

Union Public Schools Chemical Hygiene Plan

Laboratory Safety Chemical Hygiene Plan (CHP) is OSHA's Occupational Exposure to Hazardous Chemicals in the Laboratory standard (29 CFR 1910.1450). Referred to as the Laboratory standard it specifies the mandatory requirements of a Chemical Hygiene Plan (CHP) to protect laboratory workers from harm due to hazardous chemicals. The CHP is a written program stating the policies, procedures and responsibilities that protect workers from the health hazards associated with the hazardous chemicals used in that particular workplace.

This document has been created in part with excerpts from the following publications:

Science Rules and Regulations
National Science Teachers Association.

School Chemistry Hygiene Plan,
U.S. Consumer Safety Product Commission
Department of Health and Human Services
Center for Disease Control
National Institute for Occupational Safety and Health.
October 2006

The Center for Disease Control and Prevention Biosafety in Microbiological
and Biomedical Laboratories, 5th ed., December 2009

Science Students

Science students should not expect the teacher to shoulder the entire responsibility for a safe learning environment in the science classroom and laboratory. Each student should contribute to the safety of others and help maintain an atmosphere of safe learning by accepting a few basic responsibilities.

Student Responsibilities

1. Read and study the science activity or laboratory investigation before coming to class.
 - Ask questions about the activity before beginning the exercise.
 - Identify and understand the hazards and necessary precautions you need to take.
 - Understand the concept of the investigation, and know how to proceed with the investigation.
2. Know and follow all safety rules prior to the first investigation.
 - Read, understand, and sign the safety contract.
 - Wear the appropriate protective equipment, such as goggles and laboratory aprons.
 - Tie back long hair to keep it away from chemicals, open flames, and equipment.
 - Tie back or remove articles of clothing or jewelry that could touch chemicals or flames during investigations.
 - Wear shoes that enclose the feet—no sandals or open-toe shoes.
 - Never eat or drink anything while in the laboratory.
 - Locate the safety equipment, such as the eye/face wash station, and know how to use it correctly.
 - Know where the exits are located and the proper procedures to be followed in an emergency.
 - Wear splash-proof safety goggles until all chemicals have been returned, glassware cleaned, and equipment properly stored.
3. Be alert in the laboratory. Watch for potential problems, and report unsafe situations immediately. Do not work alone in the laboratory.
4. Do not attempt unauthorized activities. Work only on authorized activities that are related to the investigation.
5. If a chemical spill occurs, report it immediately and follow the teacher's instructions.
 - Move quickly from the site.
 - Wash off chemicals that have splashed onto the skin or clothing for 15 minutes using large amounts of water in the safety shower or eye/face wash station.
6. Keep your area clean. Clean up the area at the end of the class. Dispose of biological and chemical waste properly.
7. Do not enter preparatory or equipment storage rooms or chemical storerooms.
8. Always wash your hands for at least 20 seconds with soap and warm water before leaving the laboratory.

Science Teachers

Classrooms and science laboratories may be crowded, increasing the probability of accidents. Advance planning and preparation is one of the best safety practices a teacher can use to reduce the probability of accidents.

Teacher Responsibilities

1. Understand each science laboratory or field investigation in advance.
 - Carefully read and scrutinize all investigations and activities for safety procedures and materials the students will be handling.
 - Read and understand the information on Material Safety Data Sheets (MSDS) related to chemicals or other hazardous materials that will be used in the laboratory.
 - Seriously consider all the hazards discussed in the MSDS and determine if the chemicals are safe for students to use. Consider substitute chemicals or use microchemistry procedures.
 - Do a trial laboratory experience if you have not done the investigation before.
 - Remember, teachers and students must wear safety goggles and protective clothing when appropriate.
 - Anticipate what could go wrong during a typical laboratory experience, and take measures to reduce the probability of an accident occurring.
2. Have regular pre-laboratory activities before taking students into a laboratory setting. Go over all safety precautions in the investigation, and answer questions and concerns before beginning the activity.
3. Label all chemicals correctly and clearly.
4. The materials to be used during the laboratory investigation should be labeled correctly, arranged carefully, and placed in a safe area for students to use.
5. Maintain order and discipline during the activity. Safety rules are to be obeyed by all students.
6. Monitor the laboratory room or field site. Work with students to correct any procedure or behavior that is not safe.
7. Students should promptly clean up their areas while wearing safety goggles. Chemicals and biological wastes should be disposed of correctly.
8. Participate in an emergency response team to monitor safety and respond to accidents.
9. If accidents do occur, follow the school district's policy and guidelines on administering first aid and reporting the accident. Do not wait to write a report of what caused the accident, injuries, action taken, and results. A more accurate description can be made soon after an accident occurs.
10. Participate in ongoing safety professional development and through our SafeSchools online training program.

Science Department Heads and Science Teachers

The science department chair and science teacher must make safety a high priority. They should monitor safety in the laboratory, preparatory room, and storage room.

1. Develop a schedule for inspecting laboratory facilities, preparatory and equipment rooms, and storage rooms. Identify problem areas, and develop plans to improve safety.
2. Discuss with the science teachers the school district's procedures for proper disposal, labeling, and handling of chemicals.
3. Maintain a Material Safety Data Sheet (MSDS) notebook of chemicals in your department. Announce additions to the MSDS library as new chemicals and hazardous materials are added to the department. Each teacher should be made aware of the hazards of new chemicals.
4. Work with teachers to keep students in compliance with the safety rules. The classroom teacher should set and model high standards of safety.
5. Establish an emergency response team and develop procedures and responsibilities.
6. Help with emergency actions that are needed for laboratory accidents, assistance to the injured person, and the cleaning up of chemical spills, broken glassware, and fires. Planning and advance preparation will help everyone to stay calm and think clearly if an accident does happen.
7. Work with science teachers to report and investigate accidents. The purpose of the investigation is to determine the cause and make corrections, if possible—not to place blame. Accident reports will be filed with the Director of Secondary Education, the Director of Safety, the Building Principal, and the District Claims Specialist.
8. Participate in ongoing safety professional development through our SafeSchools online Training program.

District Director of Safety and Science Department Heads

The district director of safety should work closely with science department heads and classroom teachers on the science safety program and serve as a liaison between the education service center and other district directors. The science department head should conduct regularly safety updates with the science teachers.

1. The science department head and classroom teachers on each campus will work together to meet the requirements of the Chemical Hygiene Plan and pertinent laboratory safety regulations.
2. Monitor all laboratory facilities for required safety equipment. The safety equipment must be installed correctly and function properly. An annual check of each classroom, including chemical storerooms, preparatory and equipment rooms, should be part of the routine tasks.
3. The science department head and classroom teachers will review science laboratory and field investigations for safe practices and safe use of materials. Consider alternate investigations in cases where existing conditions might compromise safety.
4. Require an annual chemical inventory for each campus. Material Safety Data Sheets must be kept on all chemicals in the science department work areas.
5. Discuss with teachers the school district's process and procedure for properly disposing of chemicals and biological waste. Teachers should be made aware of their obligation to follow designated procedures for chemical waste disposal.
6. Be well informed of the laws, rules, and regulations concerning safety, and conduct professional development on safety.
7. Become active in state and national science organizations for access to current safety information.
8. Establish annual safety professional development for new teachers and review district safety policies.
9. Utilize our SafeSchools online safety training for professional development.

School District Administrators

A school district's administrators, whether on the campus or in the district's education service center, have a crucial role in assuring that students and teachers work and learn in an environment that is safe.

Administrator Responsibilities

Develop a district safety policy, and provide a safety program that includes

1. Implementing the school district's safety program;
2. Supporting professional development on safety;
3. Developing emergency procedures for responding to accidents;
4. Ensuring that science class enrollments have a limited number of students so as not to compromise safety with an excessive number of students at work stations;
5. Providing laboratory facilities that comply with Oklahoma Department of Labor (ODL) regulations, National Science Teachers Association (NSTA), American Chemical Society (ACS) Guidelines, and the Occupational Safety and Health Administration (OSHA) Laboratory Standard.
6. Providing necessary safety equipment, such as eye/face wash stations, fume hoods, emergency showers, fire extinguishers, safety eyewear, emergency fire blankets, chemical spill kits, etc.;
7. Conducting annual inspections and a maintenance program to ensure safe working conditions;
8. Producing safety policies that can be adopted by the local school board and implemented on all campuses;
9. Maintaining compliance with the Hazard Communication Act (OSHA Standard 1910.1200); and
10. Providing the district's procedures for proper disposal of chemicals and biological wastes.

Laboratory Management

Classroom management techniques maximize and reinforce proper behavior and safety in the science laboratory. Fortunately, the techniques that maximize learning also promote safety. The following represents a list of recommended laboratory management techniques.

Laboratory Management Techniques

1. Maintain fair and consistent classroom discipline to prevent unsafe conditions from being created during laboratory investigations.
2. Establish routine procedures for conducting a laboratory investigation that promote an orderly and safe environment. Ask different students in each laboratory group to
 - obtain materials from a supply area,
 - return materials at the completion of a laboratory investigation, and
 - record data, if class data are needed.
3. Explain and post the expectations for orderly conduct in the classroom, laboratory, and field. Teachers should always model appropriate classroom, laboratory, and field procedures.
4. Explain and post safety rules for the classroom, laboratory, and field. Students and parents should complete and return a signed safety contract before students begin investigations.
5. Explain the consequences of unsafe behavior.
6. Before each laboratory investigation, review the safety rules for using laboratory equipment and facilities.
7. Prior to the investigation, arrange for the proper disposal of wastes.
8. Keep up with current information on safety and class procedures, and practice those procedures consistently.
9. Examine laboratory investigations and equipment for appropriateness and safety.
10. Review with students the procedures for using the laboratory. Discuss safety rules and precautions before the investigation begins.
11. Promote a positive attitude. Students should not fear doing experiments, using reagents, or using equipment, but should have a positive attitude toward safe laboratory procedures.
12. Adjust procedures for students with emotional, physical, or educational problems to capitalize on the contributions they are able to make.
13. When a substitute teacher is in charge, create an alternate lesson plan that does not involve laboratory work.
14. Monitor continuously for maximized learning and safe conditions.
15. Plan post-lab activities.
16. Clean the work areas thoroughly and regularly.
17. Develop procedures to be followed in case of an accident.
18. Establish procedures for asking students to leave the laboratory when they demonstrate unacceptable behavior.

Paraphrased from Secondary Science Safety, by J. G. Gerlovich, T. F. Gerard, B. Shriver, G. E. Downs, and L. C. Flinn, Jr., and from Science Laboratory Techniques, by R. B. Bartholomew and F. E. Crawley, 1985.

Evaluating Safety in Laboratory Investigations

Laboratory investigations and experiments are handed down from one teacher to another, given away at conferences, downloaded from the Internet, and found in journals.

To evaluate how safe an investigation is, consider these guidelines before allowing students to conduct an unfamiliar investigation. Remember, the teacher should always complete the investigation before approving it for student use.

What Can Be Done in Advance?

- Do not assume that investigations published in laboratory manuals or journals, or acquired from other teachers, are safe.
- Always read and check new investigations carefully.
- Appropriate safety symbols should be present in the investigation to alert students to a precaution against a hazard.
- The investigation should inquire into, investigate, illustrate, or analyze a scientific concept or principle in a safe manner or method.
- Check the equipment or setup to be used and the glassware for proper assembly and cracks.
- Know all the actions and reactions that should occur between the chemicals to be used, and investigate unexpected reactions that might occur.
- Know the hazards of all substances used in the activity. Material Safety Data Sheets (MSDS) and other safety references should be consulted and reviewed with the students prior to the start of any investigation.
- Know the hazards of predicted products that may form during the chemical reactions in the investigation.
- The correct amounts of substances and concentrations of solutions should be clearly stated in the directions.
- Substances with a high hazard rating should not be used in science labs. Substitute safer compounds for the hazardous substance.
- Check the electrical equipment for proper grounding, frayed wires, and safe connections.
- All precautions must be thoroughly discussed in the pre-lab session with the students.
- The students should be aware of what to do with the products that are formed and any remaining materials.
- The investigation must be clearly written so that students understand exactly what to do and how to carry out the activity

Responding to a Laboratory Accident

Being prepared for accidents will help decrease the possibility of an accident becoming more severe or of other injuries occurring. In the event of an accident, action must be taken quickly to minimize the effects of the accident. It is strongly recommended that teachers receive professional training in cardiopulmonary resuscitation (CPR), first aid, abdominal thrust (Heimlich maneuver), and other emergency procedures.

Planning for an emergency should involve the entire organization within your school: administrators, maintenance staff, custodial staff, office staff, nurse, teachers, students, and parents. Every area and event should be included in the planning, including the school building and grounds, field trips, etc.

Possible emergencies that teachers may respond to include . . .

- small to moderate fires
- chemical reactions that result in an explosion
- serious burns resulting from exothermic reactions
- serious chemical burns
- ingestion of hazardous chemicals
- electrical shocks from equipment
- chemical spills resulting from broken containers
- minor to serious cuts

If an Accident Occurs

1. Attend to the injured person(s) immediately, call the main office and/or send a student for help.
2. Administer first aid in the laboratory to . . .
 - stop the flow of blood in the case of a cut, and
 - wash off any caustic chemicals on the body or in the eyes.

Special Note: Teachers should use Universal Precautions as prescribed in their annual Blood Borne Pathogens (BBP) training
3. If the injury is a cut or an abrasion . . .
 - wash the injured area thoroughly.
 - place a compress on the wound to stop the flow of blood.
 - replace the compress with a sterile bandage if the injury is minor.
 - accompany the student to the nurse's office if the injury is moderate or severe.
 - follow the proper BBP procedures to clean up blood.

4. If the injury is the result of chemicals . . .
 - rush the injured person to the safety shower.
 - immediately drench the entire area with a continuous flow of water for 15 minutes.
 - send a student to alert the school's nurse or to get another teacher.
 - use a spill kit to contain and remove the chemicals.
5. If foreign materials or chemicals have entered the eye . . .
 - rush the student to the dual eyewash station.
 - remember, the student will have difficulty seeing, so guide him or her to the eye/face wash station.
 - ° • rinse the open eyes with a continuous stream of tepid water (60–90 F) for 15 minutes.
 - send a student to alert the school's nurse or another teacher.
6. If the injury is the result of electrical shock . . .
 - separate the person from the electrical source carefully. Use the master control switch.
 - call the nurse for emergency medical aid immediately.
 - check for breathing and pulse immediately.
 - start CPR if necessary.
 - check for entrance and exit burns. Treat burns as you would a thermal burn.
 - there may be two burns present—one where the power entered the body and the other where it exited. Some burns are large and below the skin.
 - keep the injured person warm, quiet, and lying down.
 - the injured person may stop breathing after being shocked by high-frequency electrical currents or being struck by lightning.
 - the injured person may be unconscious, dazed, weak, or confused, with an irregular pulse.
7. The nurse and administrators should assume responsibility for providing help at this time by . . .
 - administering additional first aid,
 - contacting the parents and seeking information that is on students' emergency contact page.
 - pursuing additional treatment if necessary
8. If the nurse is not available, the teacher and/or administrators are obligated to follow through with accident procedures to protect the student from further injury.
 - The administrator or nurse should call the student's parents to advise them of the severity of the accident and to ask their permission to proceed with treatment as needed.
 - If the parents cannot be reached, the administrator must act in accordance with the situation. The administrator upon the nurse's advice, seek treatment for the injured student.

9. After the injured person has been cared for and any chemical spill contained, the teacher needs to fill out an accident report for their own protection and the protection of all parties involved.

Regardless of how good the science facilities are; how well we are trained on safety, how much emphasis we place on safe procedures—accidents are going to happen. How well we respond to accidents depends on how well we are prepared.

Emergency Response System

School personnel should organize an emergency response system at the beginning of the school year before laboratory investigations and activities begin. This system should include clearly defined roles and responsibilities for an Emergency Response Team (ERT). The ERT should be prepared to move quickly and effectively when responding to accidents in order to reduce injury to a student or teacher, and damage to property in a science classroom.

Emergency Response Team

An emergency response team composed of building administrators, building engineers, teachers, and students should be trained to respond to an emergency in a science laboratory or classroom.

If an accident should occur, each member of the team must be able to respond quickly and to perform his or her role effectively to assist an injured person and reduce damage to property.

In addition, team members should take preventative measures to ensure safety in the laboratory by regularly checking equipment and facilities.

Emergency Preparedness

The following list outlines some responsibilities that an emergency response team might perform. This does not represent a complete list but should form the basis of emergency preparedness.

- Practice regular fire and evacuation drills.
- Make sure that safety equipment is accessible and operating correctly.
- Inspect first-aid kits and chemical spill kits.
- Monitor safety equipment regularly.
- Compile and maintain a current file of Material Safety Data Sheets (MSDS).
- Practice responding to simulated accidents and emergencies.
- Identify which chemical spills to respond to and which ones a professional HazMat (Hazardous Materials) team should handle.
- Attend professional development on first aid, including CPR and abdominal thrust procedures (Heimlich maneuver).
- Document information about accidents, and maintain these records for a minimum of three years.

I. Standard Operating Procedures

A) General Employee Rules and Procedures

- 1) Employees and students are to follow the personal hygiene practices outlined in the Chemical Hygiene Plan.
- 2) Minimize all chemical exposures.
- 3) Avoid skin contact with chemicals.
- 4) Do not underestimate chemical hazards and risks.
- 5) Wear appropriate eye protection at all times. Chemical splash goggles must be worn any time chemicals, glassware or heat are used in the laboratory. Employees, students, and lab visitors must follow the goggle policy.
- 6) Never work alone in the laboratory, chemical storage or prep areas.
- 7) Never use flammable liquids near any source of ignition, spark or open flame.
- 8) Teachers will perform pre-test demonstrations in front of other instructors to evaluate the safety of the demonstration before performing the demonstration with students.
- 9) Chemicals are not to be stored over, under or near a sink.
- 10) Only authorized personnel may be allowed in the chemical storeroom.
- 11) All science laboratories and prep areas have easily accessible fire blankets in case of an accident.
- 12) All employees and students must be trained to find and use all safety devices and utility controls in the laboratory (e.g., eyewash, aprons, face shields, fire extinguisher, spill control materials etc.) before they will be allowed access to the lab.
- 13) Employees and students must receive training appropriate emergency procedures, waste disposal, spill clean-up, evacuation routes and fire emergency notification before they will be allowed access to the lab.
- 14) Do not smell or taste chemicals.
- 15) A safety shield will be used 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 the other references. MSDS sheets for each chemical in use in a particular lab investigation will be available for student reference.
- 18) All employees and students will use protective safety equipment to reduce potential exposure, i.e. gloves, aprons, face shield, fume hood, etc. as appropriate.
- 19) All chemicals will be stored in their compatible chemical families.
- 20) Chemicals are to be transported by employees and students in the safest manner possible.
- 21) Employees and students will utilize proper procedures for disposal of chemicals.

B) General Laboratory Rules and Procedures

- 1) In response to any accident, consult the school nurse and administrators to determine whether to treat or activate the Emergency Response Team.
- 2) The laboratory will be well ventilated. (Most high school science labs in Union Public Schools have a teacher controlled ventilation fan that can remove the air 6 to 8 air changes per hour.) Air for laboratory areas is separate from the rest of the school ventilation and is removed out to the exterior of the building. Ventilation must be checked a minimum of every 3 months.
- 3) Emergency telephone numbers should be posted by the phone.
- 4) Chipped, etched or cracked glassware is not to be used in the lab and is to be disposed of properly. Glassware which is chipped or scratched presents a serious breakage hazard when heated or handled.
- 5) High school laboratories have eyewashes capable of treating both eyes continuously for 15 minutes with copious quantities of potable water. Employees and students should review training procedures on how to use the eyewash quickly in case of an emergency. Eyewash effectiveness and operation are to be inspected every month. Notify the building engineer of any eyewash which does not meet the water flow requirements of ANSI Z358.1. (.4 gallons per minute)
- 6) Eyewashes should be flushed weekly to monthly to remove any contaminant that may form or grow in the eyewash.
- 7) Safety showers or body drenches are provided in most science labs. Showers are to be inspected and tested every month. Promptly repair any shower or body drench which does not meet the water flow requirements of ANSI Z358.1. (20 gallons per minute)
- 8) Safety showers are to be flushed and inspected every six months to remove any contaminant that may form or grow in the safety shower.
- 9) Approved eyewash stations and fire blankets are to be within 25 feet of the chemical stores areas.
- 10) An accident report describing the event in detail will be filed with the building Principal, the science department head, the Director of Safety, the Director of Secondary Education and the District Claims Specialist in the event of any injury inducing accident.
- 11) Read all labels carefully-the names of many chemicals look alike at first glance.
- 12) Do not operate electrical equipment with wet hands.
- 13) Have appropriate types and sizes of fire extinguishers. Triclass 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 are to be inspected every six months.
- 14) Do not block fire exits.
- 15) Keep all aisles clear.
- 16) Eyewash and Safety Shower stands will have clear and open access and will be free of clutter.
- 17) Know the exits of alternative evacuation routes in the event your primary route becomes blocked.
- 18) Accident and evacuation emergency plans will be practiced as a part of student and employee safety training.
- 19) Access to exits, emergency equipment and master utility controls must never be blocked.
- 20) Do not drink from lab glassware or other lab vessels.
- 21) No food in the laboratory. Do not eat, drink or chew gum in the laboratory.
- 22) Do not apply cosmetics in areas where laboratory chemicals are present. Do not use hair spray, hair mousse, or any flammable hair products during or just before laboratory work where an open flame is used.
- 23) No unlabeled products should be stored anywhere in the science facility.

- 24) Be thoroughly familiar with the hazards and precautions for protection before using any chemical. Study the precautionary label and review its contents before using and chemical substance.
- 25) Clean up all spills properly and promptly.
- 26) Neutralizing chemicals, such as a spill kit, dry sand, kitty litter, and other spill control materials should be readily available in the lab whenever the lab is in use.
- 27) Dispose of all chemicals properly. All disposal procedures used should be conform to state and local regulations. Contact the Union Public Schools Director of Safety for assistance
- 28) Never pipet by mouth.
- 29) Do not run in the laboratory.
- 30) Never perform unauthorized laboratory experiments.

C) Personal Hygiene Guidelines

- 1) Do not apply cosmetics or smoke, eat, chew, or drink in the laboratory.
- 2) Do not pipet by mouth-always use a pipet bulb or other appropriate suction device.
- 3) Wash thoroughly after any chemical exposure, after completing and cleaning up the laboratory, or before leaving the laboratory.
- 4) Never smell chemicals directly; always waft the odors to your nose using your hand.
- 5) Never bring foodstuffs, opened or closed, into the lab, chemical prep or storage area. Foodstuffs, should not be eaten if in a room with toxic materials.

D) Protective Clothing Requirements

- 1) Eye protection must be worn. Chemical splash goggles must meet ANSI Z87.1 G or H Standard. Wear face shields when dealing with corrosive liquids, (i.e., full strength acid and bases).
- 2) Wear gloves which offer protection for all hazards you may find in the lab. Test for holes every time you wear your gloves.
- 3) Always wear full length lab coat or a chemical-resistant apron when appropriate.
- 4) Wear low heeled shoes. Do not wear open-toed shoes or sandals of any kind.
- 5) Employees and students should wear long pants in the laboratory.
- 6) Do not wear loose or balloon sleeves.
- 7) Tie back long hair.
- 8) Do not wear hanging jewelry.
- 9) Do not wear a long or loose necktie.
- 10) Do not wear an absorbent watch strap.
- 11) Inspect all protective safety equipment before use. If defective, do not use.

E) Housekeeping Rules

- 1) Keep chemicals in the chemical storage area except when in use. 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) Do not store chemicals in drawers or cabinets except in the chemical storage area.
- 3) Waste materials require proper containers and labels.
- 4) 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.
- 5) Label all chemicals with names and hazards, even solutions.
- 6) Never block access to exits or emergency equipment
- 7) Clean up all spills properly and promptly.
- 8) Work and floor surfaces in classrooms and prep areas should be cleaned regularly and kept free of clutter.

F) Spill and Accident Procedures

- 1) Notify- Call for help. Evacuate- Get everyone to a safe location. Assemble -Organize the students and all workers. Report- Fill out detailed accident report after the emergency is over.
- 2) Clean up spills immediately and thoroughly. Follow approved spill cleanup procedures, spills should only be cleaned up by the approved personnel.

G) Chemical Storage Rules and Procedures

- 1) Keep an updated inventory of all chemicals, their amounts and location. Stored chemicals should be examined annually for replacement, deterioration and chemical integrity.
- 2) Label all chemical solutions you make with the identity of the contents, date, concentration, hazard information and your name.
- 3) Date and label all chemicals with the purchase date.
- 4) Each school facility has separate, dedicated and secure storage areas for chemicals. The room must have continuous ventilation at a rate not less than 6 air exchanges per hour to the outside.
- 5) No chemicals are to be stored in the classroom or the preparation/ equipment storeroom.
- 6) Incoming shipments of chemicals for use in science teaching must not be opened and transported by school personnel other than qualified science teachers.
- 7) All chemicals will be stored in chemically compatible families.
- 8) Store the minimum amount of chemicals needed.
- 9) Store corrosives in appropriate, vented corrosives cabinets.
- 10) Nitric acid is to be stored in a dedicated Nitric Acid cabinet.
- 11) No flammable materials should be stored outside an approved flammable storage cabinet unless in safety cans.
- 12) Do not store chemicals under a fume hood.

- 13) If possible, keep certain items in the original shipping package.
- 14) Use extreme caution when storing chemicals on shelves above eye level.
- 15) The storage area and cabinets must be labeled as to identify the hazardous nature of the products stored within.
- 16) Shelving above any work area, such as a sink, must be free of chemicals or other loose miscellany.
- 17) Shelving sections are secured to walls or floor to prevent tipping of entire sections.
- 18) Shelving should be equipped with lips to prevent containers from rolling off.
- 19) Chemicals should not be stored on the floor except in approved shipping containers.
- 20) Never store food in the laboratory refrigerator.
- 21) Store all poisons in a locked, dedicated cabinet.
- 22) Only authorized personnel are allowed in the chemical storage area.
- 23) Chemical exposure to heat or direct sunlight should be avoided.
- 24) Store chemicals in an upright position and never more than two deep.
- 25) Each storeroom should have appropriately labeled safety equipment – ABC fire extinguisher, safety goggles, fire blanket, spill kit, first-aid kit, etc.

Storage Requirements-Compressed Gas Handling Instructions

1. Compressed gases should be handled as high energy sources, and therefore, as potential explosives.
2. Always protect the cylinder valve stem.
3. Avoid exposure of cylinders to heat. Do not store gas cylinders in direct sunlight.
4. Never lubricate, modify, force or tamper with a cylinder in direct sunlight.
5. Cylinders of toxic, flammable or reactive gases should be used only under a fume hood.
6. Do not extinguish a flame involving a combustible gas until the gas is shut off- otherwise it can reignite-possible causing an explosion.
7. Gas cylinders must be secured in place. They must be protected to prevent valve damage which may be caused by falling.

Storage Requirements-Flammable Chemicals Handling Instruction

- 1) Store all flammables in a dedicated, unvented flammable cabinet.
- 2) Keep cool, between 55°F and 80°F, at all times.
- 3) Store away from all sources of ignition.
- 4) Store away from all oxidizers.
- 5) Never store flammables in refrigerators unless the refrigerator is explosion proof.
- 6) Avoid storing any chemicals, especially flammable materials in direct sunlight.

Storage Requirements-Corrosive Materials Handling Instructions

- 1) Use a fume hood when the permissible exposure limit for a chemical is less than 50 ppm as indicated of the chemical MSDS.
- 2) Use carcinogens, mutagens, teratogens, and all allergens only in a fume hood.
- 3) Handle toxic, corrosive, flammable and noxious chemicals under a fume hood.
- 4) Do not expose flammable liquids to open flame, sparks, heat or any source of ignition.
- 5) Only use flammable solids (sodium, potassium, lithium. etc.) in very small quantities. Use a safety shield when igniting flammable solids.
- 6) Water-reactive solids (sodium metal, potassium metal, etc.) should be stored under dry oil.
- 7) Use extreme caution when handling finely divided (dust-like) material. Finely divided materials may form explosive mixtures with air.
- 8) Open cans of ether (ethyl ether) should be properly disposed of after use and not stored unless absolutely necessary. Rely on expiration date to dispose of the material.

H. Chemical Disposal

Union Public Schools contracts with commercial chemical disposal companies for removal and disposal of out- of-date chemicals, chemicals without legible labels, and chemicals too hazardous for student use. Science Department Chairs should contact the Director of Safety to initiate the removal of chemicals.

- 1) Follow Flinn disposal procedures for those chemicals that can be disposed of down sinks.
- 2) Union Public Schools will not accept donated chemicals.
- 3) Chemicals for disposal must be inventoried by authorized school personnel and set aside in a secure location for removal by the disposal contractor.
- 4) Arrangements for chemical disposal will be made by the Director of Safety.

I. Prior Approval Procedures

There may be some procedures which require prior approval before an instructor attempts to perform them. These procedures must be determined by cooperation and communication between the Building Principal, Science Department, the Director of Secondary Education and the Director of Safety.

J. Safety Equipment Inspection

There are many safety items necessary for compliance to the Laboratory Standard. They include, but are not limited to:

- 1) Eyewashes.
- 2) Fire Extinguishers.
- 3) Chemical Splash Goggles.
- 4) Face Shields
- 5) Safety showers
- 6) Fire Blankets

All safety equipment in the facility must always be in good operating condition.

- 1) Goggles always must be clean and functional.
- 2) Laboratory ventilation must meet the standard of eight air changes per hour and must be tested quarterly.
- 3) Fire extinguishers must be of the right type, Tri-class ABC, and they must always be properly inspected.
- 4) Eyewashes must be functional and flushed at least once a week.
- 5) Safety Showers must be functional and flushed at least once a month.
- 6) Fume hoods must be operational at the level of 70-100 linear feet per minute as measured by a velometer.

All of the above items and all safety equipment must be inspected every three months at the minimum. Any safety equipment failing this quarterly inspection or reported to be out of order at any time must contact the building engineer immediately.

II) Employee Training

Union Public Schools provides continuing training for our employees through the SafeSchools.com training website. Our safety training inventory training contains over one hundred topics including but not limited to:

- 1) Chemical Spills Overview.
- 2) Classroom Safety
- 3) Compressed Gas Safety.
- 4) Eye and Face Protection
- 5) Fire Extinguisher Safety
- 6) Hazard Communication: Right to Understand (GHS)
- 7) Material Safety Data Sheets
- 8) Personal Protective Equipment
- 9) Science Lab Safety

Know the content and location of this Chemical Hygiene Plan, the Chemical Inventory List, and the MSDS.

III) Exposure Evaluation

It is the communicated policy of Union Public Schools to investigate all suspected overexposures to chemicals in a prompt and timely fashion.

In the event of an overexposure, after the immediate event, we must document all chemicals and circumstances involved in the overexposure. This information should be used to change safety practices to further improve lab safety. It is our obligation to maintain these files and make them accessible to the employees.

Signs of overexposure are numerous; they include:

- 1) Accidental breakage of a hazardous material container.
- 2) A skin rash or irritation occurring because of contact with a chemical.
- 3) Caustic splash to eyes, face or body.
- 4) Symptoms such as nausea, dizziness and others.

IV) Medical Evaluations

It is the policy of Union Public Schools to make medical consultation and examination available to our employees when:

- a) Any sign or symptom of an overexposure to a chemical is present.
- b) Monitoring has indicated an overexposure to a chemical has occurred.
- c) There has been a spill or uncontrolled release of chemical fumes.

We will provide the physician with the names of the chemicals used, circumstances of the exposure and all signs and symptoms of the exposure.

The medical examinations dealing with overexposure must be documented and other employees working under the same conditions must be notified. All documentation must be kept on file and accessible by other employees working in this area.

All medical examinations and consultations shall be performed by or under the direct supervision of a licensed physician and shall be provided without cost to the employee, without loss of pay.

V) Monitoring

Monitoring may be necessary for substances regulated by a standard only if there is reason to believe that exposure levels for that substance routinely exceed the PEL for that substance. If you have no cause to suspect a hazard or an exposure, no monitoring is necessary.

If monitoring is performed and this initial monitoring shows no evidence of exposure, the monitoring may be discontinued. If initial monitoring indicates an exposure, steps must be taken immediately to reduce the exposure to permissible limits. Monitoring must then be performed periodically to verify that the steps to reduce the exposure have been effective. Monitoring may be terminated after complying with the applicable standard for the hazardous material.

All monitoring results and activities shall be fully accessible and in full knowledge of the employee(s).

Appendix A

Work-Related Accidents and Injuries - Instructions

All work-related injuries must be reported directly to Melissa Brock at 357-6053 or Lynne Dawson at 357-6197, fax 357-6226.

Steps to be taken immediately after any work-related injury/incident:

1. Supervisor & Employee Must Complete the Injury and Incident Form.

Injury and Incident Form is located on the Union employee website (Forms/Electronic Documents/Human Resources). *Please note: Do not use the Student Incident Report.*

- Supervisor and employee complete the form, and supervisor faxes the form to Benefits.
- **If the employee is not available to assist in completion of the Injury and Incident Form:**
 - (a) The supervisor should complete the form and submit at the time of incident, and
 - (b) As soon as the injured employee is able, the employee should complete the Supplemental Injury and Incident form and the supervisor faxes completed form to Benefits.

2. Fax Injury Form to Human Resources at 918-357-6226.

It is important to notify Human Resources immediately.

(If incident occurs after ESC hours, report next business day.)

- HR office must make appropriate legal and insurance notifications to protect District and the employee.
- Reporting injuries with no immediate medical treatment is important, because medical treatment may be sought at a later date.
- Records of incident types are used for analysis and preventative actions.

***If injured employee needs medical treatment:**

- 3. Call Melissa Brock for authorization, 918-357-6053.**
- 4. Send Employee to MedNow at 503 South Aspen (145th & 81st) in Broken Arrow.**
 - Union Public Schools is a member of a Certified Workplace Medical Plan (**CWMP**), which requires treatment at the designated facility (MedNow). An injured employee does not have a choice of treating physicians. The employee should not go to his/her own physician because the personal physician's expenses will not be covered by the workers' compensation carrier.
- 5. If emergency, call 911.** Contact Melissa Brock afterwards to advise of emergency situation.

After receiving the Injury and Incident Report form, Human Resources will report the injury to the District's workers' compensation carrier and start the process for the workers' compensation court system to begin considering the employee's claim for a work-related injury.

- An investigation may also be initiated to determine cause of incident, interview witnesses, etc.

Please communicate this information to the supervisors that report to you.

- It is often the supervisory-level employees who first learn of workers' compensation injuries/incidents.

Questions regarding this process should be directed to:

Melissa Brock, Data & Claims Specialist

Phone: 918-357-6053; Fax: 918-357-6226

brock.melissa@unionps.org

Appendix B

Union Public Schools

**The Rules for Science
Safety**

Union Public Schools The Rules for Science Safety

One of the first things a scientist learns is that working in the laboratory can be an exciting experience. But the laboratory can also be quite dangerous if proper safety rules are not followed at all times. To prepare for safe laboratory experiences, read over the following safety rules. Then read them a second time. Make sure you know and are able to do each listed item. Ask your teacher to explain any rule you do not fully understand.

A. DRESS CODE

- Many materials in the laboratory can cause eye injury. To protect yourself from possible injury, you **MUST** wear chemical splash safety goggles when you are working with chemicals, burners, or any substance that might get into your eyes. When working with caustic chemicals, you must wear a face shield in addition to the chemical splash goggles. If you wear contact lenses, you must notify your teacher and wear non-vented goggles.
- Wear a laboratory apron or coat when you are working with chemicals or heated substances.
- Tie back long hair to keep your hair away from any chemicals burners and candles, or other laboratory equipment.
- Remove or tie back any article of clothing or jewelry that can hang down and touch chemicals and flames. Do not wear sandals or open-toed shoes in the laboratory. Never walk around the laboratory barefoot or in stocking feet. Long pants are recommended wear in the laboratory.
- Wash hands after every laboratory investigation.
- Wear latex gloves when directed.
- Do not wear an absorbent watch strap.

B. GENERAL SAFETY RULES

- Everyone should be alert and proceed with caution at all times in the laboratory. Take care not to bump another student, and remain at your lab station while performing an experiment. An unattended experiment can produce an accident.
- Be serious when working in the laboratory, never “horse around” or play practical jokes in the laboratory. You may be excluded from the laboratory if this behavior is observed.

- Be prepared to work when you arrive in the laboratory. Be sure that you understand the procedure to be employed in any laboratory investigation and the possible hazards associated with the procedure. Consult the MSDS for information about chemicals in use in the lab.
- Everyone should recognize and heed all safety symbols and cautions incorporated into the procedures of the laboratory experiments.
- Read all directions for an investigation several times. Follow the directions exactly as they are written. If you are in doubt about any part of the investigation, ask your teacher for assistance.
- Listen carefully and follow all verbal instructions from the teacher.
- Never perform activities that are not authorized by your teacher. Obtain permission before performing independent experiments.
- Never work alone in the laboratory, Watch for unsafe conditions and report unsafe situations immediately.
- Never handle any equipment unless you have permission.
- Take extreme care not to spill any material in the laboratory. If a spill occurs, ask your teacher immediately about the proper cleanup procedure. Never simply pour chemicals or other substances into the sink or trash container.
- Never eat or taste anything in the laboratory unless directed to do so. This includes food, drinks, candy, and gum, as well as chemicals.
- Know the location and proper use of safety equipment such as the fire extinguisher, fire blanket, first-aid kit, safety shower, and eyewash station. If some of this equipment is not available, your teacher will explain what alternate measures to use.
- Notify your teacher of any medical problems you may have, such as allergies, asthma, or if you wear contact lenses.
- Keep your laboratory area clean and free of unnecessary books, papers, and equipment. Do not place book bags, athletic equipment, etc. on the floor near the lab station or on the lab table. Never sit on lab tables.
- Know the location of all emergency shut-off valves and switches.
- Do not place anything except an electrical plug into the electrical outlet.
- Know where the exits are located and the proper procedures to be followed in an emergency.

- Do not enter preparatory or equipment store rooms or chemical storerooms.
- Do not apply cosmetics in the laboratory.

C. FIRST AID

- Report all accidents, no matter how minor to your teacher immediately.
- Learn what to do in case of specific accidents such as getting acid in your eyes or on your skin.
- Know where and how to report an accident or fire. Report any fire to your teacher at once. The teacher may instruct you what phone to use in case of an emergency.

D. HEATING AND FIRE SAFETY

- Never use a heat source such as a candle or burner without wearing safety goggles.
- Never heat a chemical you are not instructed to heat. A chemical that is harmless when cool can be dangerous when heated.
- Maintain a clean work area and keep all materials away from flames.
- Never reach across a flame.
- Make sure you know how to light a Bunsen burner. (Your teacher will demonstrate the proper procedure for lighting a burner.) If the flame leaps out of a burner toward you, turn the gas off immediately. Do not touch the burner. It may be hot. Never leave a lighted burner unattended.
- Point a test tube or bottle that is being heated away from you and others. Chemicals can splash or boil out of a heated test tube.
- Never heat a liquid in a closed container. The expanding gases produced may blow the container apart, injuring you or others.
- Never pick up a container that has been heated without first holding the back of your hand near it. If you can feel the heat on the back of your hand, the container may be too hot to handle. Use a clamp, tongs, or heat-resistant gloves when handling hot containers.
- Never place a foreign object into the Bunsen burner.

E. USING CHEMICALS SAFELY

- Never mix chemicals for the “fun of it.” You might produce a dangerous, possibly explosive substance.
- Never touch, taste, or smell a chemical that you do not know for a fact is harmless. Many chemicals are poisonous. If you are instructed to note the fumes in an investigation, gently wave your hand over the opening of a container and direct the fumes toward your nose. Do not inhale the fumes directly from the container.
- Use only those chemicals and the amounts needed in the investigation. Keep all lids closed when a chemical is not being used. Notify your teacher whenever chemicals are spilled.
- Dispose of all chemicals as instructed by your teacher. To avoid contamination, never return chemicals to their original containers.

F. USING GLASSWARE SAFELY

- Be extra careful when working with acids or bases. Pour such chemicals over the sink, not over your work area.
- When diluting acid, pour the acid into water. Never pour water into acid.
- Rinse any acids off your skin or clothing with water for 15 minutes. Immediately notify your teacher of any acid spill.
- Reagent bottles should be transported in a proper carrier.
- Mouth pipetting of reagents is never done.
- Never force glass tubing into a rubber stopper. A turning motion and lubricant will be helpful when inserting glass tubing into rubber stoppers or rubber tubing. Your teacher will demonstrate the proper way to insert glass tubing.
- Never heat glass ware that is not thoroughly dry. Use a wire screen to protect glassware from any flame.
- Keep in mind that hot glassware will not appear hot. Never pick up glassware without first checking to see if it is hot.
- If you are instructed to cut glass tubing, fire polish the ends immediately to remove sharp edges.
- Never use broken or chipped glassware. If glassware breaks, notify your teacher and dispose of the glassware in the proper “SHARPS CONTAINER.”
- Never eat or drink from laboratory glassware. Clean glassware thoroughly before putting it away.

G. USING SHARP INSTRUMENTS

- Handle scalpels or razor blades with extreme care. Never cut material toward you. Cut away from you. Make sure you read and follow directions before you make any cut.
- Be careful when handling sharp pointed objects such as scissors, pins, and dissecting probes.
- Never stick any dissecting instrument (except pins) into the wax pan. Remember not to deface any lab surface with the instruments.
- Change scalpel blades carefully as directed by your teacher.
- Dispose of any sharp instrument in the “SHARPS CONTAINER,” not in the waste basket. It is very dangerous to dispose of scalpel blades, pins, razor blades, or broken glass into the waste baskets. Remember that other people have to handle this material and may not be aware of the dangers.
- Notify your teacher immediately if you cut yourself or receive a cut.

H. HANDLING LIVING ORGANISMS

- No investigations that will cause pain, discomfort, or harm to mammals, birds, reptiles, fishes, and amphibians should be done in the classroom or at home.
- Treat all living things with care and respect. Do not touch any organism in the classroom or laboratory unless given permission to do so. Many plants and animals are poisonous, and even tame animals may bite or scratch if alarmed.
- Animals should be handled only if necessary. If an animal is excited or frightened, pregnant, feeding, or with its young, special handling is required.
- Your teacher will instruct you as to how to handle each species that may be brought into the classroom.
- Treat all microorganisms as if they were harmful. Use antiseptic procedure, as directed by your teacher when working with microbes. Dispose of microbes as your teacher directs.
- Clean your hands thoroughly after handling any living organism or the container that contains them. (Plant, animal, or microorganism)
- Wear gloves when handling animals. Report animal bites or stings to your teacher at once.
- No wild or dead vertebrate animal may be brought into the lab.
- Do not eat or taste any unfamiliar plant or plant parts.

- If you are allergic to plant pollen, do not work with plants or plant parts without using a face mask.

I. MICROBIOLOGY AND DNA SAFETY

- Wash hands with antibacterial soap before and after the investigation.
- Keep pencils, pens, etc. away from the face.
- Keep all containers of microorganisms or DNA closed when not in use.
- Keep laboratory doors closed when investigation is in progress.
- No mouth pipetting.
- Wear latex gloves if cuts are present on hands.
- Sterilize the work area before and after the investigation as instructed by the teacher.
- Treat all microorganisms and DNA as if they were harmful.
- Dispose of material as your teacher directs.

I. END OF INVESTIGATION RULES

- When an investigation is completed, clean up your work area and return all equipment to its proper place.
- Always wash your hands for at least 20 seconds with soap and water before leaving the laboratory and after every investigation.
- Turn off all burners before leaving the laboratory. Check that the gas line leading to the burner is off as well.

Additional Information/ Notes:

Appendix C

Union Public Schools:

Science Safety Guidelines Checklist

Union Public Schools:

Student Safety Contract

Union Public Schools:

Microbiology and DNA Student Safety Contract

National Science Teachers Association:

Science Rules and Regulations

Union Public Schools Science Safety Guidelines Checklist

The scientific classroom and laboratory is a place of adventure and discovery. Some of the most important events in scientific history have happened in laboratories. However, the laboratory can be quite dangerous if proper safety rules are not followed at all times. In order to prepare yourself for safe laboratory experiences, read the safety packet. Make sure you understand each rule. Ask your teacher to explain any that you do not fully comprehend. When you are satisfied that you understand all of the laboratory safety guidelines and have successfully completed the safety assessment, sign and date this form in the space provided. **In addition, your parent(s) or guardian need to sign in proper space to indicate that you have made them aware of your training and the laboratory safety guidelines. The completed and signed form must be returned to your teacher before you will be permitted to enter the lab.**

Check the following items and tasks as they are completed:

- ☐ I was given a copy of the *Union Public Schools Rules for Science Safety*.
- ☐ My science teacher reviewed the *Rules for Science Safety* in class and stressed the importance and necessity of knowing and following classroom safety guidelines.
- ☐ I have learned where each piece of laboratory safety equipment is located.
- ☐ I have read and understand the *Rules for Science Safety*, including the following applicable information:
 1. Appropriate dress for laboratory activities.
 2. General lab and classroom safety rules.
 3. Heating and fire safety rules.
 4. Using chemicals safely.
 5. Using glassware safely.
 6. Using sharp instruments safely.
 7. Emergency procedures.
 8. Procedures for working with live organisms.
 9. Procedures for working with microorganisms and/or DNA.
 10. End of laboratory procedures.

When all of the items in the checklist above have been completed, sign and date in the indicated space below.

Student Signature _____ Date _____

To the Parent:

Your student will be working in the laboratory during this course. In order to assure their personal safety, it is important that the ***Rules for Science Safety*** are followed. Failure to do so may result in your student's removal from the lab. Your signature indicates that you have reviewed this checklist and agree that your student will abide by the *Rules for Science Safety* and all other written and verbal instructions given in class.

Parent(s) / Guardian Signature _____ Date _____

Union Public Schools Student Safety Contract

This is to certify that I, _____ have been instructed in the following safety components of this science class.

Safety Rules _____

Location and proper use of the following safety equipment.

Fire extinguisher	_____
Fire blanket	_____
Eye protective devices (goggles, face shields)	_____
Eyewash	_____
Deluge/drench shower	_____
Chemical dispensing containers	_____
Information on 'Right-to-Know' Laws	_____
Material Safety Data Sheets (MSDS)	_____
Master shut-off for gas, electricity and water	_____
Heat sources (Bunsen burner, alcohol lamp, microwave oven, etc.)	_____
First-aid kit	_____
Electrical equipment	_____
Emergency telephone listing & location	_____

Safety procedures for the following situations:

Fire	_____
Chemical splash to the body	_____
Eye emergency	_____
Chemical spill	_____

Other concerns

Wearing vision corrective contact lenses
(yes ____, no ____)

To the Parent / Guardian:

Your student will be working in the laboratory during this course. In order to assure their personal safety, it is important that the above rules are followed. Failure to do so may result in your student's removal from the lab.

I understand these rules and agree that my student will abide by these and all other written and verbal instructions given in class.

Date: _____ Student: _____

Date: _____ Parent(s): _____

Union Public Schools Microbiology and DNA Student Safety Contract

Hands are washed with antibacterial soap before and following the activity _____
Hands are kept away from face, and mouth _____
The location and proper use of safety equipment (eyewash, fire extinguisher, drench shower) are known _____
Long hair and loose clothing are confined _____
Paper, alcohol, plastics are kept away from Bunsen burners and electrical sterilizers _____
All study containers containing microbiology or DNA study organisms are closed when not in use _____
Laboratory doors are kept closed when a microbiology or DNA lab are in progress _____
Eating and drinking are never done in the lab _____
Mouth pipetting is never done _____
No aerosols are produced because of poor techniques (forcing the last liquid drop from a pipette with air) _____
Latex gloves are worn whenever working in the lab with cuts on hands _____
Protective lab coats are worn to help prevent contamination of personal clothing _____
The work area is sterilized before and after the lab _____
All proper techniques are followed as outlined by the instructor, and only when under the instructor's direct supervision _____
All microbiology and DNA is handled as if it they were infectious _____
Personal items such as pens and pencils, that were used in the lab are kept away from face and mouth _____

Only Biosafety Level 1 work, as defined by the The Center for Disease Control and Prevention Biosafety in Microbiological and Biomedical Laboratories, 5th ed., December 2009 is performed. ("Biosafety Level 1 is suitable for work involving well-characterized agents not known to consistently cause disease in immunocompetent adult humans, and present minimal potential hazard to laboratory personnel and the environment.")

To the Parent:

Your student will be working in the laboratory during this course. In order to assure their personal safety, it is important that the above rules are followed. Failure to do so may result in your student's removal from the lab. I understand these rules and agree that my student will abide by these and all other written and verbal instructions given in class.

Date: _____ Student: _____

Date: _____ Parent(s): _____

Science Rules and Regulations

National Science Teachers Association

Standards of Student Conduct in the Laboratory and in the Field

1. Conduct yourself in a responsible manner at all times in the laboratory. Frivolous activities, mischievous behavior, throwing items, and conducting pranks are prohibited.
2. Lab and safety information and procedures must be read ahead of time. All verbal and written instructions shall be followed in carrying out the activity or investigation.
3. Eating, drinking, gum chewing, applying cosmetics, manipulating contact lenses, and other unsafe activities are not permitted in the laboratory.
4. Working in the laboratory without the instructor present is prohibited.
5. Unauthorized activities or investigations are prohibited. Unsupervised work is not permitted.
6. Entering preparation or chemical storage areas is prohibited at all times.
7. Removing chemicals or equipment from the laboratory is prohibited unless authorized by the instructor.

Personal Safety

8. ANSI Z87.1 approved chemical splash goggles or safety glasses, as appropriate or directed by your instructor, shall be worn at all times in the laboratory or field, including pre-laboratory work and clean-up, unless the instructor specifically states that the activity does not require the use of chemical splash goggles or safety glasses.
9. When an activity requires the use of laboratory aprons, the apron shall be appropriate to the size of the student and the hazard associated with the activity or investigation. The apron shall remain tied throughout the activity or investigation.
10. All accidents, chemical spills, and injuries must be reported immediately to the instructor, no matter how trivial they may seem at the time. Follow your instructor's directions for immediate treatment.
11. Dress appropriately for laboratory work by protecting your body with clothing and shoes. This means that you should use hair ties to tie back long hair and tuck into the collar. Do not wear loose or baggy clothing or dangling jewelry on laboratory days. Acrylic nails are also a safety hazard near heat sources and should not be used. Sandals or open-toed shoes are not to be worn during any lab activities. Refer to prelab instructions. If in doubt, ask!
12. Know the location of all safety equipment in the room. This includes eye wash stations, the deluge shower, fire extinguishers, the fume hood, and the safety blanket. Know the location of emergency master electric and gas shut offs and exits.
13. Certain classrooms may have living organisms including plants in aquaria or other containers. Students must not handle organisms without specific instructor authorization. Wash your hands with soap and water after handling organisms and plants.
14. When an activity or investigation requires the use of laboratory gloves for hand protection, the gloves shall be appropriate for the hazard and worn throughout the activity.

Specific Safety Precautions Involving Chemicals and Lab Equipment

15. Avoid inhaling in fumes that may be generated during an activity or investigation.
16. Never fill pipettes by mouth suction. Always use the suction bulbs or pumps.
17. Do not force glass tubing into rubber stoppers. Use glycerin as a lubricant and hold the tubing with a towel as you ease the glass into the stopper.
18. Proper procedures shall be followed when using any heating or flame producing device especially gas burners. Never leave a flame unattended.
19. Remember that hot glass looks the same as cold glass. After heating, glass remains hot for a very long time. Determine if an object is hot by placing your hand close to the object but do not touch it.
20. Should a fire drill or other evacuation emergency occur during an investigation or activity, make sure you turn off all gas burners and electrical equipment and exit the room as directed.
21. Always read the reagent bottle labels twice before you use the reagent. Be certain the chemical you use is the correct one.
22. Replace the top on any reagent bottle as soon as you have finished using it and return the reagent to the designated location.
23. Do not return unused chemicals to the reagent container. Follow the instructor's directions for the storage or disposal of these materials.

Standards for Maintaining a Safer Laboratory Environment

24. Backpacks and books are to remain in an area designated by the instructor and shall not be brought into the laboratory area.
25. Never sit on laboratory tables.
26. Work areas should be kept clean and neat at all times. Work surfaces are to be cleaned at the end of each laboratory or activity.
27. Solid chemicals, metals, matches, filter papers, broken glass, and other materials designated by the instructor are to be deposited in the proper waste containers, not in the sink. Follow your instructor's directions for disposal of waste.
28. Sinks are to be used for the disposal of water and those solutions designated by the instructor. Other solutions must be placed in the designated waste disposal containers.
29. Glassware is to be washed with hot, soapy water and scrubbed with the appropriate type and sized brush, rinsed, dried, and returned to its original location.
30. Goggles are to be worn during the activity or investigation, clean up, and through hand washing.