



# Department of Defense Education Activity ADMINISTRATIVE INSTRUCTION

NUMBER 4800.04

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## SAFETY AND OCCUPATIONAL HEALTH

**SUBJECT:** Hazard Communication and Chemical Hygiene Safety Program

- References:**
- (a) DS Regulation 4800.4, "Department of Defense Dependents Schools Chemical Hygiene and Safety Program," February 1995 (hereby canceled)
  - (b) DoDEA Regulation 4800.1, "Department of Defense Education Activity Safety Program," March 6, 2001
  - (c) Part 1910 of title 29, Code of Federal Regulations
  - (d) DoD Instruction 6050.05, "DoD Hazard Communication (HAZCOM) Program," August 2006, as amended
  - (e) DoD Instruction 6055.05, "Occupational and Environmental Health (OEH)," November 11, 2008
  - (f) DoD Manual 1342.6, "Administrative and Logistic Responsibilities for DoD Dependent Schools," August 11, 1995

1. **PURPOSE.** This administrative instruction:

- a. Reissues Reference (a) to update policy and responsibilities and procedures for the Department of Defense Education Activity (DoDEA) Hazard Communication (HAZCOM) and Chemical Hygiene (CH) Programs.
- b. Authorizes the publication of pamphlets, guidelines, manuals, or other media to assist in achieving a chemically safe environment.

2. **APPLICABILITY.** This administrative instruction:

- a. Applies to the Office of the Director, DoDEA; the Director, Domestic Dependent Elementary and Secondary Schools, and Department of Defense Dependents Schools, Cuba (DDESS/DoDDS-Cuba); the Director, Department of Defense Dependents Schools, Europe (DoDDS-E); the Director, Department of Defense Dependents Schools, Pacific, and Domestic Dependent Elementary and Secondary Schools, Guam (DoDDS-P/DDESS-Guam), (hereafter collectively referred to as "DoDEA Region Director of Student Excellence;") and all DoDEA District Superintendents, School Principals, Teachers, and Support Staff.

b. Applies to all DoDEA personnel responsible for, or concerned with, the safety of students, staff, and visitors.

3. **POLICY**. It is DoDEA policy that educational and support programs and activities promote a safe and healthy environment to protect students, staff, and visitors from chemical hazards in DoDEA facilities. To achieve this objective, DoDEA will comply with the stricter of U.S. Federal standards, DoD directives, or host nation bioenvironmental statutes applicable to each location worldwide.

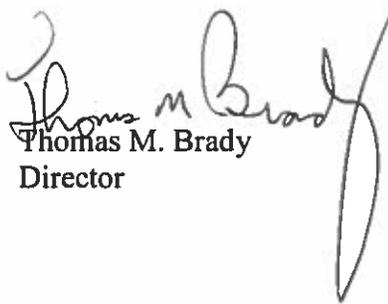
4. **RESPONSIBILITIES**. See Enclosure 1.

5. **PROCEDURES**.

a. **Hazard Communication Program**. Procedures for the implementation of a hazard communication program are outlined in Enclosure 2. This document applies to the safe use of chemicals in all DoDEA facilities.

b. **Chemical Hygiene Plan**. Occupational safety and health standards, safety rules, and procedures that shall be used as minimum chemical safety procedures for each applicable DoDEA school are provided in Enclosure 3. This document applies to the safe use of chemicals in laboratories.

6. **EFFECTIVE DATE**. This administrative instruction is effective immediately.

  
Thomas M. Brady  
Director

Enclosures:

1. Responsibilities
  2. Hazard Communication Program
  3. Chemical Hygiene Plan for Schools with Laboratories
- Glossary

ENCLOSURE 1

RESPONSIBILITIES

1. DIRECTOR, DODEA. The Director, DoDEA shall:

- a. Establish and enforce a hazard communication and chemical hygiene safety program.
- b. Provide assistance to DoDEA Area and district offices to achieve compliance with the provisions of this administrative instruction and other appropriate directives or standards.

2. DODEA HEADQUARTERS (HQ) CHIEF, OFFICE OF SAFETY. The DoDEA HQ Chief, Office of Safety shall:

- a. Advise the Director, DoDEA, on Federal and DoD HAZCOM and chemical hygiene safety standards applicable to the DoDEA academic environment.
- b. Monitor compliance of the HAZCOM and CH programs in accordance with the guidelines and responsibilities set forth in DoDEA Regulation 4800.1 (Reference (b)), and this administrative instruction.
- c. Annually review the HAZCOM and CH policy guidance for accuracy and to promulgate program checklists and other reference aids and tools to assist program compliance.
- d. Identify resources necessary for the implementation and continuity of the HAZCOM and CH Programs.
- e. Generate and provide communications to the area service centers, district offices, and schools regarding policy and guidance set forth in this instruction.
- f. Coordinate with Education Directorate to develop hazard communication and chemical hygiene officer training.

3. DODEA HQ SCIENCE COORDINATOR. The DoDEA HQ Science Chief/Coordinator shall:

- a. Maintain liaison with the DoDEA HQ Chief, Office of Safety to coordinate safety policy for the chemical hygiene program.
- b. Maintain liaison with the district science coordinators, district chemical hygiene advisors (CHAs) and the district safety and occupational health specialist to communicate guidance provided by the DoDEA HQ Safety and Occupational Health (SOH) Program Manager on current regulations or standards pertaining to HAZCOM and CH safety.

4. DODEA REGION DIRECTORS OF STUDENT EXCELLENCE. The DoDEA Region Directors of Student Excellence, under the authority, direction, and control of the Director, DoDEA, shall:

- a. Ensure the implementation and enforcement of the HAZCOM and CH Programs within their geographic area of responsibility.
- b. Ensure the district superintendent designates the science instructional systems specialist in writing to perform the duties of the CHA.
- c. Ensure safety concerns are addressed as part of all programs where chemicals are used.

5. DISTRICT SUPERINTENDENTS. The DoDEA District Superintendents shall:

- a. Ensure compliance with the HAZCOM and CH standards at all schools within the district to ensure compliance.
- b. Designate the district science instructional systems specialist as the CHA in writing. The CHA shall have training and/or experience in hazardous chemical use.
- c. Ensure sufficient resources, time and training are made available for the CHA to coordinate and implement the HAZCOM and CH policies within the district in accordance with the provisions of this administrative instruction and Federal, DoD, host nation and host installation standards.
- d. Review the status of the HAZCOM and CH programs with the district SOH specialist and CHA annually.
- e. Provide sufficient fiscal resources to schools for all equipment and supplies required to safely handle, store and dispose of hazardous chemicals in accordance with the provisions of this administrative instruction and Federal, DoD, host nation and host installation standards.
- f. Attend chemical hygiene meetings coordinated by DoDEA Headquarters.

6. DISTRICT SOH SPECIALIST. The DoDEA District SOH Specialist shall:

- a. Advise the district superintendent on DoDEA chemical hygiene and safety standards applicable to the DoDEA academic environment.
- b. Monitor compliance of the HAZCOM and CH programs in the district in accordance with the guidelines and responsibilities set forth in Reference (b) and this administrative instruction.
- c. Assist the DoDEA HQ Chief, Office of Safety by providing input on the implementation and continuity of the HAZCOM and CH Programs.

k. Coordinate with the district logistics personnel to ensure inter-service support agreement or memorandum of understanding with the host installation contains verbiage addressing the disposal of hazardous waste and excess chemicals, or, if services are not available, that the procurement of contract services is provided.

l. Verify that the CHO conducts two chemical inventories each school year, before September 30<sup>th</sup> and by June 30<sup>th</sup> and that all documentation is available for review.

m. Monitor and if necessary, assist the scheduling of installation bioenvironmental/industrial hygiene and safety inspections for schools.

n. Review all bioenvironmental/industrial hygiene and general safety inspection reports for findings pertaining to chemical storage, use, disposal and work with and assist the CHA and CHO with correcting deficiencies.

o. Attend chemical hygiene meetings coordinated by DoDEA Headquarters.

6. DISTRICT SUPERINTENDENTS. The DoDEA District Superintendents shall:

a. Ensure compliance with the HAZCOM and CH standards at all schools within the district to ensure compliance.

b. Designate the district science instructional systems specialist as the CHA in writing. The CHA shall have training and/or experience in hazardous chemical use.

c. Ensure sufficient resources, time and training are made available for the CHA to coordinate and implement the HAZCOM and CH policies within the district in accordance with the provisions of this administrative instruction and Federal, DoD, host nation and host installation standards.

d. Review the status of the HAZCOM and CH programs with the district SOH specialist and CHA annually.

e. Provide sufficient fiscal resources to schools for all equipment and supplies required to safely handle, store and dispose of hazardous chemicals in accordance with the provisions of this administrative instruction and Federal, DoD, host nation and host installation standards.

f. Attend chemical hygiene meetings coordinated by DoDEA Headquarters.

7. DISTRICT CHA. The DoDEA District CHA shall:

a. Oversee the implementation and management of the CH Program at schools.

- b. Work with the district SOH specialist to assist the CHO with any installation level requirements for the management of hazardous material, the disposal of hazardous waste and excess chemicals, and the procurement of contract services, if applicable, for the disposal of hazardous waste and excess chemicals.
- c. Liaison with the host installations and/or the host nation on issues regarding the chemical hygiene program to resolve any issues and assist schools as necessary.
- d. Assist the CHO in implementing school safety policy in all classrooms where chemicals are used in the curricular program in accordance with this administrative instruction and Federal, DoD, host installation, or host nation directives.
- e. Coordinate guidance concerning additional bioenvironmental/industrial hygiene requirements, which may be specific to areas of responsibility.
- f. Provide training to school CHO's on local environmental regulations, host nation and local laws impacting the HAZCOM and CH program.

8. SCHOOL PRINCIPALS. The DoDEA School Principals shall:

- a. Ensure that all employees are aware of and follow DoDEA's HAZCOM and CH program.
- b. Ensure all new employees have completed the DoDEA HAZCOM training and that the training is documented.
- c. Ensure that emergency protective equipment such as eyewash stations and showers are available and in serviceable condition, especially in all science laboratories or locations where chemicals are stored or mixed.
- d. Ensure that personal protective equipment for all applicable school personnel is provided and personnel are familiar with how to store, wear, remove and maintain the equipment.
- e. Conduct quarterly safety and housekeeping self-inspections where chemicals are stored or used. This includes routine inspections of emergency protective equipment.
- f. Submit an accident/injury report (AIR) for all chemical accidents and spills.
- g. Purchase and maintain all equipment and supplies required to safely handle, store and dispose of hazardous chemicals in accordance with the provisions of this administrative instruction and Federal, DoD, host nation and host installation standards.
- h. Ensure a semi-annual inventory of all chemicals is maintained on file and reflects the current inventory date.

i. Maintain sufficient spill containment equipment and supplies to contain stored chemicals and waste accumulation site contents.

j. Ensure students that are potentially exposed to hazardous substances are properly trained prior to allowing them to be exposed.

k. Consult with the district SOH specialist when hazardous chemicals requiring special precautions (i.e., local exhaust ventilation, respirators, etc.) are to be used during maintenance, renovation or other similar projects.

l. Schools with Laboratories: Designate a CHO in writing and is qualified by training and/or experience to provide technical guidance in the development and implementation of the provisions of the CH Program. Forward a copy of the appointment letter to the district CHA. This applies to middle and high schools with laboratories only, which are mandated to have a CHO.

m. Elementary schools DO NOT require a CHO, but DO require a person to provide oversight of the storage, handling and disposal of chemicals brought into the school as part of the HAZCOM program. Principals shall either assume this responsibility or designate a non-bargaining unit person to ensure compliance with the HAZCOM program detailed in Enclosure 2.

n. Meet with the CHO to be briefed on the status of the CH program at the end of each semester (see paragraph 10.c.). It is strongly recommended this meeting be scheduled and done face-to-face.

o. Be aware that chemicals requiring respirators, re-breathers or are temperature sensitive flammables requiring storage in explosion proof containment are not authorized to be procured or used in DoDEA schools.

9. SCHOOL STAFF and TEACHERS. The school staff and teachers shall:

a. Be aware of the safety precautions and procedures in effect concerning hazardous chemicals in the school, including their type and location.

b. Complete HAZCOM training per Enclosure 2 and ensure it is documented in their training record.

c. Maintain an inventory of chemicals used in their spaces and provide the inventory to the principal or his/her designee.

d. Ensure that students under their responsibility are trained on safe work practices and safety rules prior to being allowed to work with any chemicals.

e. Provide students with proper protective equipment that is in good working order.

- f. Report broken or inoperative emergency equipment to the school principal or their designated representative as soon as possible.
- g. Know the current safety requirements concerning any chemical substances used within their area.
- h. Comply with the required protective apparel and equipment requirements specified by the Safety Data Sheet (SDS) or safety professionals.
- i. Immediately report all chemical spills and injuries to the school principal so that notification can be documented through the AIR reporting system.
- j. Ensure SDSs are requested when ordering any new chemical being introduced into the curriculum. Copies of the SDS are to be provided to the designated person responsible for maintain the school chemical inventory.
- k. Ensure proper safety procedures are identified and incorporated into all projects. At a minimum, the safety procedures will outline all required personnel protective equipment (PPE) and potential hazards.
- l. Ensure students understand all of the potential hazards and use proper PPE.
- m. Chemicals that require respirators, re-breathers or are temperature sensitive flammables requiring storage in explosion proof containment are not authorized to be procured or used in DoDEA schools.

10. SCHOOL CHOs. The school CHOs shall:

- a. Complete CHO training upon assignment and refresher training every three years thereafter while assigned as CHO.
- b. Coordinate CH program with the principal and with host installation safety and health support services such as industrial hygiene, hazardous materials/environmental office, safety office, and fire department. Contact the CHA if additional guidance/assistance is needed.
- c. Provide the principal with a brief on the status of the CH program at the end of the semester. The brief shall address the status of all required actions such as inventories, student /faculty/staff training, etc. It is strongly recommended this brief be done in a scheduled meeting with the principal.
- d. Be familiar with the current safety requirements concerning regulated substances.
- e. Report all chemical spills and injuries to the school principal immediately for further reporting via the AIR reporting system.

- f. Maintain liaison with the district SOH specialist and the CHA.
- g. Work with the principal in the procurement and disposal of chemicals.
  - (1) Limit on-hand levels of chemicals to what is required by curricula
  - (2) Work with supply personnel to dispose of excess chemicals and chemicals no longer in use. Notify the principal of any problems with disposal of chemicals and to take corrective action.
- h. Conduct chemical inventories before September 30<sup>th</sup> and again by June 30<sup>th</sup>. Provide a copy of the current chemical inventory to the school principal, district CHA, host installation fire marshal and/or the environmental coordinator or hazardous materials management office.
- i. Conduct an initial inspection of all areas where hazardous chemicals may be used and submit the inspection results to the principal for review. Identify and document any corrective actions necessary. Conduct subsequent quarterly chemical hygiene safety and housekeeping self-inspections.
- j. Comply with requirements in both Enclosures 2 and 3.
- k. Inform the principal, district SOH specialist, and CHA of any concerns and/or issues that may impede the CHO in carrying out his/her responsibilities.
- l. Develop a standard operating procedure for a non-curriculum experiment being conducted is in place when using chemicals.
- m. Assist the principal in briefing the school faculty and staff on the chemicals and hazardous materials maintained at the school, the storage locations of the chemicals and hazardous material, and the safety precautions and emergency response procedures specific to the chemicals and hazardous material.
- n. Assist non-science teachers in developing chemical hazard precautions, maintaining the appropriate safety equipment for the curriculum and classroom environment, and complying with hazard communication requirements.
- o. Work with the principal and supply staff to assist other teachers (e.g. art) having hazardous waste for disposal prior to leaving at the end of the school year.

ENCLOSURE 2

HAZARD COMMUNICATION PROGRAM (HAZCOM)

The HAZCOM program is based on the concept that employees have both the right and the need to know about the hazards they are exposed to while working and the identities of the chemicals that pose the hazard. It puts in place a system whereby the hazards of all chemicals are evaluated. The hazard information and protective measures required to use these chemicals safely are communicated through the Safety Data Sheets (SDS).

In order to comply with the Department of Labor, Occupational Safety and Health Administration (OSHA) and the applicable guidelines in DoD Instruction 6050.05 (Reference (d)), the following hazard communication procedures are established for DoDEA. These procedures shall be available in each location, to include classrooms, associated with the use or storage of chemicals. This enclosure applies to all DoDEA operations where hazardous or potentially hazardous chemicals are being used, which include housekeeping and maintenance purposes.

NOTE: The HAZCOM program incorporates the Global Harmonized System of Classification and Labeling of Chemicals (GHS), which is a United Nations initiative. The GHS changed labeling and SDS requirements. The Department of Defense program is similar to the GHS and is not expected to make any immediate changes to current instructions at this time. However, if changes are instituted at the host installation, any DoDEA facilities impacted by the change should comply.

1. CHEMICAL INVENTORY.

a. All DoDEA facilities are required to maintain an inventory of chemicals being stored on the premises.

b. The school principal shall designate the CHO or another member of the staff to conduct the inventory. The inventory will be provided to the principal for forwarding to host installation fire marshal, environmental compliance office, and the district SOH specialist.

2. CONTAINER LABELING. The school principal shall designate the CHO or another member of the staff:

a. Verify that all chemical substance containers received for use are clearly labeled to indicate the following:

- (1) Identity of the contents.
- (2) Identity matches the corresponding SDS.

- (3) Name and address of the manufacturer, importer or responsible party.
- (4) Appropriate hazard warnings, cautionary statements and pictograms.

b. Chemicals will be maintained in the container they were shipped until they are prepared for use in class. Any chemical containers used during class will be marked appropriately to identify the contents.

c. Review the chemical labeling system by September 30th of each year and update or replace labels as required.

3. SDS. The school principal or their designated person shall:

a. Be responsible for obtaining and maintaining the SDSs for the school(s) under his or her cognizance. If toxic or hazardous materials are received from the United States without an SDS, one should be obtained from the manufacturer or supplier via its online website. If the chemicals are requisitioned from the host nation, the host nation equivalent of the SDS shall be produced in English, if possible. If these chemical substance containers are not properly labeled in accordance with the DoD HAZCOM program, a DoD equivalent label shall be produced in accordance with Reference (d).

b. Review SDS for new and significant health/safety information. The principal or their designated person shall ensure that any new information is made available to anyone with access or exposed to these chemicals.

c. Save all SDSs and store in a designated file or binder using a system that is organized and easy to understand.

d. The SDS collection shall be placed in a central, easily accessible location available to all staff, students, and visitors and emergency personnel. Storage of the SDS on a common drive is acceptable in addition to having a hard copy.

4. HAZARD COMMUNICATION (HAZCOM) TRAINING.

a. The school principal is responsible for ensuring all employees are trained on hazard communication and ensuring the training is documented in the employee training record, which is to be made available to the safety personnel upon request. HAZCOM training is required for all employees:

(1) Upon being hired or being allowed to work with, or handle chemicals.

(2) Whenever a new chemical is introduced to the workplace. The employee will only be required to focus on the chemical being introduced and is not required to complete the full HAZCOM training.

(3) Whenever there is a significant change to the HAZCOM program.

b. Ensure training is provided in the native tongue to all employees whose first language is not English.

c. HAZCOM training shall consist of:

(1) Overview of the requirements contained in this administrative instruction.

(2) List of chemicals and hazardous materials stored in the facility.

(3) Location of chemicals and storage cabinets in the facility.

(4) Completion of the online DoDEA HAZCOM training.

(5) Location of the master file of the SDSs and other reference materials.

(6) Signs and symptoms of chemical exposure for the materials within the facility. This information is available in the SDS. This is to be done prior to using the chemical. Training need not be conducted on each specific chemical found in the facility, but may be conducted by categories of hazard (e.g. carcinogens, sensitizers, acutely toxic agents) that are or may be encountered by an employee during the course of their duties.

(7) Understand how to read the SDS and where to locate information on permissible exposure limits (PELs), threshold limit values (TLVs) and National Institute of Occupational Safety and Health (NIOSH) exposure levels.

(8) Understand the types of equipment used to determine the presence or release of toxic and hazardous materials in the school. (e.g. Draeger meters, photoionizing detector, multi-gas detector, sampling pumps, etc.)

(9) Personnel actively working with hazardous material shall be familiar with how to use those materials in the safest possible manner, including emergency procedures and personal protective equipment requirements.

(10) Steps taken to lessen or prevent exposure to toxic and hazardous materials. Examples of this are chemical substitution practices, the use of "small-scale" chemistry techniques, inventory, storage, and disposal procedures.

## 5. CHEMICAL PROCUREMENT, DISTRIBUTION, AND STORAGE.

a. **Delivery Receipt of a Chemical Substance.** Before a chemical substance is received, the person ordering the material shall obtain information, in the form of an SDS, on proper handling, storage, and disposal. This information shall be shared with those who will be involved (e.g.,

school support assistant and supply personnel). No container shall be accepted without an adequate identifying label, SDS or if the package is damaged allowing the contents to leak. Preferably, all substances should be received in a central location. The host installation may require information on the chemical to be entered into a database, in order to comply with environmental management regulations. This also impacts the chemical waste disposal program. Chemical information should be provided to the appropriate office at the host installation prior to being placed into the stockroom/storeroom.

b. Stockroom/Storeroom. Hazardous materials shall be segregated in a well-identified area with separate exhaust ventilation vented directly up and outside the building. Organize chemicals first by compatibility, NOT alphabetic succession. Chemicals that are highly toxic or other chemicals whose containers were opened should be stored in unbreakable secondary containers, which are properly labeled (See Enclosure 2, paragraph 2.a.). Stored chemicals shall be examined at least annually for replacement, deterioration, and container integrity. Stockroom/storerooms shall not be used as preparation or repacking areas unless equipped with suitable protective equipment. Ensure that all storage areas have doors with locks. They shall remain locked, but be accessible during normal school working hours by at least one authorized person. Keep chemical storage areas off limits to all students. Door locks to chemical storage/chemical preparation areas will not be part of a master keying system. Keys to these areas will be strictly controlled and only issued to personnel trained in chemical safety. Custodial personnel will not have unaccompanied access to chemical storage/chemical preparation rooms. When cleaning of these areas is necessary custodial personnel will be accompanied at all times by personnel trained in chemical safety.

c. Distribution. When hazardous chemicals are hand carried from their storage area to the laboratory, the primary container shall be placed in a secondary container or authorized bucket for protection.

d. Containers. Keep all chemical containers off the floor, carts and electrical equipment.

e. Spill Prevention. Store chemicals inside a closeable cabinet or on a sturdy shelf with a front-edge lip to prevent accidents and chemical spills; a ¾-inch front edge lip is recommended.

f. Chemical Storage. Store all hazardous chemicals below eye level.

g. Flammable Chemicals. Store all flammable chemicals in an approved flammable storage cabinet.

h. Corrosive Chemicals. Store all corrosive chemicals in approved corrosive cabinets.

i. Explosion-Safe Storage. Items requiring explosion-safe storage are prohibited.

## 6. HOUSEKEEPING, MAINTENANCE, AND INSPECTIONS.

a. Cleaning. Floors shall be cleaned regularly to maintain a safe and healthy environment.

b. Inspections. Formal housekeeping and chemical hygiene inspections shall be held at least semi-annually as required by References (b) and (c), and DoD Manual 1342.6 (Reference (f)). Informal inspections should be continual.

c. Maintenance. All emergency eye wash stations, emergency showers, and other safety equipment shall be inspected as indicated below:

(1) Emergency eye wash stations shall be flushed weekly to ensure proper working order and to prevent microbial contamination from sitting water.

(2) Emergency showers shall be activated every three months for a period long enough to verify operation.

(3) Annual inspection is required by host installation safety or facilities personnel.

d. Passageways. Stairways and hallways shall not be used as storage areas. Access to exits, emergency equipment, and utility controls must never be blocked.

## 7. MEDICAL PROGRAM.

a. Routine Surveillance. The host installation industrial hygiene department will identify personnel who are exposed to toxicologically significant quantities of a chemical and recommend referral to occupational medicine department at the host installation medical treatment facility to determine on an individual basis whether a regular schedule of medical surveillance is necessary.

b. Chemical Exposure. If a person has a chemical exposure or has signs or symptoms of a chemical exposure, he or she should immediately seek medical consultation at the host installation medical treatment facility after following appropriate emergency response procedures.

c. First Aid. Personnel trained in first aid should be available during school working hours and be familiar with the location of the SDSs. An emergency room with medical personnel should be nearby. Each school should add the phone number and location of the appropriate medical treatment facility.

## 8. PROTECTIVE APPAREL AND EQUIPMENT. The following applies when working with chemicals:

a. Protective Apparel. Protective apparel compatible with the required degree of protection for substances being handled.

b. Safety Shower. An easily accessible drench-type safety shower that meets the American National Standards Institute (ANSI) Z-358.1 manufacture and performance standard.

c. Eyewash Station. An emergency eyewash station that meets the ANSI Z-358.1 manufacture and performance standard shall be located near bulk chemical storage and locations where splash hazards exist. An individual must have unimpeded access and be within 10 seconds (approximately 55 feet) of the eyewash station.

d. Extinguisher. A fire extinguisher.

e. Alarm and Telephone. A fire alarm pull station and telephone for emergency use.

## 9. RECORDS.

a. Accident Reports. Accident reports shall be submitted via the AIR reporting system in accordance with current DoDEA policy.

c. Inventory. Inventory records for chemicals deemed high-risk in accordance with associated SDSs shall be kept by the person designated by the school principal. The inventory shall reflect the amounts of these materials on hand.

d. Semi-Annual Inventory. A semi-annual inventory of all chemical substances stored or used shall be conducted by the designated person before September 30<sup>th</sup> and by June 30<sup>th</sup>. New or consumed chemicals shall be accounted for and recorded on inventories. Disposal of excess chemicals shall be conducted in accordance with Reference (e). The school administrator shall maintain the semi-annual chemical inventory for a period of three school years. Copies of the semi-annual inventory will be forwarded to the school principal, district, host installation fire marshal and the environmental management or hazardous materials office.

e. Medical Records. Medical records shall be retained in accordance with governing regulations, which includes section 1020 of Reference (c).

## 10. SIGNS AND LABELS.

a. Signs and Labels. Signs and labels of the following types shall be prominently posted:

(1) Telephone numbers of emergency personnel/facilities, supervisors, etc.

(2) Identification labels, showing contents of containers (including hazardous waste sealed containers) and associated hazards and chemicals transferred to secondary containers.

(3) Locations of safety showers, eyewash stations, other safety and first aid equipment, exits and areas where no food, drink, or other hand to mouth contact is permitted.

(4) Warnings at areas or equipment where special or unusual hazards exist.

11. HAZARDOUS CHEMICAL WASTE.

a. Statutes. Hazardous chemical waste shall be disposed of in accordance with the most restrictive rules governing the United States, DoD, or host nation statutes that have jurisdiction over the hazardous waste generator. The aim of the chemical waste disposal system is to ensure that minimal harm to people, other organisms, or the environment will result from the disposal of waste chemical substances.

b. Hazardous Chemical Waste Disposal

(1) Assure that the procedure involving chemicals includes plans and training for waste disposal.

(2) Deposit chemical waste in appropriately labeled and sealed containers and follow all other established waste disposal procedures as determined by the host installation.

(3) Do not discharge into the sewer concentrated acids or bases; highly toxic, malodorous, or lachrymatory substances; or any substances that might interfere with biological activity of waste water treatment plants, create fire or explosion hazards, cause structural damage, or obstruct flow.

(4) Do not indiscriminately dispose of waste chemicals by pouring them down the drain or adding them to mixed refuse for landfill burial. This is not allowed and violations could result in severe penalties.

(5) Dispose of waste chemicals by recycling or chemical neutralization when possible.

(6) Use appropriate host support agencies to properly identify, prepare, and package for disposal unneeded or unused chemicals as identified through a memorandum of understanding coordinated by the district superintendent office.

(7) Use a contracted chemical disposal service coordinated through the district superintendent office if local identification, decontamination, and disposal cannot be practically performed.

c. Transportation. Transportation of chemicals from the school shall be in accordance with the local host installation regulations.

d. Labels. All containers of chemicals being disposed must have their contents properly labeled. Unlabeled containers are considered unknown and may have cost associated to properly identify the contents.

e. Unidentified Chemical Stocks. Unlabeled containers of chemicals and solutions shall undergo prompt identification and proper disposal.

f. **Controlling Disposal Costs.** Disposal of hazardous wastes is expensive. However, there are a number of steps that can be taken to control costs. For example,

(1) Minimize quantities purchased.

(2) Segregate chemically different substances.

(3) Do not mix hazardous and non-hazardous wastes. When they are mixed, they are all considered to be hazardous waste, thereby increasing the volume and cost of hazardous waste to be disposed.

(4) Properly label waste containers to avoid having unknown chemicals.

g. **Waste Management.** Comply with the host installation requirements.

ENCLOSURE 3

DoDEA CHEMICAL HYGIENE PLAN FOR SCHOOLS WITH LABORATORIES

1. GENERAL INFORMATION. This plan outlines occupational safety and health standards, safety rules, and procedures that shall be used as minimum chemical safety procedures for all DoDEA schools with laboratories. These procedures shall be used as part of required student and employee chemical hygiene safety training. The template for the DoDEA Chemical Hygiene Plan is available as a fillable form located on the DoDEA Forms webpage. This plan represents the minimum guidance for the schools with laboratories and is to be completed by the CHO/principal and kept available in all laboratories.

Chemicals that require respirators, re-breathers or are temperature sensitive flammables requiring storage in explosion proof containment are not authorized to be procured or used in DoDEA schools.

2. STANDARD OPERATING PROCEDURES (SOPs).

a. SOPs are site specific. At a minimum the SOPs need to address the following:

(1) Hazard Assessment: Address potential hazards prior to initiation of new experiments. All appropriate protective measures are to be explained, including PPE and engineering controls that will be used. In addition, the assessment will include the process or experiment specific guideline that will be followed.

(2) Minimizing Chemical Exposures: General precautions for chemical handling and storage being implemented in laboratories.

(3) Avoiding Underestimation of Risk: Explain how chemicals will be handled to minimize exposure, including those with unknown toxicity.

(4) Experiments Using Chemicals Not Part of the Curriculum: Explain the procedures followed at the school to introduce new experiments, which are not part of the curriculum, and the reviewing/approval procedure. Include all how the safety barriers and equipment to be used are determined.

b. SOPs are to be reviewed and updated annually.

3. BASIC LABORATORY SAFETY RULES AND PROCEDURES.

a. Rules and Procedures For Laboratory Work With Chemicals:

(1) Accidents and spills.

(a) Teachers shall report all accidents and spills to the school principal who will immediately submit an accident report via the AIR reporting system. Emergency response should be initiated in accordance with local policy and procedures.

(b) Principals shall establish SOP and communicate the procedures to all personnel. The SOP shall include plans for ventilation failure, evacuation, medical care, reporting, and drills.

(c) Principals, working in conjunction with host installation emergency services, shall develop a spill control policy and include consideration of prevention, containment, evacuation, cleanup, and reporting.

(d) When transporting chemicals within the school, carts or appropriate carriers shall be used. They shall be constructed to contain spills and provide safe transport.

(e) Comply with the host installation requirements when disposing of chemicals into the sanitary sewer. Some chemicals can destroy the "bugs" used in a sewage treatment plant resulting in high cost and time to restart the facility.

(f) Principals shall carefully analyze all accidents or near accidents with the results distributed as safety awareness to all who might benefit (i.e., district CHA and SOH Specialist, district science coordinators, DoDEA HQ Science Chief/Coordinator and HQ SOH Program Manager).

(g) In case of eye contact, promptly (within 10 seconds) flush eyes with water for a prolonged period (at least 15 minutes) and seek medical attention.

(h) In case of accidental ingestion, refer to the SDS for proper first aid.

(i) In case of skin contact, promptly (within 10 seconds) flush affected area with water (for at least 15 minutes) and remove any contaminated clothing. If symptoms persist after washing, seek medical attention.

(j) Promptly clean up spills using appropriate protective equipment and proper disposal techniques.

(k) Use mechanical means (dust pan and brush) to pick up broken glass. Do not use fingers to handle broken glass. Place broken glass in a puncture-resistant container for disposal. Broken glass contaminated with hazardous chemicals must be disposed of as chemical waste.

(2) Avoidance of "routine" exposure. Everyone using chemicals shall:

(a) Develop and encourage safe habits; avoid unnecessary exposure to chemicals by any route of exposure (e.g., inhalation, ingestion, skin absorption).

- (b) Do not smell or taste chemicals.
- (c) Inspect gloves for tears, pinhole leaks, or imperfections that might cause insufficient protection during use.
- (d) Do not allow the release of hazardous material in rooms where the material can be captured by building supply or exhaust system and carried to other rooms.
- (e) Use only those chemicals for which the quality of the ventilation system is appropriate.
- (f) Do not eat, drink, chew gum, or apply cosmetics in areas where laboratory chemicals are present. All individuals shall wash hands before and after conducting activities. Do not bring food or beverages into the laboratory or chemical storage areas. Do not store food or beverages in refrigerators, glassware, or utensils that are also used for laboratory operations.
- (g) Handle and store laboratory glassware with care to avoid damage; do not use damaged glassware. Use extra care with Dewar flasks and other evacuated glass apparatus; shield or wrap them to contain chemicals and fragments should implosion occur. Use equipment only for its designed purpose.
- (h) Wash areas of exposed skin well, especially hands, before leaving the laboratory.
- (i) Do not participate in horseplay, practical jokes, pranks or other similar behavior in laboratories. This behavior might confuse, startle, or distract other persons which may result in an accident.
- (j) Do not use mouth suction for pipetting or starting a siphon.
- (k) Confine long hair and loose clothing. Wear shoes that completely cover the feet at all times in the laboratory. No open toe shoes, mules, clogs or sandals are to be worn.
- (l) Keep the work area clean and uncluttered. Ensure that chemicals and equipment are properly labeled and stored. Clean up the work area upon completion of an operation and double-check at the end of each day.

b. Personal Protection.

- (1) All personnel shall wear eye protection when handling chemicals or when a potential splash hazard exists.
- (2) All personnel shall wear appropriate gloves when the potential for contact with hazardous materials exists; inspect the gloves for rips, tears, and leaks before each use. Wash them before removal, and replace them when they become grossly contaminated or show signs of wear.

(3) Body-protecting attire, such as flame retardant lab aprons and coats should be worn to protect the skin and clothing from spilled materials that might be hazardous.

(4) All personnel shall wear loose fitting cryogenic or heavy leather gloves, full face shield in addition to safety goggles, and non-woven apron when using liquid nitrogen or other cryogenic gases.

(5) All personnel shall be aware that chemicals requiring respirators, re-breathers or are temperature sensitive flammables requiring storage in explosion proof containment are not authorized to be procured or used in DoDEA schools.

(6) When significant contamination occurs, remove laboratory coats immediately, unless removing the laboratory coat would increase the risk of exposure or contamination. Do not wear laboratory coats outside of the laboratory.

(7) Seek information and advice about hazards, plan appropriate protective procedures, and plan positioning of equipment before beginning any new operation.

(8) Science teachers shall avoid unattended operations. If an experiment is carried out continuously or overnight with no one present, leave lights on, and place an appropriate sign on the door identifying the nature of the experiment and hazardous substance used. If appropriate, arrange for someone to periodically check the operation.

c. Chemical Fume Hood (CFH).

(1) When directed by the SDS, use the CFH for operations that might result in release of toxic chemical fumes, gases, mists, vapors or dust.

(2) As a general rule, use a CFH or other local ventilation device approved by DoDEA HQ (Facilities, Office of Safety and Education) when working with any appreciably volatile substance. Consult the SDS for the product to determine the correct exposure controls and personal protection.

(3) Check airflow prior to using the CFH. Airflow should meet manufacturer requirement, which can be between 80 and 100 linear feet per minute. If there is a decrease in airflow, the CFH should not be used and a work order request should be submitted.

(4) Keep the sash closed at all times except when work is being conducted.

(5) Keep all objects at least six inches inside the chamber to prevent creation of air currents, which will allow air to escape back into the room.

(6) Do not use chemical fume hoods for storage. Keep materials temporarily stored in hoods to a minimum and do not allow the materials to block the air slots or compromise the operation of the hood.

(7) DoDEA policy requires all CFHs to be ducted. Ductless CFHs are not authorized for use in DoDEA schools.

(8) Annual inspection and certification is required by the host installation industrial hygienist/bioenvironmental department.

(9) Chemical fume hoods should be located to prevent air currents from affecting the exhaust and allowing vapors to escape into the classroom.

d. Vigilance. Be alert to unsafe conditions and see that they are corrected when detected.

e. Working Alone. Procedures involving hazardous materials shall not be conducted alone.

#### 4. CHEMICAL PROCUREMENT, DISTRIBUTION, AND STORAGE.

a. Delivery Receipt of a Chemical Substance. Before a chemical substance is received, the person ordering the material shall obtain information, in the form of an SDS, on proper handling, storage, and disposal. This information shall be shared with those who will be involved (e.g., school support assistant and supply personnel). No container shall be accepted without an adequate identifying label, SDS or if the package is damaged allowing the contents to leak. Preferably, all substances should be received in a central location. The host installation may require information on the chemical to be entered into a database, in order to comply with environmental management regulations. This also impacts the chemical waste disposal program. Chemical information should be provided to the appropriate office at the host installation prior to being placed into the stockroom/storeroom.

b. Stockroom/Storeroom. Hazardous materials shall be segregated in a well-identified area with separate exhaust ventilation vented directly up and outside the building. Organize chemicals first by COMPATIBILITY, not alphabetic succession. Chemicals that are highly toxic or other chemicals whose containers were opened should be stored in unbreakable secondary containers, which are properly labeled (See Enclosure 2, paragraph 2.a.). Stored chemicals shall be examined periodically (at least annually) for replacement, deterioration, and container integrity. Stockroom/storerooms shall not be used as preparation or repacking areas unless equipped with suitable protective equipment. Ensure that all storage areas have doors with locks. They shall remain locked, but be accessible during normal school working hours by at least one authorized person. Keep chemical storage areas off limits to all students. Door locks to chemical storage/chemical preparation areas will not be part of a master keying system. Keys to these areas will be strictly controlled and only issued to personnel trained in chemical safety. Custodial personnel will not have unaccompanied access to chemical storage/chemical preparation rooms. When cleaning of these areas is necessary custodial personnel will be accompanied at all times by personnel trained in chemical safety.

c. Distribution. When hazardous chemicals are hand carried from their storage area to the laboratory, the primary container shall be placed in a secondary container or authorized bucket for protection.

d. **Laboratory Storage.** Chemical substances permitted for current experiments should be as small as practical. Keeping limited quantities of chemicals, actively being used in class, on classroom bench tops or in storage hoods for one night, if properly secured, is permissible. Exposure to heat or direct sunlight should be avoided. Chemical storage cabinets in the classroom shall remain locked when not under the direct supervision of the teacher. Inventory records shall be verified at least twice a year. Unneeded items shall be disposed of properly in accordance with the SDS and Federal, DoD, and or host nation regulations, directives or standards.

e. **Containers.** Keep all chemical containers off the floor, carts and electrical equipment.

f. **Spill Prevention.** Store chemicals inside a closeable cabinet or on a sturdy shelf with a front-edge lip to prevent accidents and chemical spills; a 3/4-inch front edge lip is recommended.

g. **Chemical Storage.** Store all hazardous chemicals below eye level.

h. **Flammable Chemicals.** Store all flammable chemicals in an approved flammable storage cabinet.

i. **Explosion-Safe Storage.** Items requiring explosion-safe storage are prohibited per Enclosure 3, paragraph 1.

5. **ENVIRONMENTAL MONITORING.** Instrumental monitoring of airborne concentrations shall be conducted semi-annually in accordance with Reference (c) and DoD Instruction 6055.05 (Reference (e)), when testing or redesigning hoods or other ventilation devices, or when a highly toxic substance is stored or used regularly.

## 6. **HOUSEKEEPING, MAINTENANCE, AND INSPECTIONS.**

a. **Cleaning.** Floors shall be cleaned regularly to maintain a safe and healthful environment.

b. **Inspections.** Formal housekeeping and chemical hygiene inspections shall be held at least semi-annually as required by References (b) and (c), and DoD Manual 1342.6 (Reference (f)). Informal inspections should be continual.

c. **Maintenance.** All emergency eye wash stations, emergency showers, and other safety equipment shall be inspected as indicated below:

(1) Emergency eye wash stations shall be flushed weekly to ensure proper working order and to prevent microbial contamination from sitting water.

(2) Emergency showers shall be activated every three months for a period long enough to verify operation.

(3) Annual inspection is required by host installation safety or facilities personnel.

d. Passageways. Stairways and hallways shall not be used as storage areas. Access to exits, emergency equipment, and utility controls must never be blocked.

## 7. MEDICAL PROGRAM.

a. Routine Surveillance. Anyone whose work involves regular and frequent handling of toxicologically significant quantities of a chemical should consult the occupational medicine department at the host installation medical treatment facility to determine on an individual basis whether a regular schedule of medical surveillance is desirable.

b. Chemical Exposure. If a person has a chemical exposure or has signs or symptoms of a chemical exposure, he or she should immediately seek medical consultation at the host installation medical treatment facility after following appropriate emergency response procedures.

c. First Aid. Personnel trained in first aid should be available during school working hours and be familiar with the location of the SDSs. An emergency room with medical personnel should be nearby. Each school should add the phone number and location of the appropriate medical treatment facility.

8. PROTECTIVE APPAREL AND EQUIPMENT. These shall include, as appropriate, for each laboratory:

a. Protective Apparel. Protective apparel compatible with the required degree of protection for substances being handled.

b. Safety Shower. An easily accessible drench-type safety shower that meets the American National Standards Institute (ANSI) Z-358.1 manufacture and performance criteria.

c. Eyewash Station. An emergency eyewash station that meets the ANSI Z-358.1 manufacture and performance standard shall be located near bulk chemical storage and locations where splash hazards exist. An individual must have unimpeded access and be within 10 seconds (approximately 55 feet) of the eyewash station.

d. Extinguisher. A fire extinguisher.

e. Alarm and Telephone. A fire alarm pull station and telephone for emergency use.

f. Miscellaneous. Other items designated by the CHO, and approved by the district SOH specialist, district science coordinators, CHA, DoDEA HQ Science Coordinator and HQ SOH program manager.

9. RECORDS.

a. Accident Reports. Accident reports shall be submitted via the SIR/AIR Reporting System in accordance with current DoDEA policy.

b. Chemical Hygiene Plan. The plan shall be reviewed by September 30<sup>th</sup> of each year. The date of review shall be documented on the front of the plan.

c. Inventory. Inventory shall be kept by the CHO and reflect the amounts of materials on hand.

d. Semi-Annual Inventory. A semi-annual inventory of all chemical substances stored or used for all science programs (e.g., chemistry, art, photography, biology, physics, and industrial arts) shall be conducted by the CHO before September 30<sup>th</sup> and by June 30<sup>th</sup>. New or consumed chemicals shall be accounted for and recorded on inventories. Disposal of excess chemicals shall be conducted in accordance with Reference (e). The school administrator shall maintain the semi-annual chemical inventory for a period of three school years. Copies of the semi-annual inventory will be forwarded to the school principal, district CHA, host installation fire marshal and the environmental management or hazardous materials office.

e. Medical Records. Medical records shall be retained in accordance with governing regulations, which includes section 1020 of Reference (c).

f. CHO designation and training shall be maintained as a part of the personnel record.

10. SIGNS AND LABELS.

a. Signs and Labels. Signs and labels of the following types shall be prominently posted:

(1) Telephone numbers of emergency personnel/facilities, supervisors, etc.

(2) Identification labels, showing contents of containers (including hazardous waste sealed containers) and associated hazards and chemicals transferred to secondary containers.

(3) Locations of safety showers, eyewash stations, other safety and first aid equipment, exits and areas where no food, drink, or other hand to mouth contact is permitted.

(4) Warnings at areas or equipment where special or unusual hazards exist.

b. Standards and Procedures. Signs/labels shall reflect the same standards in the Chemical HAZCOM Standard (Reference (c)). Procedures for the implementation of the hazard communication program are outlined in Enclosure 2.

## 11. INFORMATION AND TRAINING.

a. **At Risk Personnel.** All personnel at risk (exposed through study or work) shall be adequately informed about chemical hazards in the laboratory, the risks involved, and what to do in an emergency.

b. **Receiving and Stockroom Storeroom Personnel.** Receiving and stockroom/storeroom personnel shall know about hazards, handling equipment, protective apparel, relevant regulations, labeling, SDSs, etc.

c. **Chemical Hygiene Advice.** Literature and consulting advice concerning chemical hygiene shall be readily available to teachers, who should be encouraged to use such resources, (e.g., SDSs for chemicals used).

d. **Information and Training.** See Enclosure 2 Section 4.a through c for the training requirements. Additional information that personnel in schools with laboratories need to be aware of is the chemical hygiene plan.

## 12. HAZARDOUS CHEMICAL WASTE.

a. **Statutes.** Hazardous chemical waste shall be disposed of in accordance with the most restrictive rules governing the United States, DoD, or host nation statutes that have jurisdiction over the hazardous waste generator. The aim of the chemical waste disposal system is to ensure that minimal harm to people, other organisms, or the environment will result from the disposal of waste chemical substances.

### b. Hazardous Chemical Waste Disposal.

(1) Assure that the procedure for each laboratory operation includes plans and training for waste disposal.

(2) Deposit chemical waste in appropriately labeled and sealed containers and follow all other established waste disposal procedures.

(3) Do not discharge into the sewer concentrated acids or bases; highly toxic, malodorous, or lachrymatory substances; or any substances that might interfere with biological activity of waste water treatment plants, create fire or explosion hazards, cause structural damage, or obstruct flow.

(4) Plan experiments so that proper waste disposal or neutralization of hazardous products from experimental work is an integral part of the overall procedure.

(5) Do not indiscriminately dispose of waste chemicals by pouring them down the drain or adding them to mixed refuse for landfill burial. This is not allowed and violations could result in severe penalties.

(6) Do not use chemical fume hoods as a means of disposal for volatile chemicals.

(7) Dispose of waste chemicals by recycling or chemical neutralization when possible.

(8) Use appropriate host support agencies to properly identify, prepare, and package for disposal unneeded or unused chemicals.

(9) Use a contracted chemical disposal service if local identification, decontamination, and disposal cannot be practically performed.

c. Transportation. Transportation of chemicals from the laboratory or school shall be in accordance with the local host installation regulations.

d. Unidentified Chemical Stocks. Unlabeled containers of chemicals and solutions shall undergo prompt identification and proper disposal.

e. Transfer or termination of employment. Prior to the transfer or termination of a teacher's employment, the teacher in conjunction with the CHO shall inventory the chemicals for which that person was responsible. Excess, waste, or outdated chemicals shall be properly disposed of and the remaining chemicals properly prepared for a complete exchange of accountability and responsibility. Shipping of chemicals is strictly regulated by federal and international laws, and therefore not allowed.

f. Controlling Disposal Costs. Disposal of hazardous wastes is expensive. However, there are a number of steps that can be taken to control costs. For example,

(1) Minimize quantities purchased.

(2) Segregate chemically different substances.

(3) Do not mix hazardous and non-hazardous wastes. When they are mixed, they are all considered to be hazardous waste, thereby increasing the volume and cost of hazardous waste to be disposed.

g. Waste management. Verify that chemical waste is being collected properly and coordinate with the supply person, or when necessary the chemical hygiene advisor, to dispose of waste at the end of the school year. If issues with disposal occur, the principal should be notified to begin mitigating the problem.

h. Labels. Each individual working with chemicals shall understand that all containers must have their contents properly labeled. Analytical costs to identify the contents of unlabeled containers are high and unnecessary if teachers do their job properly.

**13. ADDITIONAL PRECAUTIONS WITH PARTICULARLY HAZARDOUS SUBSTANCES.**

a. Select carcinogens, reproductive toxins and highly toxic substances are considered to be particularly hazardous. These substances should only be purchased or used with the prior approval of the district science ISS/CHA.

b. Consider area decontamination and waste disposal, the establishment of a designated area, and use of a containment device (chemical fume hood).

GLOSSARYPART I. ABBREVIATIONS AND ACRONYMS

AIR	accident/injury report
ANSI	American National Standards Institute
CFH	chemical fume hood
CH	Chemical hygiene
CHA	chemical hygiene advisor
CHO	chemical hygiene officer
DDESS	Domestic Dependent Elementary and Secondary Schools
DODDS-E	Department of Defense Dependents Schools, Europe
DODD-P	Department of Defense Dependents Schools, Pacific
DODEA	Department of Defense Education Activity
GHS	global harmonized system
HAZCOM	DoD Hazard Communication
HQ	Headquarters
NIOSH	National Institute of Occupational Safety and Health
OSHA	Occupational Safety and Health Administration
PEL	permissible exposure limit
PPE	personal protective equipment
SDS	safety data sheet
SOH	Safety and Occupational Health
SOP	standard operating procedures
TLV	threshold limit value

PART II. DEFINITIONS

**carcinogen.** A substance capable of causing cancer or cancerous growths in mammals. A chemical is considered to be a carcinogen if it is: Evaluated by the International Agency for Research on Cancer and found to be a carcinogen or potential carcinogen; listed as a carcinogen in the Annual Report on Carcinogens published by the National Toxicology Program; or, regulated by OSHA as a carcinogen.

**chemical.** An element, chemical compound, or mixture of elements and/or compounds. DoDEA uses chemicals for many purposes within a school and office environment. For the purpose of

this instruction the term “chemical” can apply to those items used in school curriculum, cleaning supplies, maintenance, pest control, and construction/renovation.

**chemical fume hood.** A device enclosed on three sides, top and bottom, designed and maintained to draw air into the hood at a desired rate to dilute and safely dispel potentially hazardous fumes, gases, mists, or vapors out of the facility. The hood must be designed, constructed, and maintained in such a way that an operation within the hood does not require the insertion of a person's body part other than the hands and arms.

**container.** A bag, barrel, bottle, box, can, cylinder, drum, reaction vessel, storage tank, or the like, that contains a hazardous chemical. This does not refer to pipes or piping systems, engines, fuel tanks, or other operating systems in a vehicle.

**corrosive.** A substance that causes destruction of tissue by chemical action or contact.

**disposal.** The safe removal of chemical substances from DoDEA facilities.

**exposure.** Subjecting a person to a hazardous chemical in the course of employment, study or visitation to a DoDEA facility or activity. This includes exposure through any route of entry (inhalation, ingestion, skin contact or absorption), and includes potential (e.g., accidental or possible) exposure.

**fume.** Airborne particulate formed by the condensation of solid particles from the gaseous state. Usually fumes are generated after initial volatilization from a combustion process, or from a melting process (e.g., metal fume emitted during welding).

**gas.** A state of matter in which the material has very low density and viscosity; can expand and contract greatly in response to changes in temperature and pressure; easily diffuses into other gases; and readily and uniformly distributes itself throughout any container.

**hazard warning.** Words, pictures, symbols or combination thereof appearing on a label or other appropriate form of warning that convey the hazard(s) of the chemical(s) in the container(s).

**hazardous material.** Any substance or compound that has the capability of producing adverse effects on the health and safety of humans. For additional information, see Reference (d).

**hazardous waste generator.** The place at which the hazardous chemical substance is determined to be waste material.

**health hazard.** This refers to a chemical, mixture of chemicals or a pathogen for which there is statistically significant evidence based on at least one study conducted in accordance with established scientific principles that acute or chronic health effects may occur in exposed persons. The term *health hazard* includes chemicals that are carcinogens; toxic or highly toxic agents; reproductive toxins; irritants; corrosives; sensitizers; hepatotoxins; nephrotoxins; neurotoxins; agents that act on the hematopoietic system; and agents that damage the lungs, skin, eyes, or mucous membranes.

**highly toxic.** Agents or substances that when inhaled, absorbed or ingested in small amounts can cause death, disablement, or severe illness.

**hood.** See chemical fume hood.

**incompatible.** A term applied to liquid and solid systems to indicate that one material cannot be mixed with another specified material without the possibility of a dangerous reaction.

**ingestion.** Taking in by the mouth.

**irritant.** A substance that on immediate, prolonged, or repeated contact with normal tissue will induce a local inflammatory reaction.

**label.** Written, printed, or graphic material displayed on or affixed to containers of hazardous chemicals.

**lachrymatory.** A substance that causes weeping or a tear producing effect on the lachrymal glands.

**mists.** Suspended liquid droplets generated by condensation from the gaseous to the liquid state or by breaking up a liquid into a dispersed state, such as by splashing, foaming, or atomizing.

**particularly hazardous substance.** Substances that are considered to have a high degree of acute toxicity and that are highly toxic or toxic as defined under the Hazard Communication Standard. These substances may be fatal or cause damage to target organs as a result of a single exposure or exposures of short duration.

**PELs.** Permissible exposure limits are established by OSHA and are law. This may be expressed as a time-weighted average (TWA) limit, a short term exposure limit (STEL) or as a ceiling exposure limit. A ceiling limit must never be exceeded instantaneously even if the TWA exposure limit is not violated. For laboratory uses of OSHA regulated substances, the employer shall assure that laboratory employees' exposures to such substances do not exceed the PELs specified in subpart Z of Reference (c).

**pipet.** A calibrated glass tube of varying length, open at both ends and used to transfer small volumes of liquid.

**reproductive toxin.** Chemicals that affect the reproductive capabilities including chromosomal damage (mutations) and effects on fetuses (teratogenesis).

**respirator.** A device worn over the nose and mouth to prevent inhalation of potentially harmful substances.

**TLV.** The threshold limit value (TLV) is a term used by the American Conference of Government Industrial Hygienist used to express the maximum airborne concentration of a

material to which most workers can be exposed during a normal daily and weekly work schedule without adverse effects.

vapor. The gaseous form of substances that are normally in the solid or liquid state at room temperature and pressure. The vapor can be changed back to the solid or liquid state either by increasing the pressure or decreasing the temperature alone. Vapors also diffuse. Evaporation is the process by which a liquid is changed to the vapor state and mixed with surrounding air.

waste. A chemical substance is considered to be waste when determined that it is no longer useful.