

Job Hazard Analysis

Operation Description: Science Chemical Inventory (Laboratory Chemicals)	
ODD: Schools, OCIP STE	Date Conducted: 06/20/16
Facility: Secondary Schools	Conducted By: SSP (P. Park, L. Lyons)
Location: Secondary Schools	Approved By: OCIP STE (R. Dillard, S. Phillips, J. Jefferson, B. Bowman)
Job Title(s): Science Teacher	
Required safety equipment:	
<ul style="list-style-type: none">• Personal Protective Equipment (PPE):<ul style="list-style-type: none">○ chemical splash goggles (eye glasses, safety glasses are not sufficient)○ chemical-resistant gloves○ lab coat and chemical-resistant apron (recommended)• No open-toed footwear, safety shoes with protective toe cap recommended• Always inspect PPE before and after use for damage/defects and cleanliness/contamination	
Notes:	
<ul style="list-style-type: none">• Only science or Systemwide Safety Programs staff are permitted to inventory science lab chemicals.• When possible, science staff should work with a partner when conducting an inventory.• Staff should be prepared to address chemical spills and reactions found while conducting this operation.• Inventory must be performed during a normal workday (not weekend, holiday, overnight) to ensure central office staff and spill remediation contractors are available in case of an emergency• Students may not assist and are not permitted to enter chemical storage rooms.	

Step 1: Prepare to Inventory

Performed by: science staff



Steps:

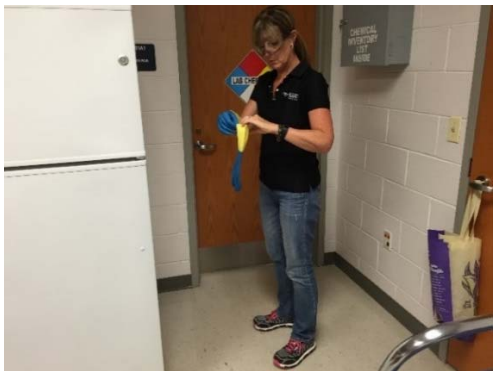
- Notify main office that an inventory will be in progress
- Ensure closest eyewash station and emergency shower are clean, unobstructed, and operable
- Ensure fire blanket and stocked first-aid kit are available
- Obtain and inspect required PPE:
 - chemical splash goggles
 - chemical-resistant gloves
 - chemical-resistant apron (recommended)
 - lab coat (recommended)
 - closed-toe footwear (safety shoes recommended)
- Gather necessary items:
 - chemical inventory form
 - chemical spill cleanup materials
 - Safety Data Sheets (SDSs)
 - Chemical Information List (CIL)

Hazards: None expected

Controls: None expected

Step 2: Enter Chemical Storage Room

Performed by: science staff



Steps:

- Don PPE
- Unlock door, open door
- Evaluate room for possible hazardous conditions:
 - visible chemical spills
 - visible smoke, vapors, fumes
 - visible chemical reaction, fire
 - unusual odors
 - disturbed items, broken glassware or containers
 - extreme temperature or humidity
- Address possible hazardous conditions in accordance with Chemical Hygiene Plan

Hazards:

- Injury or illness related to chemical exposure:
 - inhalation of vapors from spills or open containers
 - inhalation of smoke, vapors, fumes from chemical reactions, fire
 - eye/dermal absorption, ingestion from spills
- Puncture, cut by broken glass
- Slip, trip, or fall from spill or object on floor
- Burns, eye/ear injury, cuts, contusions from chemical reaction, explosion
- Head/foot injury from objects falling off shelves

Controls:

- Exit immediately and request assistance if hazardous conditions detected – **Do not attempt to fight fires!**
- Use eyewash or emergency shower immediately and seek assistance if exposed to corrosive chemicals, as needed
- Wear required PPE:
 - chemical splash goggles (eye glasses or safety glasses alone not sufficient)
 - chemical-resistant gloves
 - lab coat and chemical-resistant apron recommended
 - safety shoes recommended, no open-toed footwear
 - cut/puncture-resistant gloves over chemical gloves, if handling broken glass or other sharp items
- Handle components carefully – use tools as feasible
- Store chemicals safely
 - compatible groups, proper spacing/separation
- Store equipment safely
 - no heavy items on high shelves
 - no excessive stacking, unbalanced items
 - minimize storage of items other than chemicals in room

Step 3: Locate, Identify, Record Chemicals

Performed by: science staff



Steps:

- Locate chemical containers, turn or lift so label can be read
- For each chemical, record:
 - common or trade name
 - chemical name(s)
 - manufacturer
 - storage location
 - container size and type
 - total amount of chemical (estimated maximum amount of chemical expected to be stored at any time)
 - date chemical was brought to the school

Hazards:

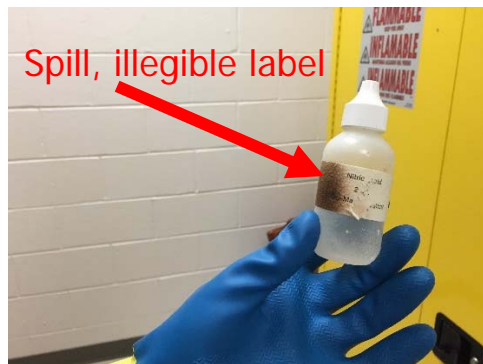
- Injury or illness related to chemical exposure:
 - inhalation of vapors from spills or open containers
 - inhalation of smoke, vapors, fumes from chemical reactions, fire
 - eye/dermal absorption, ingestion from spills
- Puncture, cut by broken glass
- Slip, trip, or fall from spill or object on floor
- Burns, eye/ear injury, cuts, contusions from chemical reaction, explosion
- Head/foot injury from dropped or falling chemical containers, equipment, or other heavy items
- Musculoskeletal injury from lifting heavy containers, items

Controls:

- Exit immediately, request assistance for hazardous conditions
- Wear required PPE:
 - chemical splash goggles
 - chemical-resistant gloves
 - lab coat and chemical-resistant apron recommended
 - safety shoes recommended, no open-toed footwear
 - cut/puncture-resistant gloves over chemical gloves, if handling broken glass or other sharp items
- Handle containers carefully – be aware of loose lids, container damage, leaks
- Use safe lifting techniques, avoid lifting heavy items if feasible
- Store chemicals safely
 - compatible groups, proper spacing/separation
- Store equipment safely
 - no heavy items on high shelves
 - no excessive stacking, unbalanced items
 - minimize storage of items other than chemicals in room
 - keep walkways, doorways clear

Step 4: Identify, Correct Chemical Storage Problems

Performed by: science staff



Steps:

- Identify leaks, spills
- Identify unlabeled or improperly-labeled containers
- Identify incorrectly stored chemicals, including:
 - incompatible chemicals stored together
 - non-flammables in flammables cabinets
 - non-corrosives in corrosives cabinets
- Identify damaged containers
- Identify unwanted, excess, and expired chemicals
- Correct any storage and labeling errors
- Contact STE to arrange for removal/disposal of unwanted or unknown chemicals

Hazards:

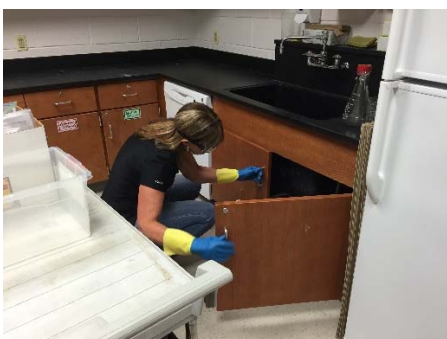
- Injury or illness related to chemical exposure:
 - inhalation of vapors from spills or open containers
 - inhalation of smoke, vapors, fumes from chemical reactions, fire
 - eye/dermal absorption, ingestion from spills
- Puncture, cut by broken glass
- Slip, trip, or fall from spill or object on floor
- Burns, eye/ear injury, cuts, contusions from chemical reaction, explosion
- Head/foot injury from dropped or falling chemical containers, equipment, or other heavy items

Controls:

- Exit immediately and request assistance if hazardous conditions detected
- Wear required PPE:
 - chemical splash goggles
 - chemical-resistant gloves
 - lab coat and chemical-resistant apron recommended
 - safety shoes recommended, no open-toed footwear
 - cut/puncture-resistant gloves over chemical gloves, if handling broken glass or other sharp items
- Handle containers carefully – be aware of loose lids, container damage, leaks
- Store chemicals safely
 - compatible groups, proper spacing/separation
- Store equipment safely
 - no heavy items on high shelves
 - no excessive stacking, unbalanced items
 - minimize storage of items other than chemicals in room
 - keep walkways, doorways unobstructed

Step 5: Search for Science Lab Chemicals Outside of the Chemical Storage Room

Performed by: science staff



Steps:

- Search all other science areas for lab chemicals, including:
 - closets and classrooms
 - cabinets, drawers, shelves, boxes
 - lab hoods, refrigerators
- Relocate found chemicals to chemical storage room
- Inventory relocated chemicals

Hazards:

- Injury or illness related to chemical exposure:
 - inhalation of vapors from spills or open containers
 - inhalation of smoke, vapors, fumes from chemical reactions, fire
 - eye/dermal absorption, ingestion from spills
- Puncture, cut by broken glass
- Slip, trip, or fall from spill or object on floor
- Burns, eye/ear injury, cuts, contusions from chemical reaction, explosion
- Head/foot injury from dropped or falling chemical containers, equipment, or other heavy items

Controls:

- Wear required PPE:
 - chemical splash goggles
 - chemical-resistant gloves
 - lab coat and chemical-resistant apron recommended
 - safety shoes recommended, no open-toed footwear
 - cut/puncture-resistant gloves over chemical gloves, if handling broken glass or other sharp items
- Handle containers carefully – be aware of loose lids, container damage, leaks
- Do not store lab chemicals outside of chemical storage room

Step 6: Remove PPE

Performed by: science staff



Steps:

- Remove PPE:
 - apron, lab coat
 - goggles
 - gloves
- Inspect PPE for damage, defects, contamination
- Discard or decontaminate (if reusable)
- Return clean reusable PPE to storage, if good
- Always wash hands after removing PPE
- Ensure adequate stock of PPE (including necessary sizes) for students, staff

Hazards:

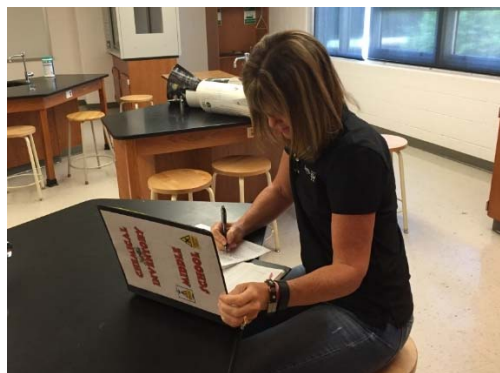
- Injury or illness related to chemical exposure:
 - eye/dermal absorption, ingestion from contaminants on PPE
- Puncture, cut by broken glass on PPE

Controls:

- Appropriate training on PPE selection and use for students, staff
- Use of correct PPE (material, size, type)
- Proper PPE removal, disposal to prevent contact with contaminants
- Ensure proper use of PPE by students, staff
- Ensure goggle sanitizing cabinet operates properly

Step 7: Revise Chemical Information List (CIL), Safety Data Sheet (SDS) Collection

Performed by: science staff



Steps:

- Revise the CIL to reflect changes:
 - addition of chemicals
 - chemical quantity changes
 - removal of chemicals
- Alphabetize CIL by common/trade name (MOSH requirement)
- Revise the SDS collection (add/remove SDSs, as necessary)
- Ensure science staff are aware of updates
- Store CIL and SDSs near chemical storage room in a readily accessible location

Hazards: None expected

Controls: None expected



Science Chemical Storage Guidelines

Consult Chemical Hygiene Plan, STE safety documents for additional guidance and requirements

- Ensure all science staff and students are trained on health/physical hazards of science chemicals at the school
- Ensure anyone else who could be exposed to science chemicals (building service workers, other educators who work in science areas) are also sufficiently trained, as needed
- Be prepared for emergencies before they occur:
 - Keep eyewash stations and emergency showers clean and unobstructed – test monthly
 - Ensure spill clean-up materials are available
 - Ensure stocked first aid kit and fire blanket are readily accessible
 - Ensure all walkways, aisles, and exits are unobstructed
- Ensure proper PPE is available, clean, in good condition and everyone is trained to use PPE and uses it
 - chemical-resistant gloves – nitrile, neoprene, butyl (check SDS or chemical resistance guides from glove manufacturer for correct glove for the chemical to be used – **no glove protects against all chemicals**)
 - remove non-chemical-resistant gloves from the lab (food service gloves, vinyl, latex)
 - minimize chemical contact even with PPE – PPE is not impervious
 - chemical-resistant aprons
 - lab coats – might not be flame-resistant, probably not chemical-resistant
 - goggles – must be designed for chemical splash, impact (ANSI Z87.1 labeled)
 - faceshields – for face protection – always wear goggles underneath for eye protection
 - cut-resistant, heat-resistant gloves if needed
- Store all science lab chemicals in the chemical storage room only
- Students are not permitted in chemical storage rooms
- Consumer products and food products used for science labs must be labeled and stored as lab chemicals – ‘For lab use – Do not consume’ for food products
- Store chemicals by compatibility and hazard class (Flinn system recommended)
- Store hazardous chemicals below shoulder height – consider heights of science staff who will work in the chemical storage room
- Only store flammable chemicals in flammables cabinets
- Only store acids/corrosives in acids/corrosives cabinets
- Do not overload shelves with chemicals and/or equipment
- Do not stack chemical containers on top of chemical containers
- Minimize storage of equipment or any items other than chemicals in chemical storage rooms
- Keep chemical information list (CIL) and safety data sheets (SDSs) readily accessible outside the chemical storage room – in an adjacent prep room or nearby
- Report all chemical accidents/incidents to STE and Systemwide Safety Programs (see CHP)