SOP: Chemical Handling, Storage, and Spill Response

This SOP details the protocols for **chemical handling, storage, and spill response**, including proper labeling, safe usage practices, secure and compliant storage methods, and immediate containment and cleanup procedures for chemical spills. The aim is to minimize risks to personnel health, environmental impact, and property damage through strict adherence to safety guidelines and effective emergency response actions.

1. Purpose and Scope

This Standard Operating Procedure applies to all employees, contractors, and laboratory personnel engaged in the handling, usage, and storage of chemicals, as well as those responsible for spill response activities within the facility.

2. Responsibilities

- **All Personnel:** Adhere to this SOP and report unsafe conditions or spills immediately.
- **Supervisors/Managers:** Ensure implementation of this SOP, maintain training records, and provide necessary resources.
- **Emergency Response Team:** Lead spill containment and cleanup actions; coordinate with relevant authorities when necessary.

3. Chemical Handling Procedures

1. Read and understand Safety Data Sheets (SDS) for each chemical prior to use.
2. Wear appropriate Personal Protective Equipment (PPE): lab coat, gloves, safety goggles, and other specified PPE.
3. Use fume hoods or other engineering controls as required.
4. Label all chemical containers clearly with:
    - Full chemical name (no abbreviations)
    - Concentration (if applicable)
    - Date received/opened
    - Hazard pictograms and warnings
5. Never eat, drink, or apply cosmetics in areas where chemicals are handled.
6. Wash hands thoroughly after chemical handling.

4. Chemical Storage Protocol

1. Store chemicals by compatibility group (e.g., acids, bases, flammables, oxidizers).
2. Avoid storing incompatible chemicals together-reference SDS and chemical compatibility charts.
3. Use designated, labeled cabinets (e.g., flammable storage cabinets, corrosives cabinets).
4. Ensure containers are sealed tightly and stored at recommended temperature/humidity.
5. Clearly label all storage areas with hazard signage.
6. Maintain updated inventory of all chemicals.

5. Spill Response Procedures

1. **Assess the Situation:**
    - Identify the chemical spilled and quantity.
    - Refer to the SDS for specific hazards and guidance.
2. **Alert Personnel:** Evacuate area if necessary and notify supervisor/Emergency Response Team.
3. **Restrict Access:** Isolate affected area to prevent further exposure or spread.
4. **Contain the Spill:**
    - Use appropriate spill kits: absorbents, neutralizers, containment barriers.
    - Wear suitable PPE as specified in the chemical's SDS.
5. **Clean Up:**
    - Collect residue and contaminated materials in proper waste containers.
    - Decontaminate affected area following SDS guidance.
6. **Disposal:** Dispose of waste according to hazardous waste procedures and regulatory requirements.
7. **Report:** Document the incident and response actions; submit report to supervisor and EHS.

Spill Type	Immediate Action	Who to Notify

Minor (manageable, no injury/exposure)	Clean using spill kit, dispose properly	Supervisor, lab manager
Major (large, toxic, fire risk, injury occurred)	Evacuate area, activate emergency response, call 911 (if needed)	Emergency Response Team, EHS, supervisor

6. Training and Review

- All personnel must complete annual training on chemical safety and spill response.
- This SOP will be reviewed and updated at least annually or following a significant incident.

7. References

- OSHA Hazard Communication Standard (29 CFR 1910.1200)
- Relevant Safety Data Sheets (SDS)
- Facility-specific Chemical Hygiene Plan