

# CHEMICAL HYGIENE PLAN



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## Introduction

### Scope of the Chemical Hygiene Plan

It is the policy of the Idaho Falls School District 91 to provide a place of employment that is free from recognized hazards likely to cause physical harm, and that complies with all federal, state, and local laws and regulations affecting the safety and health of its employees. This Chemical Hygiene Plan (CHP) addresses this goal for the laboratory workplace by including the requirements of the Occupational Safety and Health Administration (OSHA) Standard on Occupational Exposure of Hazardous Chemicals in Laboratories as adopted by the Idaho Division of Building Safety.

### Applicability of the Laboratory Standard

The laboratory standard covers "laboratory use of hazardous chemicals", where chemical manipulations occur which are not part of a production process.

"Laboratory scale" means work with substances in which the containers used for reactions, transfers, and other handling of substances are designed to be easily and safely manipulated by one person. This definition excludes those workplaces whose function is to produce commercial quantities of materials.

Employees who are to be addressed in the Chemical Hygiene Plan are individuals employed in the laboratory workplace that may be exposed to hazardous chemicals in the course of his or her assignments. This includes employees who actually work in the laboratory (instructors and aides) or employees who because of their work assignments may be required to enter a laboratory where potential exposures may occur, such as maintenance or custodial personnel.

Employees covered by this plan are the science Department Personnel of:

- Skyline High School
- Idaho Falls High School
- Compass Academy
- Taylorview Middle School
- Eagle Rock Middle School

*The occasional visitor to the laboratory, such as a guest or sales person, is not included in the definition of employee and therefore does not need to be addressed in the Chemical Hygiene Plan. Students pose a unique consideration. Because students are not employees, they are not formally covered by provisions of the CHP. However, there are recommendations in this document that suggest appropriate student rights and responsibilities related to issues of chemical safety.*

### Summary of the Requirements

The Laboratory Standard requires that covered laboratories prepare, implement, and make available to employees, a Chemical Hygiene Plan which is capable of:

1. Protecting employees from health hazards associated with hazardous chemicals in the laboratory.
2. Keeping laboratory employees' exposures to OSHA and IDBS-regulated substances below the permissible exposure limits.

The Chemical Hygiene Plan should include:

1. Procedures for determining employee exposure that includes: initial monitoring, periodic monitoring, and employee notification of the monitoring results.

2. Employee and student information and training to ensure that they are apprised of the hazards of chemicals present in their work area(s).
3. Procedures for employees who work with hazardous chemicals to receive medical attention under specified circumstances.
4. A system for hazard identification of incoming containers of chemicals and for chemical substances developed in the lab.
5. Requirements for the use of proper respiratory equipment where necessary to maintain exposure below permissible exposure limits.
6. Record keeping procedures for employee exposure monitoring measurements and medical records.

## Chemical Hygiene Personnel

### Objective

Successful development and implementation of a Chemical Hygiene Plan must be by the full commitment of the senior administrators, the school district ES&H Specialist and laboratory Chemical Hygiene Officer. The Chemical Hygiene Officers' goal is to ensure that responsibility for chemical hygiene and safety in the laboratories is shared by all who work in those laboratories including students.

### Key Personnel and Their Responsibilities

#### 1. Superintendent

The superintendent is ultimately responsible for chemical hygiene within the school district. The Superintendent should, with other administrators, provide continuing support for district-wide chemical hygiene programs.

#### 2. Principal

The principals are responsible for chemical hygiene programs in the local schools. The principal will appoint a Chemical Hygiene Officer for the local school and will monitor, support, and require school employees' compliance with the CHP.

#### 3. Environmental, Safety & Health Specialist

The school district Environmental, Safety & Health Specialist will ensure compliance with the CHP, monitor local school's implementation of the school district CHP, and make necessary revisions to this CHP.

#### 4. School Chemical Hygiene Officer

The Chemical Hygiene Officer (CHO) has the following responsibilities:

- a. Maintain adequate records detailing chemical inventory, student laboratory safety training and laboratory safety inspection.
- b. Ensure that employees and students are provided with the required and appropriate training to carry out their responsibilities.
- c. Monitor local SCHOOL compliance with the school district CHP.

#### 5. Laboratory Instructor

Each laboratory instructor is responsible for planning and conducting each laboratory operation in accordance with the appropriate laboratory procedures and rules outlined in the Chemical Hygiene Plan. Appropriate student

training and documentation of training shall be the responsibility of the laboratory instructor. It is also the instructor's responsibility to develop good personal chemical hygiene habits.

## 6. Students

Good personal chemical hygiene habits must also be taught to all students who use the lab while enrolled in science courses. Students shall not be allowed to use school district laboratories until such training has taken place. Students shall not be allowed to use school district laboratories unless they are directly supervised by a school district laboratory instructor. Students shall not be allowed to use school district laboratories outside of regular science course classes unless they first obtain permission from the school CHO and are directly supervised during their work.

## Standard Operating Procedures for Laboratories

### Objective

The objective of these operating procedures is to protect employees and students working in the laboratory, others who may be exposed, and to protect the environment from injury or contamination due to hazardous chemicals.

### Employee Exposure Protection

Laboratory operations will be conducted in a manner that prevents employee exposure to OSHA/IDBS-regulated substances in excess of the permissible exposure limits (PELs). (OSHA, 29 CFR Part 1910 Subpart Z.)

#### 1. Respiratory Equipment

Proper respiratory equipment will be provided to employees and students where the use of respirators is necessary to maintain exposure below permissible exposure limits.

#### 2. Personal Protective Equipment

Personal protective equipment and instructions on the proper use of this equipment will be provided to employees and students, as appropriate, to minimize exposure to hazardous chemicals.

### Laboratory Facilities (Design Criteria)

The work conducted in a lab and its scale must be appropriate to the physical facilities available and to the quality of the ventilation system.

#### 1. Laboratory Design

A laboratory facility should include, where appropriate:

- a. An adequate general ventilation system with air intakes and exhausts located so as to avoid intake of contaminated air.
- b. Well-ventilated stockrooms and storerooms.
- c. Proper chemical storage for specific hazardous materials; e.g., flammables, corrosives, poisons.
- d. Adequate laboratory hoods and sinks.
- e. Emergency equipment including fire extinguishers, spill kits, and alarms.
- f. First aid equipment including first aid kits, eyewash fountains and drench showers.

2. Laboratory Ventilation
  - a. The general laboratory ventilation system should provide a source of air for breathing and for input to local ventilation devices, ensure that laboratory air is continually circulated and direct air flow into the laboratory from non-laboratory areas and out to the exterior of the building.
  - b. General laboratory ventilation should not be relied on for protection from exposure to hazardous chemicals released into the laboratory. A rate of 4-12 room air changes per hour is normally adequate general ventilation if local exhaust systems such as hoods are used as the primary method of control. General air flow should not be turbulent and should be relatively uniform throughout the laboratory. The most recent ASHRAE standard should be consulted for new facilities and for any facility experiencing indoor air quality problems. ASHRAE recommends 15-20 CFM per person in school classrooms and higher rates for hazardous areas. General ventilation rates must be tied to the size of the room, the occupant load, and the exposure potential. How is the facility being used? Are chemical experiments being performed in, or outside of, the hood? Are select carcinogens or acute toxics allowed in the lab? All of these items will greatly affect the general ventilation rate in the laboratory/classroom in a middle or high school.
  - c. A laboratory hood with a minimum of 2.5 linear feet of hood space per person should be provided for every two students if they spend most of their time working with chemicals. Airflow into and within the hood should not be excessively turbulent and hood face velocity should be adequate (typically 60-125 fpm).
  - d. Cabinets that store hazardous chemicals should be fitted with auxiliary ventilation systems. Stockrooms should be well ventilated.
  - e. The quality and quantity of ventilation should be evaluated when installed, regularly monitored (at least once a month), and reevaluated whenever a change in ventilation devices is made.

## Employee Exposure Determination and Monitoring

If there is reason to believe that exposure levels for an OSHA/IDBS-regulated substance routinely exceed the action level (or in the absence of an action level, the PEL), the Environmental, Safety & Health Specialist or Chemical Hygiene Officer will ensure that employee or student exposure to that substance is measured. (Refer to Section 8.)

## Medical Consultations and Medical Exams

Employees who work with hazardous chemicals will be provided with an opportunity to receive medical attention when overexposure to a hazardous chemical is suspected. (Refer to Section 8.)

## Chemical Procurement

The activities and personnel involved in purchasing or otherwise acquiring chemicals for the laboratory must be performed in accordance with the Chemical Hygiene Plan.

1. Plan Purchase Approval

This school district does not currently have a specific approval procedure for chemical purchases. However, it is this school district's policy that all chemical purchases are of minimum amount needed for immediate needs and address a valid curriculum based need. Stock piling of chemicals for future use for any reason is discouraged. A copy of each purchase order will be sent to the Environmental, Safety & Health Specialist.

## 2. Receiving Shipments

Before a substance is received, information on proper handling, storage and disposal should be available and known to employees involved in shipping, receiving and distribution of laboratory chemicals. Preferably, all substances should be received in a central location within the department and inspected by the department Chemical Hygiene Officer. No container should be accepted without an adequate identifying label and Safety Data Sheet.

## 3. Carcinogens, Reproductive toxins and Highly Acute Toxins

No select carcinogens, reproductive toxins or highly acute toxins are allowed in middle school or high school laboratories in this school district without written approval of the Environmental, Safety & Health Specialist.

## Hazard Identification

Laboratory chemicals and facilities should be properly labeled to identify any hazards associated with them for employee information and protection.

### 1. Container Labels

Labels on incoming containers of hazardous chemicals must not be removed or defaced. Unlabeled bottles of chemicals should not be opened; such materials should be disposed of promptly as outlined in the Waste Disposal Procedures below.

When dispensing chemicals from one container to another, make sure that the new container is properly labeled with the chemical name and hazards. All secondary containers should be labeled in this manner unless they are intended for the immediate use of the person who dispensed the chemicals.

### 2. Safety Data Sheets

Safety Data Sheets received with incoming shipments of hazardous chemicals must be maintained and made readily available to laboratory employees and students upon request. No chemical shall be in storage in any laboratory without a Safety Data Sheet readily available.

### 3. Laboratory Signs

Laboratory areas that have special or unusual hazards should be posted with warning signs. Signs should be posted to show the location of safety showers, eyewash stations, exits, first aid kits, fire extinguishers, etc. Extinguishers should be labeled to show the type of fire for which they are intended. Waste containers should be labeled to show the type of waste that can be safely deposited. Consumption of food and beverages is not permitted in areas where laboratory operations are being carried out. Areas where food is permitted should be marked and a warning sign (e.g., EATING AREA - NO CHEMICALS) should be posted.

## Material Handling

The storage, distribution, and methods of handling hazardous chemicals will be conducted in a manner which minimizes the potential for accidents and employee or student exposure.

### 1. Stockrooms/Storerooms

Hazardous chemicals should be segregated in a well-identified area with local exhaust ventilation. Stockrooms/storerooms should remain locked. Stockrooms/storerooms should be under the control of one person who is responsible for its safety and inventory control. Stored chemicals should be examined at least once each semester and prior to the beginning of classes, for replacement, deterioration, and container integrity.

## 2. Distribution

When chemicals are hand carried, they should be placed in an outside container or acid-carrying bucket to protect against breakage and spillage. To avoid exposure to persons on passenger elevators, chemicals should be transported on freight-only elevators, if possible.

Compressed gas cylinders should never be rolled or dragged. Cylinders should be transported with a suitable handcart and the cylinder strapped in place.

## 3. Laboratory Storage

Quantities of chemicals stored in the laboratory should be kept to a minimum. Chemicals should be stored away from heat sources and direct sunlight. All Chemicals in the Idaho Falls School District 91 will be stored according to the Flynn Scientific chemical storage protocol. Incompatible materials should be segregated for storage. Periodic inventories shall be conducted, at the end of each semester/trimester, with unnecessary items being sent for disposal following the Waste Disposal Procedures outlined below.

## 4. Use of a Hood

A hood should be used for operations that might result in release of toxic chemical vapors or dust. In general, the hood should be used when working with any appreciably volatile substance with a Threshold Limit Value (TLV) of less than 50 ppm.

Chemicals stored in the hood should not be allowed to block vents or air flow and should be kept to a minimum. The hood ventilation system should be kept "on" if chemicals are stored in the hood.

Chemical storage in the hood is only allowed on a temporary basis, although some hoods have a built-in storage compartment. These compartments can only be used if they provide ventilation to the outside. This applies to all chemical storage cabinets.

## 5. Working Alone

No experiments should be conducted by an instructor or student working alone in a laboratory. There are no exceptions to this policy.

## 6. Dispensing Chemicals

When chemicals are being transferred from one container to another, employees should be sure that the new container is compatible with the chemical and is labeled with the identity of the chemical. The label must have the date and name of the employee filling the container. Also, the use of hazard warning labels are required, e.g., poison, corrosive, flammable, etc.

## Laboratory Operations/Activities Requiring Approval

Instructors should be informed of those laboratory procedures and operations which require prior approval from the Chemical Hygiene Officer to ensure that these activities are carefully monitored for adherence to the Chemical Hygiene Plan and regulatory requirements.

### Laboratory Operations Requiring Approval

- a. Non-routine procedures for which the employee or student has not been trained.
- b. Analytical work with an unknown substance.
- c. Disposal of chemical wastes.
- d. Operations or activities for which there are no written procedures.
- e. Purchase of chemicals.

## Emergency Prevention and Response

Laboratory instructors and other employees should be familiar with emergency procedures in order to prevent and reduce the impact of laboratory accidents.

### 1. Emergency Procedures

The emergency procedures should address a failure in the ventilation systems and evacuation of the laboratory.

### 2. First Aid

Schools must have personnel trained in first aid available during working hours to render assistance until medical help can be obtained. All laboratory science personnel in this district are encouraged to possess a valid first aid card.

### 3. Emergency Equipment

The Environmental, Safety & Health Specialist and/or Chemical Hygiene Officer will ensure that adequate emergency equipment is available in the laboratory and inspected periodically to ensure that it is functioning properly. (Refer to the laboratory safety checklist in this manual.)

### 4. Accident Reports

All accidents and near accidents should be carefully investigated. The results of this investigation and recommendations for the prevention of similar occurrences should be forwarded to the Environmental, Safety & Health Specialist. Accident reports will be kept on file with the Environmental, Safety & Health Specialist and made available upon request.

## Waste Disposal

The Environmental, Safety & Health Specialist and Chemical Hygiene Officer will ensure that laboratory chemicals are disposed of in compliance with appropriate regulations and in a manner which minimizes damage to human health and the environment.

### 1. Waste Handling

Chemical wastes should be removed from the laboratory to a central waste storage area, by authorized personnel, at least once a semester or upon request, and from the central storage area at regular intervals. Unlabeled containers of chemicals and solutions should undergo prompt disposal; if partially used, they should not be opened.

### 2. Waste Disposal/Recycling

Laboratory wastes should be recycled whenever possible. Before disposing of any laboratory waste materials, consult the Environmental, Safety & Health Specialist for the proper disposal method or procedure. Hoods should not be used as a waste disposal method for volatile chemicals.

### 3. Waste Removal Requests

Chemical wastes should be removed from the laboratory to a central waste storage area, by authorized personnel upon request. A waste removal request will be sent to the Environmental, Safety & Health Specialist by the building CHO. This request must state the common name, chemical formula, amount, and type of container of the substance to be removed. (see attached form)

## Information and Training

The Environmental, Safety & Health Specialist and Chemical Hygiene Officer will provide laboratory personnel and other appropriate employees (e.g., receiving and shipping personnel, custodial, maintenance, stockroom personnel, emergency teams) with information and training on the hazards of chemicals present in their work area and what to do if an accident occurs.

### 1. Training Program

Training will consist of at least the following subjects:

- a. Methods that may be used, and observations to detect, the release or presence of a hazardous chemical (such as continuous monitoring devices and the visual appearance or odor of hazardous chemicals when being released).
- b. The physical and health hazards of chemicals in the work area.
- c. The measures that instructors can take to protect themselves and their students from these hazards, including specific procedures that this school district has implemented to protect instructors and students from exposure to hazardous chemicals (e.g., general laboratory safety rules, emergency procedures and protective equipment to be used).

### 2. Information for Employees

Employees will be provided with the following information:

- a. The OSHA Standard for Occupational Exposure to Hazardous Chemicals in Laboratories
- b. The permissible exposure limits (PEL's) for OSHA/IDBS-regulated substances or recommended exposure limits for other hazardous chemicals where there is no applicable standard.
- c. The signs and symptoms associated with exposure to hazardous chemicals used in the laboratory.
- d. The location and availability of reference material on the hazards, safe handling, storage and disposal of hazardous chemicals found in the laboratory including Safety Data Sheets.

### 3. When to Provide Training and Information

Information and training will be provided at the time of the employee's initial assignment to the work area where hazardous chemicals are present and prior to assignments involving new exposure situations. Refresher information and training will be provided at least annually.

Students will receive and Instructors will document general laboratory safety training at the beginning of each semester/trimester and whenever practice demonstrates a need. Specific safety procedures will be taught or reviewed whenever the need dictates.

## Inspections and Reviewing Chemical Hygiene Plan

General safety inspections of the laboratory and annual review of the Chemical Hygiene Plan will contribute to overall laboratory and employee safety. The Chemical Hygiene Officer will ensure that these procedures are followed in each department and by each Environmental, Safety & Health Specialist. Documentation of compliance will be available in schools.

## 1. Inspecting Laboratory Safety Equipment

Laboratory safety equipment will be inspected at least once a semester to ensure fitness for use and modified if inadequate, including:

- a. Fume hoods & other protective equipment (environmental controls)
- b. Personal protective equipment (e.g., gloves, respirators).
- c. Emergency equipment (e.g., fire extinguishers, spill kits).
- d. First aid equipment (e.g., showers, eyewash stations). (See science lab safety checklist for complete list.)

## 2. Review of the Chemical Hygiene Plan

The Chemical Hygiene Plan for the District will be reviewed by the Environmental, Safety & Health Specialist and the Chemical Hygiene Officers at least annually for:

- a. Compliance with current regulations and for adequacy in protecting employees from the health and physical hazards associated with chemicals in use in the laboratory. The results of this review should be recorded, including notes on needed changes, when those changes were made, etc.
- b. The plan will be updated as necessary (e.g., when there are changes in laboratory operations, laboratory personnel, regulations, etc.) and in a timely manner.

## General Laboratory Safety Rules

### Objective

To protect the health and safety of laboratory instructors and students who work with hazardous chemicals through training and careful attention to safe operation practices.

### General Rules

The following pages contain the General Laboratory Safety Rules for all school district laboratories. Other specific laboratory safety rules for individual laboratories can be added to these rules by the Chemical Hygiene Officer of that laboratory.

1. Know the safety rules and procedures that apply to the work at hand. Before beginning any new operation, determine the potential hazards and appropriate safety precautions to take.
2. Know the location of, and how to use, emergency equipment in the area, as well as how to obtain additional help in an emergency. Be familiar with emergency procedures.
3. Know the types of protective equipment that are available and use the proper equipment for each job.
4. Watch out for unsafe conditions and report them so that corrections can be made as soon as possible. One person's accident can be a danger to everyone in the lab area.
5. Consuming food or beverages in laboratories or areas where chemicals are being used or stored is not permitted.
6. Practical jokes or other behavior that might distract, startle or confuse another worker or student can be dangerous and must be avoided.
7. Make sure that you use equipment for its designed purpose only.

8. If you leave an operation unattended for any period of time, leave the laboratory lights on, post a sign, and take the necessary precautions for the event of a failure of a utility service (such as electricity or cooling water). Any time chemicals are out of locked cabinets or storerooms, an unattended lab must be locked.
9. Notify the laboratory Chemical Hygiene Officer immediately if you have been exposed to a hazardous chemical.

## Chemical Handling

1. Do not smell or taste chemicals.
2. Always add acid to water. Never add water to acid.
3. Know the hazards posed by the different classes of chemicals, including oxidizers, flammables, corrosives, compressed gasses, acutely hazardous and chronically hazardous chemicals.
4. Read and understand the Safety Data Sheet (SDS) before using any new chemical.
5. Be aware of the proper waste disposal methods for the chemicals you are handling. Improper disposal may lead to injury to human health, the environment and/or facility equipment.
6. Be sure that equipment is carefully secured before its use. Combine reagents in the proper order, and avoid adding solids to hot liquids.
7. Never work alone in the laboratory. Make arrangements to have someone monitor your activities.
8. When transporting, storing, using, or disposing of any substance, be sure that the substance cannot accidentally come into contact with an incompatible substance. This contact could result in explosions or the production of highly toxic or flammable substances. Refer to incompatibility charts.
9. When chemicals are being transferred from one container to another, be sure that the new container is compatible with the chemical and is labeled with the identity of the chemical. Labels shall be dated and have the name of the person making the transfer.

## Health and Hygiene

1. Wear appropriate eye protection at all times in areas where chemicals are used or stored. Do not use contact lenses in the laboratory. The plastic lens can absorb chemical vapors which can then cause serious eye damage.
2. Use protective apparel, including face shields, gloves, and other special clothing, as needed. Inspect gloves before each use, wash them before removal, and replace them periodically. Avoid contact between gloves and exposed skin, clothing, and eyes or mucous membranes during use.
3. Long hair and loose clothing should be confined to avoid accidents; lab smocks or aprons are highly recommended. No shorts or short skirts should be worn in the labs or storage areas. Sandals, cloth sneakers, opened toes, and perforated shoes shall not be worn. Feet should be covered in the event of a spill.
4. Mouth suction to pipet chemicals or to start a siphon shall NOT be permitted for any laboratory procedure; a pipetter, pipet bulb, or aspirator shall be used to provide vacuum.
5. Avoid exposure to gases, vapors, and aerosols. Use appropriate safety equipment when this type of exposure is likely.
6. Wash well with soap and water before leaving the laboratory. Chemicals on hands can be transferred to food and ingested.

## Food Handling

1. No food or beverages shall be stored, handled or consumed in the laboratory or other areas where chemicals are used or stored.
2. Do not bring chemicals or chemical equipment into areas that are designated for food consumption.
3. Glassware or utensils that have been used for laboratory operations shall never be used to prepare or consume food. Laboratory refrigerators, ice chests, microwave ovens, cold rooms, etc., must not be used for food storage or preparation. Laboratory refrigerators shall have spark-proof motors to avoid setting off explosions of leaking vapors.

## Housekeeping

1. Work areas shall be kept clean and free from obstructions. Cleanup should follow the completion of each operation and at the end of each day.
2. Wastes shall be deposited in the appropriate receptacles. Equipment and chemicals should be stored properly. Clutter should be minimized.
3. Laboratory accidents and spills shall be attended to immediately. Follow the appropriate emergency procedures.
4. Chemical and waste containers shall be kept labeled at all times. The laboratory supervisor should be informed immediately of the presence of any unlabeled containers. Do not open unlabeled containers.
5. Access to exits, emergency equipment controls, etc., shall not be blocked.
6. Notify the laboratory supervisor immediately if equipment malfunctions. Discontinue use of the equipment if a safety hazard exists.
7. Chemical storage under the hoods should be kept to a minimum. Leave the hood ventilation system turned on if chemicals are stored in or under the hood. Only temporary hood storage is allowed.

## Glassware

1. Accidents involving glassware are the leading cause of laboratory injuries. Careful storage and handling procedures should be used to avoid glassware breakage.
2. Adequate hand protection should be used when inserting glass tubing into rubber stoppers or corks or when placing rubber tubing on glass hose connections. Tubing should be fire polished or rounded and lubricated, and hands should be held close together to limit movement of glass should a fracture occur.
3. Vacuum-jacketed glass apparatus should be handled with extreme care to prevent implosions. Only glassware designed for vacuum work should be used for that purpose.
4. Hand protection should be worn when picking up broken glass. Small pieces should be swept up with a brush and dustpan.

## Flammability Hazards

1. Do not use an open flame to heat a flammable liquid or to carry out a distillation under pressure. Use an open flame only when it is necessary and extinguish it as soon as it is no longer needed.

2. Before lighting a flame, remove all flammable substances from the immediate area and notify others in the area. Check all containers of flammable substances in the area to ensure that they are tightly closed.
3. Store flammable materials in a flammable cabinet or other appropriate location.
4. Make sure that all flammable cabinets and containers are properly grounded to prevent accidental ignition of flammable vapors and liquids from static electricity or other sources of ignition.

## Hazardous Waste Handling

1. Hazardous wastes should be properly labeled and stored in a separate hazardous waste area.
2. See your laboratory Chemical Hygiene Officer for the proper hazardous waste disposal procedures.

*Note: Any questions or concerns about laboratory safety rules should be addressed to your laboratory Chemical Hygiene Officer and/or the school district's Environmental, Safety & Health Specialist.*

## Specific Exposure Control Measures

### Objective

To address the criteria that would invoke the use of specific exposure control measures, above and beyond the Standard Operating Procedures and General Laboratory Safety Rules, which will reduce instructor or student exposure to hazardous chemicals.

### Criteria

Criteria for determining when and what types of specific exposure control measures should be implemented may be based on:

1. The degree of toxicity of a substance to be used;
2. The exposure potential of the procedures performed; or,
3. The capacity of the engineering controls, administrative practices or personal protective equipment to control personal exposure effectively.

### Degree of Toxicity of Substances

No select carcinogens, reproductive toxins or highly acute toxins are allowed in middle or high school laboratories in this school district without written authorization from the Environmental, Safety & Health Specialist.

Select carcinogens are substances meeting one of the following criteria:

1. IDBS or OSHA regulates it as a carcinogen.
2. It is listed under the category "known to be carcinogens" in the Annual Report on Carcinogens published by the National Toxicology Program (NTP) (latest edition).
3. It is listed under Group 1 ("carcinogenic to humans") by the International Agency for Research on Cancer Monographs (IARC) (latest edition).

4. It is listed in either Group 2A or 2B by IARC or under the category "reasonably anticipated to be carcinogens" by NTP, and causes statistically significant tumor incidence in experimental animals in accordance with any of the following criteria:
  - a. After inhalation exposure of 6-7 hours per day, 5 days per week, for a significant portion of a lifetime to dosages of less than 10 mg/m.
  - b. After repeated skin application of less than 300 mg/kg of body weight per week.
  - c. After oral dosages of less than 50 mg/kg of body weight per day.

Reproductive Toxins are chemicals affecting the reproductive capabilities including chromosomal damage (mutations) and effects on fetuses (teratogenesis). In addition, certain reproductive toxins may cause infertility in females or males.

High Acute Toxicity Substances may be fatal or cause damage to target organs as a result of a single exposure. Examples include hydrogen cyanide, hydrogen sulfide, and nitrogen dioxide.

## Exposure Potential

The routes of exposure to chemicals may occur by inhalation, ingestion, contact with skin or eyes, or injection.

1. Inhalation of chemical vapors, mists, gases or dusts can produce poisoning through the mucous membrane of the nose, mouth, throat, and lungs and can seriously damage these tissues. The degree of injury resulting from exposure to toxic vapors, mists, gases or dusts depends on the toxicity of the material and its solubility in tissue fluids, its concentration and the duration of exposure.
2. Ingestion of many chemicals can be extremely dangerous. The relative acute toxicity of a chemical can be evaluated by determining its LD 50 value, which is defined as the quantity of chemical that will cause the death of 50% of the test animals when ingested in a single dose. In addition, many chemicals will directly damage the tissue of the mouth, throat, nose, lungs, and gastrointestinal tract.
3. Contact with skin and eyes can lead to significant chemical injury. A common result of skin contact is local irritation, but many chemicals can be absorbed through the skin and cause systemic poisoning. Most chemicals are damaging to the eyes, which are very sensitive organs. Alkaline materials, phenols, and strong acids can cause permanent loss of vision.
4. Injection of chemicals is not a very common route of exposure but may occur through mechanical injection from glass or other materials contaminated with chemicals, or when chemicals are handled in syringes.

Other factors to consider in evaluating the degree of exposure potential from the use of a particular chemical or activity involving the chemical include the:

- a. Chemical's volatility, flammability, and reactivity.
- b. Potential for unplanned chemical reactions.
- c. High heat of reaction.
- d. Amount of time that a worker will be exposed.
- e. Sensitivity of the lab worker (e.g., asthma, allergies, pregnancy).
- f. Potential for generating aerosols.
- g. Potential for an uncontrollable release.

## Capacity of Engineering Controls, Administrative Practices, and Personal Protective Equipment

Evaluating the need for specific exposure control measures when an employee is handling certain chemicals or using certain procedures should include a review of existing engineering controls, administrative practices and personal protective equipment (PPE).

The capacity of general ventilation and local exhaust systems should be evaluated against the required level of employee exposure protection. For example, work with any toxin should be conducted under a hood with a face velocity of at least 60 fpm (or other containment device) if the procedure could result in the generation of aerosols or vapors.

Administrative practices, such as record keeping, training and medical surveillance, may need to be revised for particular laboratory activities to ensure employees are adequately protected from overexposure to hazardous chemicals. It may be appropriate to maintain inventory and usage records for certain chemicals and provide routine medical surveillance for instructors who will be handling these substances in any significant quantities.

The compatibility of available PPE and substances and/or procedures to be used is another area to consider in deciding whether to implement certain exposure control measures. Laboratory employees should be trained on the proper use and type of PPE to use and should seek guidance from their laboratory Chemical Hygiene Officer if they are uncertain about its adequacy for a specific operation.

## Employee Exposure Control Measures

The IDBS Laboratory Standard requires that each laboratory evaluate the need for specific exposure control measures when employees are working with select carcinogens, reproductive toxins, or substances with a high degree of acute toxicity. These measures include the establishment of designated areas, use of containment devices, decontamination procedures and safe removal of contaminated waste. No select carcinogens, reproductive toxins or highly acute toxins are allowed in middle or high school laboratories in this school district without written authorization from the Environmental, Safety & Health Specialist.

## Designated Areas

IDBS recommends that the use of select carcinogens, reproductive toxins, or substances of high acute toxicity be restricted to "designated areas," especially when other less toxic chemicals are being used in the same area. A designated area may be an entire laboratory, an area within a lab, or a device such as a lab hood. The goal is to limit exposures and alert all employees in the vicinity to the potential hazard. No select carcinogens, reproductive toxins or highly acute toxins are allowed in middle or high school laboratories in this school district without written authorization from the Environmental, Safety & Health Specialist.

## Containment Device

Circumstances involving select carcinogens, reproductive toxins, or substances of high acute toxicity that may warrant the use of containment devices (such as a fume hood) include:

1. The use of volatile substances.
2. Manipulations that may generate an aerosol.
3. Any handling or reaction that may result in an uncontrollable release.

4. Critical hoods should have a monitoring device to allow convenient confirmation of adequate hood performance prior to use. No select carcinogens, reproductive toxins or highly acute toxins are allowed in middle or high school laboratories in this school district without written authorization from the Environmental, Safety & Health Specialist.

## Decontamination Procedures

It may be appropriate to establish decontamination procedures to adequately address the decontamination required for certain designated areas in the laboratory. Vacuum pumps and other contaminated equipment including glassware should be decontaminated in the hood before removing them from the designated area. The controlled area should be decontaminated periodically and always before normal work is resumed there.

## Safe Removal of Contaminated Waste

Safe disposal of contaminated wastes should be a part of the planning process for any laboratory experiment or procedure. If practical, very hazardous substances should be converted to less hazardous substances in the laboratory rather than being directly placed in containers for disposal. Personnel removing contaminated waste should be aware of the hazards and should know what to do in the event of a spill during transport. To ensure the safe removal of wastes from the laboratory, the Environmental, Safety & Health Specialist, through the Chemical Hygiene Officer, should be contacted for the proper disposal methods.

Solid chemical wastes should be placed in suitable containers. It is important to ensure that all waste containers are properly labeled to identify the associated contents and hazards. Laboratory employees involved in disposing of the wastes should be aware of the hazards of the waste, the importance of segregating incompatible materials and the applicable regulatory requirements.

## Procedures for Handling Reproductive Toxins

Some examples of reproductive toxins are: Lead Compounds, Organomercurials, and Formaldehyde Ethidium Bromide. When it is necessary to handle reproductive toxins, adhere to the following rules:

1. Women of childbearing age should only handle these substances in a hood and when satisfactory performance of the hood has been confirmed.
2. Avoid skin contact by using gloves and wearing long sleeves and other protective apparel as appropriate.
3. Always wash hands and arms immediately after working with these materials.
4. Keep records of the amounts of these materials on hand, amounts used, and the names of the workers involved.
5. Employees should be familiar with the emergency procedures for accidents or spills involving these substances. The Chemical Hygiene Officer should be notified of all incidents of exposures or spills.
6. Containers of these substances should be unbreakable, stored in a well-ventilated area and be labeled properly.
7. No select carcinogens, reproductive toxins or highly acute toxins are allowed in middle or high school laboratories in this school district without written authorization from the Environmental, Safety & Health Specialist.

## Procedures for Handling Chemicals with High Acute Toxicity

Some examples of chemicals with high acute toxicity are Hydrofluoric Acid and Hydrogen Cyanide. When it is necessary to handle chemicals with high acute toxicity, adhere to the following rules:

1. Use and store these substances in areas of restricted access with special warning signs.
2. Always use a hood or other containment device for procedures that may result in the generation of aerosols or vapors containing the substance. The released vapors should be trapped to prevent their discharge with the hood exhaust.
3. Avoid skin contact by using gloves and wearing long sleeves and other protective apparel as appropriate.
4. Always wash hands and arms immediately after working with these materials.
5. Keep records of the amounts of these materials on hand, amounts used, and the names of the workers involved.
6. Employees should be familiar with the emergency procedures for accidents or spills involving these substances. If a major spill occurs outside of the hood, emergency responders should wear appropriate personal protective equipment and all other workers should evacuate the area.
7. Be sure that at least two people are present at all times when a highly toxic compound, or compound of unknown toxicity, is being used.
8. Breakable containers of these substances should be stored in resistant trays, and work and storage surfaces should be covered with removable, absorbent plastic-backed paper.
9. Contaminated clothing should be chemically decontaminated, if possible, or destroyed. Contaminated waste should be stored in suitably labeled impervious containers. Liquids can be stored in glass or plastic bottles with vermiculite.
10. No select carcinogens, reproductive toxins or highly acute toxins are allowed in middle or high school laboratories in this school district without written authorization from the Environmental, Safety & Health Specialist.

## Procedures for Handling Select Carcinogens

Some examples of select carcinogens are Benzene, Nickel, and Vinyl Chloride. When it is necessary to handle select carcinogens, adhere to the following rules:

1. All work with these substances should be conducted in a "designated area" such as a restricted access hood, glove box, or portion of a lab designated for use of chronically toxic substances. People with access to this area should be aware of the substances used and the necessary precautions to take. The designated area should be clearly marked with warning and restricted access signs.
2. The use and disposal of these substances should be approved by the Chemical Hygiene Officer prior to this activity.
3. Always use a hood or other containment device for procedures that may result in the generation of aerosols or vapors containing the substance. The released vapors should be trapped to prevent their discharge with the hood exhaust.

4. Vacuum pumps should be protected against contamination by scrubbers or other devices and vented into the hood. Vacuum pumps and other contaminated equipment should be decontaminated in the hood prior to removing them from the designated area. The designated area should also be decontaminated before resuming work there.
5. Avoid skin contact by using gloves and wearing long sleeves and other protective apparel as appropriate.
6. Remove any protective clothing before leaving a designated area and place it in an appropriate, labeled container.
7. Always wash hands, arms, face and neck immediately after working with these materials.
8. Keep records of the amounts of these materials on hand, amounts and dates used, and the names of the employees involved.
9. Employees should be familiar with the emergency procedures for accidents or spills involving these substances. If a major spill occurs outside of the hood, emergency responders should wear appropriate personal protective equipment and all other workers should evacuate the area.
10. Be sure that at least two people are present at all times when a highly toxic compound, or compound of unknown toxicity, is being used.
11. These substances should be stored in unbreakable containers in a ventilated area with limited access. Work and storage surfaces should be covered with removable, absorbent plastic-backed paper. All containers should be labeled with the identity and hazards of the substance.
12. Contaminated clothing should be chemically decontaminated, if possible, or destroyed. Contaminated waste should be stored in suitably labeled impervious containers. Liquids can be stored in glass or plastic bottles with vermiculite. Containers of contaminated wastes should be transferred from the designated area in a secondary container.
13. Determine the appropriateness of medical surveillance for employees if they are working with toxicologically significant quantities of these substances on a regular basis.
14. Positive pressure glove boxes should be checked for leaks before each use. Negative pressure glove boxes should have a ventilation rate of at least 2 volumes per hour and a pressure of at least 0.5 inches of water. Exit gases should be trapped or filtered and then released through the hood.
15. No select carcinogens, reproductive toxins or highly acute toxins are allowed in middle or high school laboratories in this school district without written authorization from the Environmental, Safety & Health Specialist.

## Inspection and Plan Review

### Objective

To develop a well-organized laboratory inspection program which allows the Chemical Hygiene Officer to identify and correct the cause of chemical exposures before they occur and:

1. Generate and help maintain a high level of prevention consciousness.
2. Assist in the education of employees, supervisors and students in the merits and methods of detecting and eliminating accident causes.
3. Demonstrate the school district's sincere interest in the health, safety and welfare of all employees and students.
4. Foster a better understanding of the responsibilities that each must assume in the prevention of accidents.
5. Help determine where additional training or instruction may be required.
6. To develop a Chemical Hygiene Plan review process which evaluates the effectiveness of the overall plan and identifies the need for updates to ensure that employees and students are adequately protected against harmful exposure to hazardous chemicals.

### Inspection Procedures

General laboratory inspection procedures address the following items:

(See LABORATORY/SCIENCE ROOM SAFETY CHECKLIST)

1. General ventilation systems, local ventilation equipment (such as fume hoods) and other protective equipment.
2. Personal protective equipment including gloves, face guards and respirators.
3. Emergency equipment such as spill kits, eyewash stations and fire extinguishers.
4. First aid equipment including fire blankets and first aid kits.
5. Informal inspections of housekeeping and personal chemical hygiene should be conducted periodically.

### General Laboratory Ventilation

Each laboratory should be evaluated for the quality and quantity of general ventilation present. This evaluation should be repeated periodically and any time a change is made in the general ventilation system or in the local ventilation systems within the laboratory. Air flow patterns can be observed using commercially available smoke sources. If the general ventilation is satisfactory, the movement of air from the doorways (and other input ports) through the laboratory to the hoods (or other exhaust ports) should be relatively uniform. There should be no areas where the air remains static or where airflow velocities are high. Whenever serious ventilation problems are suspected, air flow rates can be measured using special instruments as a way of identifying differences between input and exhaust air.

Laboratory work involving use of hazardous chemicals should be conducted in a manner that prevents contact with the skin and unsafe employee exposure through vapors or dust that enter the general laboratory environment. These

activities are normally conducted in a hood. Laboratory workers should regard the general laboratory atmosphere as a source of air to breathe and as a source of input air for the local ventilation systems (e.g., hoods).

## Laboratory Hoods

OSHA/ IDBS require that fume hoods and other protective equipment must be functioning properly to ensure employee protection from chemical exposure. A comprehensive inspection of this equipment should be conducted at least at the beginning of every semester/trimester and should consider the following:

1. Hoods should not be regarded as a means of disposing of chemicals, but rather as a backup safety device in case dusts or vapors escape from the apparatus being used.
2. Hoods should be tested before use to ensure adequate face velocities (typically 60 to 125 fpm) and the absence of turbulent flow, perhaps with the use of a continuous monitoring device.
3. The hood should be kept closed except during manipulations of apparatus in the hoods.
4. The placement of equipment and other items in the hood, an open window in the lab, or a person walking by the hood can all affect a hood's performance.
5. Chemicals stored in hoods should be kept to a minimum, and they should not block air vents or disrupt air flow. If hazardous chemicals must be stored in a hood temporarily, the hood ventilation system should be kept in operation.

Hood performance should be tested against the design specifications for uniform air flow across the hood face as well as for total exhaust air volume. The uniformity of airflow to the hood can be determined by taking a series of air velocity measurements at the face of the hood (face velocities) in a grid pattern. If the values for specific points across the hood face vary by more than +/-25 fpm, from the average value, corrections should be made to achieve uniform airflow. This may involve adjusting interior hood baffles or altering the path of input air flowing into the room.

The total volume of air being exhausted is the product of the average face velocity and the area of the hood opening. In general, face velocities in the range of 60 to 125 fpm will provide laminar flow of air over the floor and sides of the hood. Higher face velocities (over 125 fpm) result in air turbulence at the hood face and within the hood. This could lead to vapors spilling out into the general laboratory atmosphere.

The optimum face velocity of a hood, known as the capture velocity, will vary depending upon its configuration. Capture velocity increases when the hood sash is lowered thus reducing the hood face area. The capture velocity when the hood is in use should be greater than the currents of air at the hood face.

The presence of air turbulence at the face of the hood and within the hood should also be determined by observing the smoke pattern. If there is excessive turbulence or if the hood fails to capture smoke, changes may be required in the face velocity, location of air input ports, and location of the hood or the volume of input air.

Another method of evaluating hood performance is to monitor worker exposure while the hood is being used for its intended purpose. The criterion for this type of evaluation would be the desired performance of the hood (i.e., does it contain vapors and gases at an unacceptable worker exposure level?).

A hood test should be conducted any time there is a change in any aspect of the lab's ventilation system (i.e., change in total volume of input air, addition of other hoods, etc.).

An example Laboratory Hood Inspection form is provided in this section as a guide for documenting hood performance tests and hood area inspections.

Other local ventilation systems, including canopy hoods and snorkels located over various instruments, should also be inspected at least every six months to ensure that they are functioning properly. Ideally, all ventilation systems should have a monitoring device that allows the user to easily determine whether the total system and its necessary components are functioning to provide a safe work place.

## Emergency, First Aid and Personal Protective Equipment

Safety equipment should be inspected at least every month to ensure that it will function when needed and that there are adequate supplies. Deficiencies should be noted and promptly corrected.

An example Laboratory Safety Inspection form is provided in this manual for use in documenting this type of inspection.

## Review of the Chemical Hygiene Plan

The effectiveness of the Chemical Hygiene Plan must be reviewed and evaluated at least annually prior to the beginning of the school year and updated if necessary. Factors to consider in the review include:

1. Changes in laboratory procedures, operations or equipment that may affect the potential for personal exposure to hazardous chemicals.
2. The addition or deletion of the use of specific hazardous chemicals which warrant a review of laboratory safety procedures.
3. Changes in laboratory personnel and/or their responsibilities.
4. The review and evaluation of inspection records, accident investigations, professional research on chemical hygiene techniques, etc.

Chemical Hygiene Officers can use the Chemical Hygiene Plan (CHP) Review Checklist in this section to insure and document that the CHP conforms to the OSHA/IDBS requirements. Any suggested changes to the CHP should be recorded and noted on the form when completed. Completed Review Checklists should be submitted to the Environmental, Safety & Health Specialist for incorporation into the Chemical Hygiene Plan.

## Employee Information and Training

### Objective

To provide information and training about the hazards of chemicals present in the laboratory work area in a manner and at a frequency which will educate employees on how to protect themselves and others from potential harm in the laboratory.

### Information Requirements

Laboratory employees must be provided with specific information on the chemicals used in their work areas. IDBS's information requirements are summarized in this section under the heading "Information Program."

## Employee Training Requirements

Employees must be trained on the potential chemical hazards in their work areas and on appropriate sections of the Chemical Hygiene Plan.

## Who Should Be Trained

This training should be provided to all employees who actually work in the laboratory as well as to other employees whose assignments may require that they enter a laboratory where exposures might occur, such as maintenance and custodial personnel. Employees who are responsible for receiving and handling shipments of new chemicals or chemical wastes should also be informed of the potential hazards and appropriate protective measures for chemicals they may receive. Students should also receive training appropriate to their level of chemical handling and potential exposure.

## Record Keeping

Training of laboratory personnel should be documented and kept in the employee's file.

## Information and Training Frequency

The OSHA/IDBS Laboratory Standard requires that employees receive information and training at the time of their initial assignment to a work area where hazardous chemicals are present and prior to assignments involving new exposure situations. Refresher training and information must be provided at least annually.

## Information Program

Laboratory employees will be informed of at least the following information:

1. The location and availability of the Chemical Hygiene Plan.
2. The permissible exposure limits (PEL's) for OSHA/IDBS-regulated substances and/or recommended exposure limits for other hazardous chemicals.
3. Signs and symptoms of exposure to hazardous chemicals used in the laboratory.
4. The location and availability of known reference materials on the hazards, safe handling, storage and disposal of hazardous chemicals found in the lab including, but not limited to, Safety Data Sheets received from the chemical supplier.

## Employee Training Program - IDBS

Laboratory employees will be trained on the applicable details of the Chemical Hygiene Plan (CHP) including a review of the:

General Rules for Laboratory Safety.

1. Appropriate sections of the Standard Operating Procedures such as:
  - a. Laboratory Operations/Activities Requiring Approval; Material Handling (including dispensing and labeling of chemicals); Waste Disposal Methods.
  - b. Chemical Hygiene Personnel
    - i. Emergency procedures outlined in the school district's Emergency Response Plan, including spills, fires, explosions, evacuation and decontamination.
    - ii. Specific exposure control measures to be used in handling particularly hazardous chemicals.

IDBS requires that the training also address:

1. Methods and observations that can be used to detect the presence or release of a hazardous chemical (including any monitoring being conducted and the visual appearance or odor of a chemical when released).
2. The physical and health hazards of chemicals in the work area.
3. Measures employees can take to protect themselves from these hazards, including the location and proper use of protective apparel and equipment and the location of emergency equipment and exits.

The Department of Health and the Office of the Superintendent of Public Instruction also require that comparable laboratory safety training and personal protective equipment be provided to students appropriate to their potential exposure to hazardous chemicals. This will vary based on their grade level, courses of study, the lab facility and the individual policies of the school district, school, instructor, local health district, workers' compensation insurance and property and casualty insurance carriers.

## Exposure Monitoring and Medical Attention

### Objective

To provide laboratory instructors, other laboratory employees and students with an appropriate level of exposure monitoring and medical attention to protect them from adverse health effects resulting from potential exposure to hazardous chemicals.

### Exposure Monitoring

The Laboratory Standards for exposure monitoring are summarized on the following pages. The ES&H Specialist or Chemical Hygiene Officer will maintain any records of exposure monitoring, including the test method and results. Employee exposure monitoring records should be kept in the employee's file.

If there is reason to believe that exposure levels for an OSHA/IDBS-regulated substance routinely exceed the action level (or in the absence of an action level, the PEL), employee exposure to that substance will be measured.

#### 1. Initial Exposure Determination

Factors that might raise the possibility of overexposure and therefore warrant an initial measurement of employee exposure include:

- a. The manner in which the chemical procedures or operations involving the particular substance are conducted (e.g., use of an open vessel instead of a closed system).
- b. The existence of historical monitoring data that shows elevated exposures to the particular substance for similar operations.
- c. The use of a procedure which involves significant quantities or is performed over an extended period of time.
- d. Signs or symptoms of exposure (e.g., skin or eye irritation, shortness of breath, nausea, headache, etc.) which are experienced by the employee.

None of these conditions should be allowed to exist in middle or high school laboratories in this school district.

## 2. Exposure Monitoring

If the initial exposure determination described above discloses employee exposure over the action level for a particular substance (or in the absence of an action level, the PEL), the school district will immediately comply with the exposure monitoring requirements of the IDBS standard for that substance.

Monitoring airborne concentrations of individual hazardous chemicals should be conducted in the following circumstances:

- a. In testing or redesigning the hoods and other local ventilation devices in the laboratory.
- b. When a specific substance that is toxic or highly toxic is regularly and continuously used (e.g., three times a week).
- c. When requested by a laboratory employee because of a documented health concern or suspicion that a PEL may be exceeded.

## 3. Record Keeping

Exposure testing procedures and results should be sent to the ES&H Specialist who coordinates and maintains these records.

The employee will be notified of any monitoring results within 15 working days after receipt of the results either individually or by posting the results in an appropriate location that is accessible to employees such as the safety bulletin board.

An accurate record of any measurements taken to monitor employee exposures must be kept, transferred and made available for each employee in accordance with IDBS's Access to Employee Exposure and Medical Records requirements.

## Medical Attention

The ES&H Specialist must maintain an accurate record for each laboratory employee undergoing medical consultations or medical examinations as required by the IDBS Laboratory Standard. (Medical examinations are to be provided at no cost to the employee.) Information that should be kept in an employee's file includes, where appropriate, the:

1. Exposure monitoring test methods and results.
2. Material Safety Data Sheet of the hazardous chemical(s) involved.
3. Accident Report.
4. Information submitted to, and received from, the physician.

## Medical Consultations and Medical Exams

Employees who work with hazardous chemicals will be provided with an opportunity to receive medical attention when overexposure to a hazardous chemical is suspected.

1. Medical attention will be provided to an employee under the following circumstances:
  - a. Whenever an employee develops signs or symptoms of exposure to a hazardous chemical to which they may have been exposed in the laboratory, the employee will be provided with the opportunity to receive an appropriate medical examination.

- b. When exposure monitoring reveals an exposure level routinely above the action level (or PEL) for a IDBS-regulated substance, medical surveillance will be conducted as required by the particular IDBS standard.
- c. Whenever an event takes place in the laboratory such as a spill, leak or explosion that results in the likelihood of a hazardous exposure, the affected employee will be provided with the opportunity for medical consultation to determine the need for a medical exam.

## 2. Type of Medical Attention

All medical examinations and consultations will be performed under the direct supervision of a licensed physician and will be provided without cost to the employee, without loss of pay and at a reasonable time and place. All questions regarding medical consultations and examinations should be directed to the ES&H Specialist.

## 3. Information for the Physician

The following information will be provided to a physician conducting medical consultations and exams:

- a. The identity of hazardous chemicals to which the employee may have been exposed.
- b. A description of the conditions under which the exposure occurred, including quantitative exposure data if available.
- c. A description of the signs and symptoms of exposure that the employee is experiencing, if any.

## 4. Physician's Report

A written opinion from the examining physician for any consultations or exams performed under this Operating Procedure must include:

- a. Any recommendations for further medical follow-up.
- b. The results of the medical examination and any associated tests.
- c. Any medical condition revealed during the course of the exam which might compromise employee safety during, or as a result of, exposure to hazardous chemicals found in the workplace.
- d. A statement that the employee has been informed by the physician of the results of the consultation or medical exam and any medical condition that may require further examination or treatment.

The written opinion should not reveal specific diagnoses unrelated to occupational exposure, except as noted above.

## 5. Record Keeping

An accurate record of any medical consultations or medical examinations must be kept by the ES&H Specialist. Records for each employee must be transferred and made available as specified under IDBS's Access to Employee Exposure and Medical Records requirements.

Provisions equal to the above shall be extended to affected students when an overexposure situation occurs. Application of the specific provisions related to student medical records, method of payment for physician services, etc., will vary according to student safety requirements and school district policies.