Hand Protection**

- Skin contact with chemicals may result in irritation, burns, or absorption of the chemical into the blood stream.
- Appropriate gloves for the hazardous material shall be used.
  a) Refer to Glove Compatibility Chart to determine the appropriate chemical glove type to use
  b) Use appropriate thermal gloves for heat or cryogenic work (e.g., dry ice transfer).

- Proper use of gloves
  a) Gloves shall be changed any time the integrity of the glove is compromised.
  b) Disposable gloves shall not be reused
  c) While in the lab, remove gloves prior to handling items that may be handled without gloves such as phones or doorknobs.
  d) Gloves shall be removed prior to leaving the laboratory
  e) Gloves shall not be placed in general recycling

**11.4 Body Protection**

- When working with chemicals, a lab coat or chemical resistant apron shall be worn.
- When working with pyrophoric materials and some flammable materials, a fire resistant lab coat is required.
- Lab coats/aprons shall be stored away from personal clothing.

**11.6 Foot Protection**

- Closed-toe shoes with substantial soles shall be worn at all times in labs where chemical or physical hazards are present. Sandals shall not be worn.
- Chemical resistant overshoes or boots may be used to avoid possible exposure to corrosive chemical or large quantities of solvents or water that might penetrate normal footwear.

**11.7 Respirators**

When chemical substitution and effective engineering controls are not possible, respirators may be necessary.

## XII. PERFORMANCE, AUDIT, AND REVIEW

### 12.1 Performance Evaluation

12.1.1 The OHS Committee shall establish, implement and maintain a process(es) for monitoring, measurement, analysis and performance evaluation.

12.1.2 The OHS Committee shall determine:

a) what needs to be monitored and measured, including
   1. the extent to which legal requirements and other requirements are fulfilled;
   2. its activities and operations related to identified hazards, risks and opportunities;
   3. progress towards achievement OHS objectives;
   4. effectiveness of operational and other controls

b) the methods for monitoring, measurement, analysis and performance evaluation, as applicable, to ensure valid results;

c) the criteria against which the organization will evaluate its OHS performance

d) when the monitoring and measuring shall be performed;

e) when the results from monitoring and measurement shall be analysed, evaluated and communicated.

12.1.3 The OHS Committee shall evaluate the OHS performance, and determine the effectiveness of the OHS management system.

12.1.4 The OHS Committee shall ensure that monitoring and measuring equipment is calibrated or verified as applicable, and is used and maintained as appropriate.

**12.2 Evaluation of Compliance**

12.2 1 The OHS Committee shall establish, implement and maintain a process(es) for evaluating compliance with legal requirements and other requirements

12.1.2 The OHS Committee shall:

a) determine the frequency and method(s) for the evaluation of compliance;
b) evaluate compliance and take action if needed
c) maintain knowledge and understanding of its compliance status with legal requirements and other requirements;
d) retain documented information of the compliance evaluation result(s).

**12.3 Internal Audit**

12.2.1 The OHS Committee shall conduct internal audits at planned intervals to provide information on whether the OHS management system:

a) conforms to:
    1. the OHS Committee's own requirements for its OHS management system, including the OHS policy and OHS objectives;
    2. the requirements of this document;
b) is effectively implemented and maintained.

12.2.2 Internal Audit Programme

The OHS Committee shall

a) plan, establish, implement and maintain an audit programme(s) including the frequency, methods, responsibilities, consultation, planning requirements and reporting, which shall take into consideration the importance of the processes concerned and the results of previous audits;
b) define the audit criteria and scope for each audit;
c) select auditors and conduct audits to ensure objectivity and the impartiality of the audit process;
d) ensure that the results of the audits are reported to relevant managers; ensure that relevant audit results are reported to workers, and, where they exist, workers' representatives, and other relevant interested parties;
e) take action to address nonconformities and continually improve its OHS performance
f) retain documented information as evidence of the implementation of the audit programme and the audit results.

**12.4 Management Review**

12.4.1 Top management shall review the OHS management system, at planned intervals, to ensure its continuing suitability, adequacy and effectiveness.

12.4.2 The management review shall include consideration of:

a) the status of actions from previous management reviews;
b) changes in external and internal issues that are relevant to the OH&S management system including:
   1. the needs and expectations of interested parties;
   2. legal requirements and other requirements;
   3. risks and opportunities;
c) the extent to which the OHS policy and the OHS objectives have been met;
d) information on the OHS performance, including trends in:
   1. incidents, nonconformities, corrective actions and continual improvement;
   2. monitoring and measurement results;
   3. results of evaluation of compliance with legal requirements and requirements;
   4. audit results;
   5. consultation and participation of workers;
   6. risks and opportunities;
e) adequacy of resources for maintaining an effective OH&S management system;
f) relevant communication(s) with interested parties;
g) opportunities for continual improvement

12.4.3 The outputs of the management review shall include decisions related to:

a) continuing suitability, adequacy and effectiveness of the OHS management system in achieving its intended outcomes;
b) continual improvement opportunities;
c) any need for changes to the OHS management system;
d) resources needed;
e) actions if needed;
f) opportunities to improve integration of the OH&S management system with other business processes;
g) any implications for the strategic direction of the organization.

12.4.4 Top management shall communicate the relevant outputs of management reviews to workers, and, where they exist, workers' representatives

12.4.5 The organization shall retain documented information as evidence of the results of management reviews.

## XIII. IMPROVEMENT

The OHS Committee shall determine opportunities for improvement and implement necessary actions to achieve the intended outcomes of its OHS management system.

### 13.1 Incident Nonconformity and Corrective Action

13.1.1 The OHS Committee shall establish, implement and maintain a process(es), including reporting, investigating and taking action, to determine and manage incidents and nonconformities.

13.1.2 Corrective actions shall be appropriate to the effects or potential effects of the incidents or nonconformities encountered.

13.1.3 The OHS Committee shall retain documented information as evidence of:
— the nature of the incidents or nonconformities and any subsequent actions taken;
— the results of any action and corrective action, including their effectiveness.

13.1.3 The organization shall communicate this documented information to relevant workers, and, where they exist, workers' representatives, and other relevant interested parties.

**13.2 Continual Improvement**

The OHS Committee shall continually improve the suitability, adequacy and effectiveness of the OHS management system, by:

a) enhancing OHS performance;
b) promoting a culture that supports an OHS management system;
c) promoting the participation of workers in implementing actions for the continual improvement of the OHS management system;
d) communicating the relevant results of continual improvement to workers, and, where they exist, workers' representatives;
e) maintaining and retaining documented information as evidence of continual improvement.

## XIV. REFERENCES

**Safety**

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**Health**

2. Undang-Undang No. 17 Tahun 2023 tentang Kesehatan

**HSE Management**

3. PP No. 50 Tahun 2012 tentang Penerapan Sistem Manajemen Keselamatan dan Kesehatan Kerja
4. PERMENAKER RI No. 4 tahun 1987 tentang Panitia Pembina Keselamatan dan Kesehatan Kerja serta Cara Penunjukan Ahli Keselamatan Kerja
5. PERMENAKER RI No.5 tahun 1996 tentang Sistem Manajemen Keselamatan Kerja

6. PERMENAKER RI No.26 tahun 2014 tentang Penyelenggaraan Penilaian Penerapan Sistem Manajemen Keselamatan Kerja

**FIRE Protection**

7. PERMEN PU No. 26 tahun 2008 tentang Persyaratan Teknis Sistem Proteksi Kebakaran pada Bangungan Gedung dan Lingkungan
8. PERMENAKERTRANS No.4 tahun 1980 tentang Syarat-Syarat Pemasangan dan Pemeliharaan Alat Pemadam Api Ringan
9. PERMENAKER RI No. 2 tahun 1983 tentang Instalasi Alarm Kebakaran Automatik

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10. PP No. 74 tahun 2001 tentang Pengelolaan Bahan Berbahaya dan Beracun
11. PP No. 22 tahun 2021 tentang Penyelenggaraan Perlindungan dan Pengelolaan Lingkungan Hidup (P3LH)
12. PERMENLHK No.6 tahun 2021 tentang Tata Cara Persyaratan dan Pengolahan Limbah Bahan Berbahaya dan Beracun
13. PERMENEGLH No.3 tahun 2008 tentang Tata Cara Pemberian SImbol dan Label Bahan Berbahaya dan Beracun
14. PERMENLH No.14 tahun 2013 tentang Simobl dan Label Limbah Bahan Berbahaya dan Beracun
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17. Pedoman Teknis PERMENAKER No, 5 tahun 2018 tentang Keselamatan Kesehatan Kerja di Lingkungan Kerja
18. PERMENKES RI No.1077 tahun 2011 tentang Pedoman Penyehatan Udara dalam Ruang Rumah

**Radiation**

19. PP No.45 tahun 2023 tentang Keselamatan Radiasi Pengion dan Keamaan Zat Radioaktif

**Office**

20. PERMENKES RI No.48 Tahun 2016 tentang Standar Keselamatan dan Kesehatan Kerja Perkantoran

**Public Facilities and Evacuation Facilities**

21`. PERMEN PUPR Np.14 tahun 2017 tentang Persyaratan Kemudahan Bangunan Gedung

22. SNI 03-1746-2000 tentang Tata Cara Penyelamatan terhadap Bahaya Kebakaran pada Bagunan Gedung

**First Aid**

23. PERMENAKERTRANS No.15 tahun 2008 tentang Pertolongan Pertama pada Kecelakaan di Tempat Kerja

**Disaster Management**

24. PERKABANAS Penanggulangan Bencana No.17 tahun 2019 tentang Pedoman Standardisasi Peralatan Penanggulangan Bencana

**Safety Sign**

25. ISO 7010 tahun 2019 Graphical Symbols-Safety Colours and Safety Signs-Registered Safety Signs