

CHEMICAL HYGIENE PROGRAM



COLLINGSWOOD PUBLIC SCHOOLS

Mr. Alfred Hird as District Chemical Hygiene Officer, has the ultimate responsibility for the Chemical Hygiene Plan (CHP) within the school district and must, with other administrators, see that it is implemented and provided with continuing support.

I. Introduction

A. Purpose

This chemical hygiene plan sets forth policies, operating procedures, equipment, personal protective equipment and work policies that are capable of protecting employees from health hazards presented by hazardous chemicals used in the science laboratories in Collingswood Public Schools (CPS). It is intended to meet the requirements of 29 CFR 1910.1450 (Occupational Exposure to Hazardous Chemicals in Laboratories). It is a written program developed and implemented by the employer which sets forth procedures, equipment, personal protective equipment and work practices that are capable of protecting employees from health hazards presented by hazardous chemicals used in that particular workplace and which meets the requirements of this section.

B. Scope

To protect employees from health hazards associated with the use of hazardous chemicals in our laboratory. This will be accomplished through:

- ◆ Identification of hazardous chemicals and then minimizing exposure to employees;
- ◆ Development of an outline of the responsibilities of the district, department supervisors, chemical hygiene officer, employees;
- ◆ Discussion of safe procedures;
- ◆ Determination of lab facilities and equipment needed;
- ◆ Discussion of procedures for procurement, distribution, storage of chemicals;
- ◆ Implementation of a plan for monitoring safety equipment and storage areas;
- ◆ Expansion of a process for recording and retaining chemical hazard records;
- ◆ Expansion of a plan for posting chemical hazard signs and labels
- ◆ Development of a written emergency plan to address accidents involving chemicals;
- ◆ Establishment of a chemical hazard training program
- ◆ Development of a chemical waste disposal program.

The plan will be available to all employees for review and a copy will be located in the following areas:

- ◆ Front office of each middle and high school

- ◆ Science Department of each middle and high school

The plan will be reviewed annually by and updated as necessary.

1. Hazardous Chemicals

The CPS Officer, building Principals, and building Department Chairs identify as hazardous those chemicals for which there is sufficient evidence to indicate acute or chronic health problems. Examples are chemicals rated by the NFPA as 3 or 4 in any category; manufacturer MSDS hazard ratings; hazardous chemicals (those for which there is statistically significant evidence on at least one study conducted in accordance with established scientific principles that acute or chronic health effects may occur in exposures to employees); health hazard (chemicals which are carcinogens, toxic or highly toxic agents, productive toxins, irritants, corrosives, sensitizers, hepatotoxins, nephrotoxins, neurotoxins, agents which act on the hematopoietic systems, and agents which damage the lungs, skin, eyes, or mucous membranes); or, poisons.

2. Responsibilities

The District appointed the following CPS personnel to provide necessary safety equipment, provide funds to meet the CPS needs, and provide MSDS's for chemicals

- ___ Middle and High School Principals
- ___ Science Department Chairperson
- ___ Science Safety Contact Person

The Chemical Hygiene Officer

The need for a facility to appoint a Chemical Hygiene Officer (CHO) is a result of the Occupational Safety and Health Administration's (OSHA) Laboratory Standard (29 CFR 1910. 1450). The standard was created in 1990 and requires that a facility with a laboratory on the premises designate a CHO. As stated in section (b), **"A CHO is an employee who is designated by the employer who is qualified by training and experience to provide technical guidance in the development and implementation of the provisions of the chemical hygiene plan (CHP)."**

The School District Chemical Hygiene Officers:

shall ensure that building principals, school chemical hygiene officer, and department personnel follow the CPS, work with department chairs to develop and implement the plan, conduct lab inspections, stay current in CPS legislation, check labeling, inventory chemicals, maintain records, provide technical assistance to school employees,

determine need for protective equipment, ensure that MSDS's are in place, and review the plan annually.

School District Principals are responsible for chemical hygiene in the school by monitoring school employee compliance with the plan and working closely with the district and building Chemical Hygiene Officers. School Chemical Hygiene Officers are designated by principals as the building contact person for the CHP. They will ensure that training has been received by employees, provide housekeeping inspections, coordinate requests from and to the district CHP officer, coordinate acquisition, inventory, and use, if any, of hazardous chemicals within the building. School Chemical Hygiene Officers will adopt the county CHP and monitor use of chemicals, maintain records of chemicals and their use, provide specific training, develop emergency plans for chemical spills and accidents, and review the plan annually

Employees shall know and follow the district CHP, know hazards associated with chemicals used, use safety equipment as designed, inform the chemical hygiene officer of chemical problems, maintain storage areas in proper order, and help refine the CPS.

3. Safe Procedures

Collingswood Public Schools identifies the following as standard operating procedures in the Laboratory to help ensure a safe environment:

Safety practices are established to:

1. Minimize chemical exposure
2. Assess chemical hazards
3. Provide proper ventilation
4. Locate and properly use eyewash(s) and safety shower(s)

Safety rules are established to:

1. Prevent unnecessary exposure to chemicals for lab procedures
2. Prevent working alone in labs
3. Ensure proper glassware handling
4. Prevent eating in labs
5. Address accidents and spills
6. Promote use of appropriate personal protective apparel
7. Promote use of proper chemical waste disposal

A) General Employee Rules and Procedures

- 1) Minimize all chemical exposures.
- 2) Avoid skin contact with or inhalation of chemicals. Do not smell or taste chemicals.
- 3) Avoid underestimation of chemical hazards and risks.
- 4) Wear OSHA approved eye protection at all times (must meet ANSI Z87.1 Standard). Chemical splash goggles must be worn any time chemicals,

glassware or heat are used in the laboratory and any time preserved organisms are dissected.

- 5) Never work alone in the laboratory, chemical storage or prep areas.
- 6) Never use flammable liquids near any source of ignition, spark, or open flame.
- 7) Never perform a first-time chemical demonstration in front of your class. Always perform first-time demonstrations in front of other instructors to evaluate the safety of the demonstration.
- 8) Never store chemicals over, under or near a sink.
- 9) Allow only authorized personnel the chemical storeroom. Students are never to be allowed in the chemical storage area.
- 10) Establish a procurement, check-in, check-out, and reshelving system for all chemicals.
- 11) Have a fire blanket easily accessible in case of an accident.
- 12) Know how to quickly locate and operate all safety devices and emergency equipment in the laboratory (e.g., eyewash, fire extinguisher, etc.). Mark these items with placards. Train new employees and students in their operation.
- 13) Know appropriate procedure in the event of a power failure.
- 14) Know where and how to use master utility controls to shut off gas, electrical and water supplies.
- 15) Use a safety shield whenever an explosion or implosion might occur.
- 16) Read all chemical labels prior to use.
- 17) Know and understand the hazards of the chemical as stated in the MSDS and other references. Maintain an MSDS library for the entire chemical inventory.
- 18) Have neutralizing chemicals, such as a spill kit, dry sand, kitty litter, and other spill control materials readily available.
- 19) Dispose of all chemicals properly. All disposal procedures used should conform to state and local regulations.
- 20) Use protective safety equipment to reduce potential exposure, gloves, fume hood, etc.
- 21) Know how to properly store all chemicals in their compatible chemical families. (Consult the Flinn Chemical Catalog/Reference Manual for details.)
- 22) Know proper transportation and disposal procedures for chemicals in the school building. Never transport chemicals off campus.

- 23) Know appropriate emergency procedures, for waste disposal, spill clean up, evacuation routes and fire emergency notification.
- 24) Know and understand the personal hygiene practices outlined in the Chemical Hygiene Plan.
- 25) Sterilize microscope oculars and hand lenses with alcohol to minimize the spread of eye infections.
- 26) Create a **written** first aid policy that indicates whether it to treat, contact school nurse or call a physician – we need to discuss this. The MSDS should be sent with the student to the nurse or emergency medical team.
- 27) Fill out an accident report when an accident occurs and time permits, describing the event in detail.
- 28) Analyze carefully all accidents or near accidents (close calls) and distribute the results to all who might benefit.
- 29) Make sure the laboratory is well ventilated. (A ventilation fan that can remove the air a minimum of 8 air changes per hour.) Air for laboratory ventilation shall directly flow into the laboratory from non-laboratory areas and out to the exterior of the building.
- 30) Have safety showers or body drenches. Showers should be tested every six months by maintenance. Promptly repair any shower or body drench that does not meet the water flow requirements.

B) General Laboratory Rules and Procedures

- 1) Post information for emergency communication. A telephone or some other means of communication should be available in every science classroom and storage room.
- 2) OSHA approved eye protection (must meet ANSI Z87.1 Standard) must be worn any time chemicals, glassware or heat are used in the laboratory and any time preserved organisms are dissected. Contact lenses can be worn in the laboratory if ACS, NIOSH and OSHA approved indirect vented goggles are used.
- 3) Do not use chipped, etched or cracked glassware. Glassware, which is chipped or scratched, presents a serious breakage hazard when heated or handled.
- 4) Classrooms in which chemicals are used must have an eyewash capable of treating both eyes continuously for 15 minutes with copious quantities of potable water. Teach everyone how to use the eyewash quickly in case of an emergency. The eyewash must be located within 10 seconds of anyone within the hazard area. Eyewash effectiveness and operation should be inspected and flushed weekly and documented. Promptly

repair any eyewash that does not meet the water flow requirements of ANSI Z358.1.

- 5) Read all labels carefully—the names of many chemicals look alike at first glance.
- 6) Do not operate electrical equipment with wet hands.
- 7) Have appropriate types and sizes of fire extinguishers. Tri-class ABC and Halon fire extinguishers are appropriate for laboratories. Carbon Dioxide fire extinguishers are inappropriate for laboratories. A Class D fire extinguisher should be available when working with flammable solids. Fire extinguishers should be inspected every six months.
- 8) Keep all aisles clear:
 - Have access to exits, emergency equipment and master utility control.
 - Do not block fire exits
 - Have an alternative evacuation route in the event your primary route becomes blocked. Practice your emergency plans.
- 9) Do not drink from lab glassware or other lab vessels.
- 10) Do not have food or drinks in the laboratory. Do not eat, drink or chew gum in the laboratory. Do not store food/chemicals/specimens in the same refrigerator. Flammable substances are not to be stored in a standard type refrigerator.
- 11) Do not apply cosmetics in areas where laboratory chemicals are present.
- 12) Do not have unlabeled products stored anywhere in the science facility.
- 13) Be thoroughly familiar with the hazards and precautions for protection before using any chemical. Study the precautionary label and review its contents before using any chemical substance.
- 14) Never perform unauthorized laboratory experiments.

C) Personal Hygiene Guidelines

- 1) Do not apply cosmetics, smoke, eat, chew gum, or drink in the laboratory.
- 2) Wash hands thoroughly after any chemical exposure or before leaving the laboratory.
- 3) Never smell chemicals directly; always waft the odors to your nose using your hand.

D) Protective Clothing Requirements

1. Wear eye protection at all times. Chemical splash goggles must meet ANSI Z87.1 Standard. Teacher should wear face shields when dealing with corrosive liquids, (i.e., full strength acids and bases). Wear approved indirect vented goggles if contact lenses are worn. Goggles should fit over eyeglasses.
2. NO experiment or demonstration using any chemical that requires the use of a respirator is to be performed in the school setting.
3. Wear a full-length lab coat or a chemical-resistant apron when using or preparing reagents.
4. Wear appropriate clothing:
 - long pants and short sleeves/long sleeves that can be rolled up. Shorts and shirts with loose or balloon sleeves should not be worn in the laboratory.
 - Wear low-heeled shoes. Do not wear open-toed shoes or sandals of any kind. Do not wear flip flops, sandals, high heels, or cloth shoes to lab
 - Tie back long hair.
 - Remove neckties and scarves.
 - Remove watches with absorbent watchstraps

E) Housekeeping Rules

- 1) A NFPA diamond is required on the chemical storeroom door as well as on the outside of the building where chemicals are stored with the hazard rating reflecting the highest hazard of any chemical housed. Keep chemicals in the chemical prep and storage area. If chemicals are moved to the classroom for lab, they must be returned to their proper storage location at the end of the day's laboratory periods.
- 2) Keep waste materials in proper containers and properly labeled. These containers should be stored in compatible families until disposal.
- 3) Do not store items in the fume hood. The storage of items in the fume hood is a fire hazard and decreases the efficiency of the fume hood.

- 4) Inventory and label all chemicals with names and hazards, including teacher-prepared solutions, with the date received, the initial of person who received it, as well as the date the reagent solutions were prepared.
- 5) Never block access to exits or emergency equipment.
- 6) Clean up all spills properly and promptly.
- 7) Clean all work and floor surfaces regularly and keep free of clutter.

c. Fume hood use regarding:

1. Performance monitoring
2. Prevention of chemical storage within
3. Limitation of use to appropriate chemicals

4. Lab Facilities and Equipment Guidelines

a. Lab facility is designed to ensure that:

1. Ventilation provides at least 4-12 air exchanges per hour – must be checked and documented yearly by Maintenance.
2. Drench shower(s) and eyewash(s) are properly placed and working (see schedule for monitoring in 4.b.1, 2)
3. Master shutoffs are conveniently located and in good working order

b. Safety Equipment is properly maintained and monitored regularly by the classroom teacher and the Maintenance department, including:

1. Proper location and operation of eyewash(s) - to be flushed and checked for pressure and temperature monthly by the classroom teacher, yearly by Maintenance, with proper documentation.
2. Proper location and operation of drench shower(s) - to be flushed and checked for pressure and temperature monthly by the classroom teacher, every six months by Maintenance, with proper documentation.
3. Proper location and operation of fire extinguisher(s) – of the correct type (Triple class ABC) and properly inspected by authorities.
4. Proper location and operation of fire blanket(s)
5. Proper location and operation of laboratory hood(s) – must be operational at a level of 70 -100 feet/minute as measure by a velometer – to be checked annually by Maintenance with proper documentation.

5. Chemical Procurement, Distribution, Storage Guidelines

a. Chemicals are:

1. Received into the system only with proper manufacturer labels – then marked with the date received and the initials of the person receiving.
2. Stored by chemical families in appropriate storerooms
3. Maintained in small quantities (one year supply)

4. Inventoried regularly and assessed for container integrity and hazards

6. Equipment Monitoring

- a. Equipment is inspected quarterly, indicating that:
 1. Permanent records are made and stored
 2. Safety equipment is in place and used properly
- b. Storage areas are to be inspected each semester for hazards and any problems are to be corrected.

7. Record Maintenance

- a. Records are established and maintained for:
 1. Any accidents and incidents involving chemicals
 2. Comprehensive inventory and use of hazardous chemicals
 3. Regular inspections of equipment
 4. Regular inspections of storage areas
 5. On-going employee chemical and safety training
 6. All chemical disposal operations conducted

8. Signs and Labels

- a. Signs and labels are posted and maintained for:
 1. Safety equipment (shower, eyewash, blankets/extinguishers, exits, etc.)
 2. Containers of hazardous materials
 3. Special use areas (radiation, lasers, biohazards, etc.)

9. Emergency Plans for Spills and/or Accidents

- a. Policies are established for:
 1. Prevention of chemical spills
 2. Containment of chemical spills
 3. Cleanup of chemical spills
 4. Reporting of chemical spills
- b. Analysis of all accidents and near accidents

10. Training Programs

- a. Training is developed and implemented:
 1. To provide employees covered by the laboratory standard information and training to assist them in assessing chemical hazards in their work area.
 2. To provide employees, at the beginning of employment, and provide updates as new assignments or chemicals are encountered.
 3. To include employee understanding of physical hazards, health hazards, chemical route of bodily entry, hazardous chemical dosage, container labels, MSDS's, safety equipment, accident procedures, applicable references.

11. Chemical Waste Disposal

a. Employees are apprised:

1. Concerning the collection and containment of waste chemicals
2. Concerning proper procedures for safe transport of waste chemicals to collection sites

12. Use of Science Facilities

a. Regulate the use of science classrooms to eliminate the following circumstances:

- ◆ Non-science teachers floating into science rooms
- ◆ Testing (PSAT, Writing Assessments, etc) being administered by non-science teachers in science rooms
- ◆ Non-science after-school programs (such as Drivers Education or tutoring) being scheduled into science rooms
- ◆ Non-science summer school teachers being assigned to science classrooms

13. Pregnancy Policy

a. A list of chemicals that will be used in the classroom during the pregnancy will be provided to the pregnant individual along with MSDS for each chemical. These items will be forwarded to the pregnant person's physician.

b. The physician should write a letter of permission for the pregnant person to be in the environment where these chemicals will be used.

c. If the physician determines that a pregnant student should not be exposed to these materials, alternative assignments will be provided to the student.

14. Teacher Contract

a. All employees will be responsible for reading and implementing all sections of the Chemical Hygiene Plan. Additionally, each science teacher will be required to sign the attached liability statement and return to the building administration within the first month of employment.

Statement of Liability

- ◆ I acknowledge that I am responsible for conducting labs according to all established safety guidelines.
- ◆ I have read the Chemical Hygiene Plan, including the list of Hazardous Chemicals. I understand that I am responsible to obtain, read and follow MSDS in storing, using and disposing of these chemicals properly.
- ◆ I have checked my classroom and storage room (if applicable) for the chemicals listed. If any were found, I notified the appropriate County Hygiene Officer(s) to arrange for their removal.
- ◆ I understand that if I knowingly retain chemicals that are not approved for storage or use, that I will be held financially responsible for the cost of their removal.

Middle School Only:

- ◆ I understand that as a middle school science teacher, I may only use household chemicals. For any other chemicals, I understand that I am responsible to obtain permission for their use from the County Hygiene Officers and that I am responsible to store, use and dispose of these chemicals properly.

Signature _____

Date _____