SOP: Chemical Handling, Storage, and Spill Response

This SOP details **chemical handling, storage, and spill response** procedures to ensure safe management of hazardous substances. It includes guidelines for proper labeling, secure storage, personal protective equipment usage, safe handling practices, spill prevention strategies, immediate spill containment and cleanup methods, disposal protocols, and emergency response actions to minimize health risks and environmental impact.

> **Note:** All laboratory staff must read and follow this SOP before working with hazardous chemicals.

1. Purpose

To provide procedures for the safe handling, storage, and spill response of chemicals to protect personnel, property, and the environment.

2. Scope

This SOP applies to all personnel who handle, store, or respond to spills of chemicals within laboratory, storage, and operational areas.

3. Responsibilities

- **Supervisors:** Ensure staff are trained in chemical safety and spill response.
- **Staff & Students:** Follow all procedures and immediately report unsafe conditions or spills.
- **Safety Officer:** Maintain and update SOP; oversee incident response and training.

4. Chemical Labeling

- All containers must be clearly labeled with:
    - Chemical name
    - Hazard warnings (e.g., flammable, corrosive)
    - Date of receipt/preparation
    - Responsible person's name or initials
- Do not use chemicals in unmarked containers.

5. Chemical Storage

- Store chemicals by compatibility (refer to chemical compatibility chart).
- Segregate acids, bases, oxidizers, flammables, and reactives.
- Keep containers sealed and upright.
- Store chemicals in designated, ventilated storage areas away from heat sources, direct sunlight, and incompatible materials.
- Ensure safety data sheets (SDS) are accessible near storage areas.

6. Personal Protective Equipment (PPE)

- Wear appropriate PPE:
    - Lab coat or apron
    - Chemical-resistant gloves
    - Safety goggles or face shield
    - Closed-toe shoes
    - Respirator (if required by SDS)
- Check PPE for integrity before use.

7. Safe Handling Practices

- Read the SDS before using any chemical.
- Work in a fume hood when handling volatile or highly toxic substances.

- Use secondary containment when transporting chemicals.
- Never pipette by mouth; use pipette aids.
- Avoid working alone with hazardous chemicals.

8. Spill Prevention Strategies

- Keep work areas clean and uncluttered.
- Use spill trays and absorbent pads under containers.
- Regularly inspect containers and storage areas for leaks or damage.
- Cap and return containers immediately after use.

9. Spill Response Procedures

1. **Assess the situation:**
    - Identify the chemical and hazard level.
    - Determine if it is a minor or major spill.
2. **Alert:**
    - Evacuate area if necessary.
    - Notify supervisor and safety personnel.
3. **Contain:**
    - Stop the source of the spill if safe.
    - Use absorbent materials to encircle and contain the spill.
4. **Cleanup:**
    - Wear appropriate PPE.
    - Use spill kits for specific chemical hazards.
    - Collect and dispose of waste as hazardous chemical waste, following disposal procedures.
5. **Decontaminate:**
    - Clean affected surfaces with suitable cleaning agent, rinse and dry.
6. **Report:**
    - Document the incident, cleanup, and disposal measures taken.

10. Chemical Waste Disposal

- Segregate chemical waste according to compatibility.
- Label waste containers with contents, hazards, and accumulation start date.
- Store waste in designated areas pending pickup.
- Do not dispose of chemicals down the drain unless specifically authorized.

11. Emergency Response

- Activate fire alarm and evacuate in case of large or hazardous spills.
- Provide first aid to affected persons; flush eyes/skin with water for at least 15 minutes for chemical contact.
- Contact emergency services (e.g., 911) and provide SDS to responders.
- Follow the facility emergency plan for major incidents.

12. Training

- All personnel must receive training on chemical hazards, safe handling, spill response, and emergency procedures before working with chemicals.
- Refresher training to be conducted annually or upon changes to the SOP.

13. References

- OSHA Hazard Communication Standard (29 CFR 1910.1200)
- Safety Data Sheets (SDS) for each chemical
- NFPA Chemical Compatibility charts