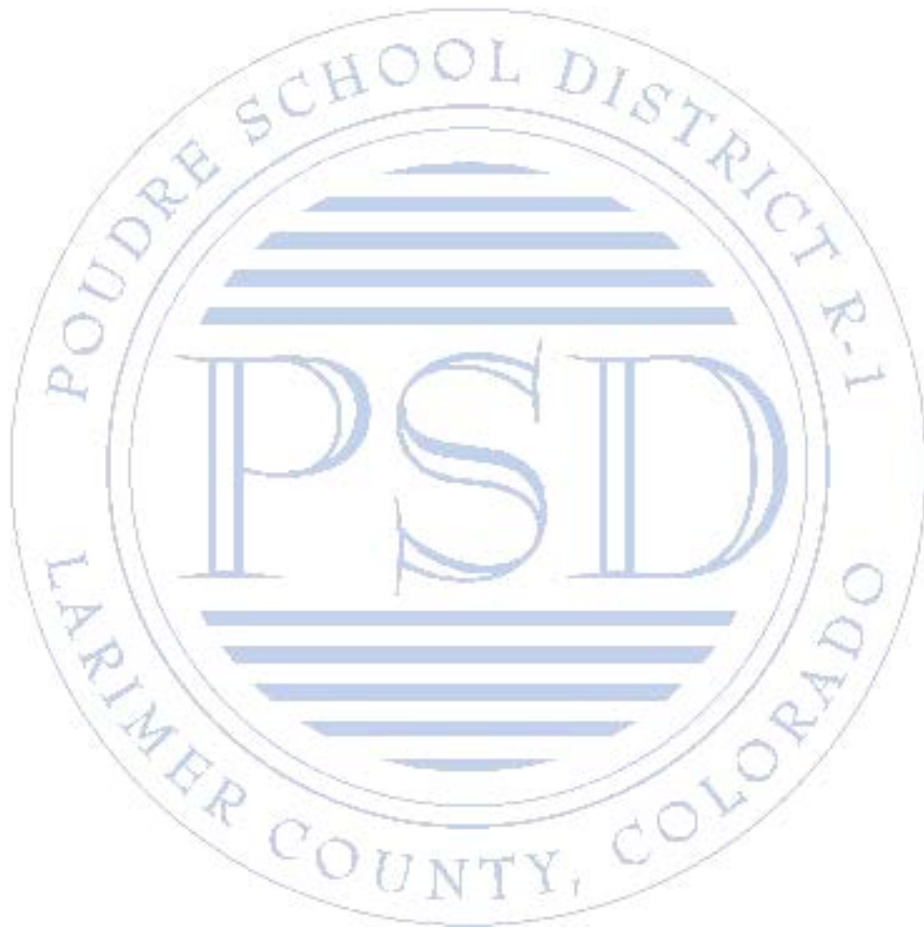


Poudre School District Chemical Hygiene Plan



Facility Services
2445 LaPorte Avenue
Fort Collins, CO 80521
970-490-3333

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Introduction and Overview

This Chemical Hygiene Plan contains the district's guidelines for management of chemicals in secondary schools with specific emphasis on science and art departments. It contains information required by the Colorado Department of Public Health and Environment (CDPHE) Consumer Protection Division, as outlined in the document *Rules and Regulations Governing Schools in the State of Colorado*. Additional information about the rules and regulations may be obtained by visiting the Division of Environmental Health & Sustainability's webpage at www.cdphe.state.co.us/cp/.

Section I: Annual Review

The Chemical Hygiene Plan will be reviewed and updated at least annually by the district's environmental safety coordinator: John Holcombe, jholcomb@psdschools.org or (970) 490-3497.

Section II: Laboratory Hazardous Materials and Chemical Management

In accordance with district policy [EBAB – Hazardous Substances](#), the district is committed to minimizing hazardous chemical use and waste and providing a healthy and safe environment for its students and staff. In order to achieve these goals, proper chemical management and training are essential to make students and employees aware of potential hazards related to chemical use, including:

- Restricting the purchase of hazardous chemicals and ensuring all staff following purchasing procedures in order to minimize large quantities of chemicals and/or extremely hazardous chemicals from entering the school.
- Minimizing hazardous chemical use and waste generation in the classroom via microscale chemistry, green chemistry, demonstration labs, video instruction, or other forms of non-hazardous or less-hazardous curricula.
- Ensuring staff follow the Chemical Hygiene Plan, participate in training programs, and work to minimize chemical waste generation.

Section II (a): Administrative Positions and Duties

The following positions are integral in the district's chemical management process:

A. Principal

1. Responsible for chemical management in the school and monitors school employees' compliance with the Laboratory Hazardous Materials and Chemical Hygiene Plan.
2. Ensure science department, art department, and secondary school chemical coordinators have an understanding of and are adhering to the chemical management plan in each school.

B. Environmental Safety Coordinator

1. Stay current with legal requirements concerning chemical management and hazardous waste management, including appropriate training for handling and shipping hazardous waste.
2. Coordinate disposal of hazardous waste.
3. Coordinate chemical spill cleanups.
4. Ensure chemical use and storage is in compliance with district policies and procedures, and all applicable regulations.
5. Review the Chemical Hygiene Plan annually and update as needed.

C. Science Curriculum Coordinator

1. Ensure staff have received appropriate training and are aware of the Chemical Hygiene Plan and other reference material.
 2. Maintain and regularly update the library of alternative science curricula.
 3. Encourage and provide training on microscale chemistry, green chemistry, demonstration labs, or other forms of non-hazardous or less-hazardous curricula.
- D. School Science Department Head, Chemical Coordinator, and/or Teacher
1. Understand and follow the Chemical Hygiene Plan.
 2. Printed hard copy of the Chemical Hygiene Plan shall, at a minimum, be located in the science, art, and master Safety Data Sheets (SDS) notebook.
 3. Plan and conduct each laboratory exercise with the least toxic alternatives.
 4. Use good laboratory chemical management practices.
 5. Ensure students are knowledgeable of the chemical hygiene rules, required protective equipment, and safety training.
 6. Teach proper chemical management to students.
 7. Conduct a monthly inspection of stored chemicals for signs of leakage, poor storage practices, peeling labels, or any other problems.
 8. Maintain a current copy of Safety Data Sheets (SDS).
 9. Ensure all materials and wastes are labeled, used, and disposed of as required.
 10. Maintain chemical spill clean-up materials in chemical storage areas.
 11. Report facility problems to the principal immediately so appropriate action may be taken.
 12. Use of the Flinn Chemventory system; all staff who purchase, use, store, or dispose of chemicals should be logged onto the system and use as needed for management of chemicals.

Section III: Purchasing Procedures

Staff are encouraged to purchase chemicals on an annual basis at the beginning of the school year; however, purchasing can be submitted any time during the school year. Prior to purchasing chemicals, the following should be done:

1. Check inventory to make sure the chemical is not already in stock.
2. Evaluate any special storage and/or handling requirements.
3. Crosscheck the CDPHE's list of prohibited, restricted, and demonstration use only chemicals. (Reference Appendices A, B, and B2)
 - a. **Note: under no circumstances will a chemical on the prohibited list be approved for use in district schools**
4. Chemical purchases must be limited to a maximum two year supply and smaller packages are preferable. Smaller packages are:
 - a. Emptied faster, resulting in less chance for decomposition of reactive compounds.
 - b. Have less breakage.
 - c. Reduce the risk of accident and exposure; large containers require material to be transferred to a small container.
5. When possible, chemicals should be delivered during summer break or school holidays.
 - a. Staff are responsible for unpacking and handling chemical purchases.
 - b. All chemicals must be labeled with the date they were received and stored in the proper location.
6. SDS for chemicals ordered must be available at the time the chemical is received.
 - a. SDS must be maintained permanently and be readily available for inspection, consultation, and review.

- b. A hardcopy of all SDS must be stored alphabetically in the SDS notebook in the main office. A second copy must be in the storage area or online in the Flinn Chemventory program.
7. Chemical donations are prohibited.

Section IV: On-Site Hazardous Materials and Chemical Management

Staff are required to adhere to the following guidelines for chemical storage, inventory, use, safety, disposal, and spill response:

A. Storage

1. Chemicals will be stored in a designated room or rooms. The school's science department head and/or chemical coordinator will be responsible for the oversight of the chemical storage room(s).
2. Chemicals must be stored according to compatibility group, not alphabetically. Use the Flinn Chemventory labeling system to separate chemicals into organic and inorganic compatibility. (Reference Appendix E)
3. Label all containers with the chemical name (no formulas) and acquisition date.
 - a. Restricted and demonstration-only chemicals shall be identified on the label and shall be identified on the hard copy of the school's Chemical Hygiene Plan.
4. Conduct regular inspections of stored chemicals for signs of leakage, poor storage practices, peeling labels, or any other problems.
5. Chemicals should not be stored on the floor or above eye level.
6. Storage areas must have restricted access; no student or unauthorized staff member will be allowed in storage area unsupervised.
7. Laboratory working solutions shall be properly labeled as to the name of reagent, method in which reagent is used, the type and amount of chemicals used to prepare the reagent, date of preparation and the name of the analyst preparing the reagent. All working solutions and standards shall be examined for stability and properly discarded when found to be no longer usable.

B. Inventory

1. Chemical inventories: identify current chemical supplies; determine if there is surplus stock; determine what is to be disposed of as waste; identify chemical risks and liabilities; provide vital information to emergency responders; and are required by the CDPHE.
 - a. Chemicals identified as expired, outdated, unlabeled, unknown, surplus, unwanted, or prohibited should be designated for disposal.
 - b. Chemicals must be properly labeled and stored using the Flinn Chemventory System (organic/inorganic); any other chemicals (i.e., art) should be properly stored in secured areas and/or in corrosive or flammable cabinets as required.
 - c. Restricted and demonstration-only chemicals shall be identified on the inventory and shall be identified on the hard copy of the school's Chemical Hygiene Plan.

C. Use

1. Standard laboratory experiments can be highly hazardous and produce wastes requiring special (and often costly) disposal methods. Alternative lab exercises do exist that use a minimum quantity of the least hazardous, most easily disposable agents. The following must be followed for chemical use:
 - a. Staff, where feasible, will minimize chemical use and waste generated via microscale chemistry, green chemistry, demonstration labs, video

instruction or other forms of alternative methods of non-hazardous or less-hazardous curricula. Switching to this type of instruction will dramatically reduce hazardous waste generation in the laboratory and save money in purchase and disposal costs.

- b. Alternative science curricula should be utilized whenever possible to limit the use of hazardous chemicals and should be documented and updated as needed. On an annual basis faculty should review their curricula to identify ways of minimizing chemical use and waste.

D. Safety

1. Schools should be equipped with the following safety equipment (as applicable):
 - a. Eye Protection that meets American National Standards Institute 1989 Z87.1 Standard *Practice for Occupational/Educational Eye and Face Protection*
 - i. Safety glasses, splash goggles, or face shields should be used when hazardous materials are used and there is a potential hazard to the eye.
 - b. Eye wash fountain (portable eye wash bottles are not permitted)
 - c. Fire extinguisher, which will be installed as required by code
 - d. Hand washing facility
 - e. Fire blanket when open flame is used
 - f. Showers (not in all facilities)
 - g. Fume hoods (not in all facilities)
2. The above items should be checked for operation by the science department head and/or chemical coordinator periodically; the checklist is available in Attachment D.
 - a. If items are deficient or need repair, a work order must be submitted to the Customer Support Center at 490-3333.

E. Waste Disposal

1. Non-hazardous or neutralized liquid chemicals may be solidified for solid waste disposal (i.e., put in the trash); non-hazardous solid waste may be disposed of in the trash. Site custodians must be notified of any hazardous chemical put in the trash for disposal.
2. Site managers can contact the Customer Support Center at 490-3333 to arrange for disposal of hazardous waste.
 - a. The Chemical Disposal Form (Attachment F) must be filled out.
 - b. The district's environmental safety coordinator will coordinate the disposal and complete all associated paperwork.

F. Chemical Spill Response/Accidents

1. A chemical spill response kit should be available in each main chemical storage area. Staff shall refer to the chemical spill/hazardous material release protocol.
2. The form below should be posted in all chemical storage areas. The form can be accessed online here: <https://www.psdschools.org/webfm/8078/view>

Management of Chemicals

Acquisition of Chemicals

Staff must reference three chemical lists published by the CDPHE prior to purchasing chemicals. These lists can be found in Attachment C:

- *Appendix A - Prohibited Chemicals List* – Items on this list may not be stored or used in the schools.
- *Appendix B - Restricted Chemicals List* – Items on this list are allowed, although some have a quantity limit indicated in parenthesis after the chemical name.
- *Appendix B2 - Restricted Chemicals Teacher Demonstration Only List* – Items on this list may only be used by the instructor for demonstration purposes and have quantity limits in parenthesis after the chemical name. Students are not allowed to handle these chemicals. See Appendix B2 list.

Under no circumstances are donated hazardous materials to be received unless prior written approval for such materials has been given by the district's environmental safety coordinator.

The following should be evaluated prior to purchasing hazardous materials:

- Is there a need for the material?
- Is it currently on the chemical inventory?
- What are the hazards?
- Is there a non-hazardous material or a less hazardous substitute?
- Are the quantities being purchased justifiable?
- What is the stability and shelf life of the hazards?
- Is suitable and sufficient storage available?
- Does the material require special disposal considerations?
- Is the material on the Appendix A or Appendix B2 product list?

Refer to **Section III: Purchasing Procedures** above for additional information.

General Rules and Procedures

The following are general rules and procedures for chemical use. Refer to **Section IV: On-Site Hazardous Materials and Chemical Management** for additional information on chemical use and chemical safety.

- Know the evacuation procedures in case of an emergency or safety drill during a laboratory experiment; containers must be closed, gas valves turned off, fume hoods and any electrical equipment turned off.
- Follow safe use and handling of glassware procedures. Never use glassware that is scored, chipped or broken. Dispose of glassware in appropriate container.
- Ensure defective equipment is not used until repaired or replaced and unsafe condition is corrected.
- No eating or drinking in chemical areas.
- Follow good housekeeping in all laboratory areas. Clean up work areas and return equipment and supplies to their proper place. Clean up any debris or mess, another person may not know what the white powder on the counter contains.

Inventory and Tracking

Chemical inventories are one measure taken as part of a comprehensive program used to manage chemicals used in the district. Refer to **Section IV: On-Site Hazardous Materials and Chemical Management** for additional information on chemical inventory.

- Chemicals should be inventoried, segregated, labeled, and stored according to the Flinn Chemventory storage plan (see the Chemical Storage section below for further explanation). The inventories include site, room number, name of product, quantity of product, physical state, container type, and storage location. The inventory list is organized by organic and inorganic and should be posted in the chemical storeroom at each site. The chemical coordinator at each school should make sure each storage location is being inventoried and stored properly.
- In order to maintain the inventory, quantities used or purchased must be documented on the science chemical inventory list. It is not necessary to document small quantities used (such as a few milliliters or grams), but if most of the product is used or if any more is ordered, these changes must be documented. The science chemical inventory list provides spaces for teachers to indicate quantity used or quantities purchased for each product.
- In case of an emergency, it is imperative that an up-to-date inventory of all chemicals stored in the storage area be maintained and readily available in two locations, one in the storeroom and one in the main office.

Safety Data Sheets

Safety Data Sheets (SDS) contain information about the nature of the hazards of the products. Each chemical that is stored or used at your site must have a SDS. The law requires the manufacturer and/or distributor to supply an SDS with each order. The following product information found on an SDS:

- Physical properties and health effects that make it dangerous.
- The level of personal protective equipment needed.
- Immediate first aid if you are overexposed to the product.
- Handling and storage procedures for day-to-day operations.
- How to respond to accidents involving the product.

Chemical Storage

Flinn Chemventory System

The Flinn Chemventory System, a cloud-based laboratory chemical inventory system, has been adopted by the district and should be used to properly store laboratory chemicals by separating chemicals into their organic and inorganic families and further dividing the materials into related and compatible families. All secondary schools have this resource and should be used by all staff responsible for chemicals.

- The program comes with updated GHS (Global Harmonized System) pictograms, hazard codes, and signal word information for over 2,400 Flinn chemicals.
 - The GHS label printing feature can be used to easily track all solutions prepared in the lab.
- Flinn Chemventory should be used by the entire school where chemicals are used, including art, science, tech ed, etc.

Compressed Gas Cylinder Storage

Gas cylinders must be stored in a place to prevent them from falling and the cylinder valve stem must be protected. The cylinder must be chained to a solid object, such as a wall or cabinet and cylinder cap must be in place except when the cylinder is in use and connected to a regulator.

Dedicated Storage Cabinets

Specific hazard groups must not only be segregated into compatibility groups, but also must be stored in special cabinets designed to address that specific hazard. Flammable and corrosive liquids are required to be stored in separate cabinets designed especially for those chemicals.

- Flammable liquids must be stored in a dedicated UL rated flammable cabinet.
- Base liquids must be stored in a dedicated UL rated corrosive cabinet.
- Organic acid liquids and inorganic acids liquids must be stored in a dedicated UL rated corrosive cabinet.

Container Identification Labeling Requirements

Secondary Containers - Chemicals transferred from the original container into another container and will be used for more than one day must be properly labeled. All secondary containers used for storage must be labeled with the following:

- Name of product
- Manufacturer's name, address, and a 24- hour emergency phone number
- Any physical or health hazards
- Any necessary protective equipment or precautions necessary to work with the product
- Date
- Note: ALWAYS replace torn or damaged labels

Working Solutions

When working solutions are made, the container must be labeled with the following:

- Name of product
- Date solution was prepared
- Concentration of solution

Lab Experiment Solutions

Special consideration must be given to laboratory experiments designed for students to identify different unknown solutions. In these situations labeling the container with the product name would defeat the purpose of the lab. Different identification systems may be used; however when these solution are stored, a key to the identification system must be posted in the storeroom. For example, the container may be identified as "Solution A"; therefore, the key would indicate Solution A is 1N Sodium Hydroxide.

Disposal of Hazardous Materials

There are several laws which dictate proper disposal procedures of hazardous waste.

The environmental safety coordinator is responsible for all hazardous waste disposal to ensure the district follows proper and consistent methods to collect, consolidate, and properly dispose of all hazardous waste.

District Hazardous Waste Collection Facility

The district has a hazardous waste collection site registered with the State of Colorado as a conditionally exempt generator. Depending on the waste, it is recycled, sent to the landfill, or incinerated.

Non-Hazardous Waste Disposal

- Most science departments have at least one sink plumbed to an acid neutralization tank. It is acceptable to drain dispose of laboratory wastes considered non-hazardous or of low

toxicity.

- Do not put combinations of chemicals down the drain at one time. Rinse a solution down the drain with a ten-fold dilution of water, then rinse the second solution down the drain with a ten-fold dilution of water.
- If the site has an acid neutralization tank, it is acceptable to drain dispose of weak concentrations of corrosive chemicals, such as acids and bases. Never drain dispose of acids and bases at the same time in order to prevent an adverse chemical reaction. The following is a list of substances which should NEVER be drain disposed (see Attachment E for sink disposal guidelines)
 - Hydrocarbons or phenolic compounds.
 - Flammable or explosive substances, such as gasoline, kerosene, naphtha, ethers, alcohols, ketones, aldehydes, peroxides, chlorates, perchlorates, bromates, carbides, hydrides, and sulfides.
 - Non-water soluble products, such as vacuum pump oil, mineral oils, gels, solids
 - Cyanide substances
 - Tetrachlorethene
 - Heavy metals, such as arsenic, cadmium, chromium, copper, lead, mercury, molybdenum, nickel, selenium, silver or zinc.

Hazardous waste disposal

- If a site has any of the following items, please notify the environmental safety coordinator for removal and proper disposal.
 - Unused chemicals: containers in poor condition or the use has become obsolete
 - Lab experiment byproducts: place the remaining mixture or any by-products produced as a result of the experiment in a container with a lid. The waste must be in a closed container and the contents identified, so it can be transported safely.
 - Lab specimens: to dispose of lab specimens, the packing fluid must be decanted from the specimens prior to disposal and should be disposed of properly per the disposal requirements. When finished with the specimens, place in a non-transparent plastic bag and double bag them (black is preferred). Seal the bag completely and place directly outside in the trash dumpster. Do not leave the specimens where students can find them, such as a trash can in the science room.
 - Broken glass: place broken glassware into a cardboard box, seal with tape and identify broken glass on the box. The box and contents can be place into the trash receptacle for disposal.

Spill Response

Each chemical storage area is equipped with a spill kit containing floor dry and baking soda. See Attachment A for the Emergency Information Posting, which lists SDS information and poison control information. In the event of an accidental release of a chemical, remove any other chemicals located near or around the spilled material, if possible to do so safely, and place floor dry on the spilled chemical.

Non-Corrosive/Non-Flammable Material Spill

If the spilled material exhibits a reacting characteristic such as the production of gas, vapor, heat evolution, bubbling, etc., do not attempt to remove any chemicals in the area. Proceed to evacuate the immediate area. The subsequent steps will be followed in situations involving a spill:

- Evacuate all personnel from the incident area and restrict access to the spill.

- Notify the principal/site administrator, who will notify the school resource officer and stress that there is a suspected hazardous material spill.
 - The school resource officer will notify the appropriate emergency response personnel.
- If the school resource officer is unavailable and the area is deemed unsafe, evacuate the building and call 911.
- Do not attempt to clean up or further disturb the material.

Flammable Material Spill

Be aware if the spill is of a known flammable material, there are certain actions that should be taken in order to stabilize the incident area to ensure the emergency situation does not intensify. A flammable material spill presents a potentially volatile environment in which a fire/explosion could result. The subsequent steps are to be followed in the event of a flammable material spill:

- Evacuate all personnel from the incident area and restrict access to the spill.
- Notify the principal/site administrator, who will notify the school resource officer and stress that there is a suspected hazardous material spill.
 - The school resource officer will notify the appropriate emergency response personnel.
- If the school resource officer is unavailable and the area is deemed unsafe, evacuate the building and call 911.
- Restrict ignition sources, such as open flames.
- Do not key your two-way radio or touch the light switches in the incident area; doing so could create an ignition source.
- Do not attempt to clean up or further disturb the material.

Acid/Base Spill

If the spill involves an acid, place baking soda on the spill material to neutralize.

Acids and bases are corrosive materials, which have a tendency to react violently with each other and with other materials to produce hazardous gases, and sometimes extreme heat, so it is important to isolate the area. Staff must avoid the incident area due to the nature of acids/bases being highly irritating and corrosive to skin. The subsequent steps will be followed in situations involving corrosive material spills:

- Evacuate all personnel from the incident area and restrict access to the spill.
- Notify the principal/site administrator, who will notify the school resource officer and stress that there is a suspected hazardous material spill.
 - The school resource officer will notify the appropriate emergency response personnel.
- If the school resource officer is unavailable and the area is deemed unsafe, evacuate the building and call 911.
- Instruct the custodian to turn off the building ventilation system to prevent exhausting the vapors throughout the building.
- Do not attempt to clean up or further disturb the material.

Science Safety Equipment

The following outlines the science safety equipment and procedures. Refer to **Section IV: On-Site Hazardous Materials and Chemical Management** for additional information on safety equipment available at each site.

Eye Protection

Eye protection that meets the American National Standards Institute (ANSI) 1979 Z87.1 Standard must be worn by all students participating in, observing, or in close proximity to any experiment or activity which could result in eye injury. Eye protection glasses, goggles, face shields, and similar eye protection devices shall be issued clean and properly sanitized and stored in a protected place. Goggles should be worn whenever liquid chemicals are used.

Eye Wash Fountains/Safety Showers

The first response (prior to medical treatment) for a student or teacher who has hazardous material in their eyes or on their faces is to flush the affected area with water to dilute chemicals, wash off debris, and irrigate the eyes. It is very important to hold the eyelids open and roll the eyeballs so that water can flow over all surfaces of the eyeballs and in the folds surrounding them.

An eye/face wash station that can wash both eyes simultaneously is required in every science laboratory and preparation room where hazardous materials are used. The eyewash station must be visibly marked, unobstructed for immediate use and **flushed weekly**.

Attachment A

Emergency Information Posting

Emergency Information Posting

The following information must be posted in areas using hazardous chemicals.

Use the following first aid procedures for accidental poisoning or exposure from chemicals:

- Take the person to the nurse's office immediately;
- The nurse should contact the poison control center and they will need to know:
 - ✓ Age of the victim
 - ✓ Name of the poison/chemical ingested
 - ✓ Amount of material ingested or degree of exposure
 - ✓ Time of ingestion or exposure
 - ✓ Condition of victim
 - ✓ Any first aid that has been performed

Refer to the Safety data Sheet (SDS) of the chemical ingested for additional information and basic first aid procedures and health hazards of the chemical

Poison Control Center Information

Rocky Mountain Poison and Drug Center

Emergency Phone Number: 800-222-1222 or 303-739-1127

Address: 990 Bannock Street, Fourth Floor, Denver CO 80204

Attachment C

CDPHE Chemical Lists

Appendix A – Prohibited Chemicals

Appendix B – Restricted Chemicals

**Appendix B2 – Restricted Chemicals
Demonstration Use Only**

Appendix A - Prohibited Chemicals

| Name | Formula | CAS # | Hazard* |
|--|--------------------|----------|--|
| 2-Butanol (sec-Butyl Alcohol) | $C_2H_5CH(OH)CH_3$ | 78-92-2 | may form explosive peroxides upon concentration |
| Acetal (1,1-Diethoxyethane) | $C_6H_{14}O_2$ | 105-57-7 | may form explosive peroxides upon concentration; toxic |
| Acetaldehyde (Ethanal) | CH_3CHO | 75-07-0 | may form explosive peroxides upon concentration; possibly carcinogenic to humans; highly flammable |
| Acetyl Halides (e.g., Acetyl Fluoride, Acetyl Chloride, Acetyl Bromide, Acetyl Iodide) | | | respiratory irritant, toxic; violent reaction with water; dangerous fire risk |
| Acetyl Nitrate | CH_3CONO_3 | 591-09-3 | shock sensitive |
| Acrolein | CH_2CHCHO | 107-02-8 | flammable and reactive; may be fatal if ingested, inhaled, or absorbed through the skin |
| Acrylic Acid (Propenoic Acid) | H_2CCHCO_2H | 79-10-7 | may form explosive peroxides; reactive; corrosive |
| Acrylonitrile | CH_2CHCN | 107-13-1 | may form explosive peroxides; possibly carcinogenic to humans; flammable; reactive |

Appendix A - Prohibited Chemicals

| Name | Formula | CAS # | Hazard* |
|---|---------------------------------------|------------|--|
| Alcohols (Allylic, Benzylic) Note: Alcohols are referred to as allylic or benzylic if the hydroxyl group is bonded to an allylic carbon atom (adjacent to a C=C double bond) or a benzylic carbon atom (next to a benzene ring), respectively. (e.g., 3-penten-2-ol; 2-propen-1-ol (allyl alcohol), 1-phenylethanol, phenylmethanol (benzyl alcohol), diphenylmethanol (diphenylcarbinol), triphenylmethanol (triphenylcarbinol)). | | | may form explosive peroxides upon concentration |
| Alkyl-Substituted Cycloaliphatics Note: Methyl-, ethyl-, propyl-, butyl- are common alkyl substituents. A cycloaliphatic is a cyclic hydrocarbon such as cyclopropane, cyclobutane, or cyclohexane (e.g., tert-butylcycloheptane or 1-cyclobutyl-4-methylpentane). | | | may form explosive peroxides upon concentration |
| Aluminum Phosphide | AlP | 20859-73-8 | water-reactive; generates poisonous and explosive gas when in contact with air or moisture |
| Amatol (TNT and Ammonium Nitrate mixture) | | | explosive |
| Ammonal (TNT, Ammonium Nitrate, and Aluminum Powder Mixture) | | | explosive |
| Ammonium Bromate | NH_4BrO_3 | 13843-59-9 | shock sensitive |
| Ammonium Chlorate | NH_4ClO_3 | 10192-29-7 | strong oxidizer; explosive |
| Ammonium Hexanitrocobaltate | $\text{NH}_3\text{Co}(\text{NO}_2)_6$ | 13600-98-1 | explosive |

Appendix A - Prohibited Chemicals

| Name | Formula | CAS # | Hazard* |
|---|--|------------|--|
| Ammonium Nitrite | NH_4NO_2 | 13446-48-5 | explosive |
| Ammonium Perchlorate | NH_4ClO_4 | 7790-98-9 | strong oxidizer; explosive; irritant |
| Ammonium Periodate | NH_4IO_4 | 13446-11-2 | strong oxidizer; explosive; irritant; inhalation hazard |
| Ammonium Permanganate | NH_4MnO_4 | 13446-10-1 | explosive |
| Ammonium Tetraperoxychromate | $(\text{NH}_4)_3\text{CrO}_8$ | | explosive |
| Antimony Compounds (e.g., triethyl stibine, tripropyl stibine, trivinyl stibine, antimony trichloride, antimony pentachloride, nickel antimonide) | | | dust fire and explosion hazard; poison; corrosive; reactive; some antimony compounds are possibly carcinogenic to humans |
| Arsenic and Arsenic Compounds (e.g., lead arsenate, sodium arsenate, sodium arsenite, Trisilyl Arsine, arsine, arsenic trioxide) | | | carcinogenic to humans; poison |
| Azide Compounds (e.g., hydrogen azide, sodium azide, copper azide, lead (dinitride) azide) | | | acutely toxic; shock sensitive; explosive |
| Azidocarbonyl Guanidine | $\text{C}_2\text{H}_4\text{N}_6\text{O}$ | 54567-24-7 | shock sensitive, explosive |
| Barium | Ba | 7440-39-3 | water-reactive; may ignite on contact with water or moist air; acutely toxic |
| Barium Chlorate | $\text{Ba}(\text{ClO}_3)_2 \cdot \text{H}_2\text{O}$ | 13477-00-4 | explosive; strong oxidizer; toxic |
| Barium Oxide (Anhydrous) | BaO | 1304-28-5 | poison; water-reactive |
| Barium Peroxide | BaO_2 | 1304-29-6 | poison; water-reactive; oxidizer |

| Appendix A - Prohibited Chemicals | | | |
|--|--------------------------|------------|--|
| Name | Formula | CAS # | Hazard* |
| Benzene | C_6H_6 | 71-43-2 | carcinogenic to humans; flammable |
| Benzene Diazonium Chloride | $C_6H_5ClN_2$ | 100-34-5 | explosive |
| Benzotriazole | $C_6H_5N_3$ | 95-14-7 | explosive |
| Benzoyl Peroxide | $(C_6H_5CO)_2O_2$ | 94-36-0 | flammable; explosive; oxidizer; sensitizer; allergen; reacts violently with bases |
| Benzyl Alcohol | $C_6H_5CH_2OH$ | 100-51-6 | reacts violently with oxidants; may form explosive peroxides upon concentration |
| Bismuth Nitrate | $Bi(NO_3)_3 \cdot 5H_2O$ | 10035-06-0 | strong oxidizer; contact with other material may cause fire; toxic |
| Boranes and Diboranes (e.g., borane, tribromoborane, trifluoroborane, diborane, pentaborane, methyldiborane) | | | poison; flammable; water-reactive |
| Bromine Pentafluoride | BrF_5 | 7789-30-2 | oxidizer; poison; inhalation hazard; corrosive; reacts with water with explosive force |
| Bromine Trifluoride | BrF_3 | 7787-71-5 | oxidizer; poison; inhalation hazard; corrosive; reacts with water with explosive force |
| Butadiene | C_4H_6 | 106-99-0 | may form explosive peroxides; carcinogenic to humans |
| Butanetriol Trinitrate (BTTN) | $C_4H_7N_3O_9$ | 6659-60-5 | explosive |

Appendix A - Prohibited Chemicals

| Name | Formula | CAS # | Hazard* |
|---|--------------------------------------|------------|--|
| Cadmium and Cadmium Compounds (e.g., cadmium hydroxide, cadmium oxide, cadmium sulfide) | | | carcinogenic to humans; highly toxic |
| Calcium Nitrate, Anhydrous | $\text{Ca}(\text{NO}_3)_2$ | 10124-37-5 | strong oxidizer; may explode if shocked or heated |
| Calcium Permanganate | $\text{Ca}(\text{MnO}_4)_2$ | 10118-76-0 | strong oxidizer |
| Carbon Tetrachloride | CCl_4 | 56-23-5 | possibly carcinogenic to humans; acutely toxic |
| Chloral Hydrate | $\text{CCl}_3\text{CH}(\text{OH})_2$ | 302-17-0 | controlled barbiturate; probably carcinogenic to humans |
| Chlorine | Cl_2 | 7782-50-5 | oxidizer, corrosive, may be fatal if inhaled |
| Chlorine Dioxide | ClO_2 | 10049-04-4 | oxidizer; flammable and reactive; shock sensitive; explosive |
| Chlorine Trifluoride | ClF_3 | 7790-91-2 | powerful oxidizer; explosive reaction with water and acids; poisonous if inhaled |
| Chlorine Trioxide | ClO_3 | 13932-10-0 | shock sensitive; explosive |
| Chloroacetylene | C_2HCl | 593-63-5 | shock sensitive; air reactive |
| Chloroform | CHCl_3 | 67-66-3 | poison; possibly carcinogenic to humans |
| Chloropicrin | CCl_3NO_2 | 76-06-2 | shock sensitive; explosive; poison; inhalation hazard |

Appendix A - Prohibited Chemicals

| Name | Formula | CAS # | Hazard* |
|--|---|------------|--|
| Chloroprene | C ₄ H ₅ Cl | 126-99-8 | may form explosive peroxides; possibly carcinogenic to humans |
| Chlorotrifluoroethylene | C ₂ F ₃ Cl | 79-38-9 | may form explosive peroxides |
| Chromic Chloride (Chromium (III) Chloride) | CrCl ₃ ·6H ₂ O | 10060-12-5 | acutely toxic; fatal if inhaled |
| Chromium (Powder) | Cr | 7440-47-3 | flammable; toxic |
| Chromyl Chloride | CrO ₂ Cl ₂ | 14977-61-8 | water-reactive; chromium (VI) compounds are carcinogenic to humans |
| Cobalt (Powder) | Co | 7440-48-4 | possibly carcinogenic to humans |
| Colchicine | C ₂₂ H ₂₅ NO ₆ | 64-86-8 | acutely toxic |
| Copper Acetylide | Cu ₂ C ₂ | 1117-94-8 | explosive |
| Cumene (Isopropylbenzene) | C ₆ H ₅ CH(CH ₃) ₂ | 98-82-8 | may form explosive peroxides upon concentration; possibly carcinogenic to humans |
| Cycloheptanone | C ₇ H ₁₂ O | 502-42-1 | may form explosive peroxides; flammable; corrosive; toxic |
| Cyclohexanol | C ₆ H ₁₁ OH | 108-93-0 | may form explosive peroxides upon concentration |
| Cyclopentene | C ₅ H ₈ | 142-29-0 | may form explosive peroxides upon concentration |
| Diacetylene (Butadiyne) | C ₄ H ₂ | 460-12-8 | may form explosive peroxides upon concentration; highly flammable; explosive |

| Appendix A - Prohibited Chemicals | | | |
|---|-------------------------|------------|---|
| Name | Formula | CAS # | Hazard* |
| Diazidoethane | $C_2H_4N_6$ | 629-13-0 | explosive |
| Diazodinitrophenol (DDNP) | $C_6H_2N_4O_5$ | 4682-03-5 | explosive |
| Diazomethane | CH_2N_2 | 334-88-3 | poisonous and flammable gas |
| Dicyclopentadiene | $C_{10}H_{12}$ | 77-73-6 | may form explosive peroxides upon concentration; acutely toxic; fatal if inhaled; flammable |
| Diisopropyl Ether | $C_6H_{14}O$ | 108-20-3 | may form explosive peroxides |
| Dinitrophenol | $C_6H_3OH(NO_2)_2$ | 51-28-5 | explosive |
| Dioxane | $C_4H_8O_2$ | 123-91-1 | may form explosive peroxides upon concentration; possibly carcinogenic to humans |
| Dipentaerythritol Hexanitrate (DPEHN) | $C_{10}H_{16}N_6O_{19}$ | 13184-80-0 | explosive |
| Disulfur Dinitride | S_2N_2 | 25474-92-4 | explosive |
| Divinyl Acetylene | C_6H_6 | 821-08-9 | may form explosive peroxides; acutely toxic; highly flammable |
| Divinyl Ether | $C_4H_6O_2$ | 109-93-3 | may form explosive peroxides; highly flammable |
| Ethyl Ether (diethyl ether) | $(C_2H_5)_2O$ | 60-29-7 | may form explosive peroxides upon concentration |
| Ethyl Nitrite | $C_2H_5NO_2$ | 109-95-5 | explosive |
| Ethylene Glycol Dimethyl Ether (Glyme or 1,2-Dimethoxyethane) | $C_4H_{10}O_2$ | 28923-39-9 | may form explosive peroxides upon concentration |

| Appendix A - Prohibited Chemicals | | | |
|---|----------------------|-----------|---|
| Name | Formula | CAS # | Hazard* |
| Ethylene Glycol Dinitrate (EGDN or 1,2-Dinitroxyethane) | $C_2H_4N_2O_6$ | 628-96-6 | explosive |
| Ethylene Oxide | C_2H_4O | 75-21-8 | carcinogenic to humans; flammable; explosive; may be fatal if inhaled or absorbed through the skin |
| Formaldehyde | CH_2O | 50-00-0 | carcinogenic to humans; poison; may cause allergic reaction |
| Furan | C_4H_4O | 110-00-9 | possibly carcinogenic to humans; may form explosive peroxides upon concentration |
| Glycerol Monolactate Trinitrate (GLTN) | $C_6H_9N_3O_{11}$ | | explosive |
| Grignard Reagents and their solvents Note: a Grignard Reagent has a formula $RMgX$ where X is a halogen and R is an alkyl or aryl (based on a benzene ring) group. An example is CH_3CH_2MgBr (ethylmagnesium bromide). They are typically found in solution with tetrahydrofuran or ether as the solvent. | | | Both the Grignard Reagent and the solvents are hazardous. The Grignard Reagents can be highly reactive, corrosive, pyrophoric, and toxic. The solvents are highly flammable and may form explosive peroxides. |
| Guanyl Nitrosamino Guanylidene Hydrazine | | | explosive; strong oxidizer |
| Hexyl Alcohol | $CH_3(CH_2)_4CH_2OH$ | 111-27-3 | highly flammable; poison |
| HMX | $C_4H_8N_8O_8$ | 2691-41-0 | explosive |

Appendix A - Prohibited Chemicals

| Name | Formula | CAS # | Hazard* |
|---|---|------------|--|
| Hydrofluoric Acid | HF | 7664-39-3 | corrosive; may be fatal if inhaled or ingested; liquid and vapor can cause severe burns not always immediately painful or visible, but possibly fatal |
| Hydrogen Peroxide (>30%) | H ₂ O ₂ | 7722-84-1 | fire and explosion risk, severely corrosive; strong oxidizer |
| Hydrogen Sulfide | H ₂ S | 7783-06-4 | highly flammable; exposure to very high concentrations causes immediate death; death or permanent injury may occur after very short exposure to small quantities |
| Isopropyl Ether (Diisopropyl Ether) | C ₆ H ₁₄ O | 108-20-3 | highly flammable; may form explosive peroxides |
| Lead Dinitroresorcinate (LDNR) | PbC ₆ H ₂ (NO ₂) ₂ (OH) ₂ | | explosive; probably carcinogenic to humans |
| Lead Dioxide (Lead (IV) Oxide or Lead Brown) | PbO ₂ | 1309-60-0 | toxic; probably carcinogenic to humans; will accelerate burning in fire; may explode from heat or contamination |
| Lead Mononitroresorcinate (LMNR) | PbC ₆ H ₃ NO ₂ (OH) ₂ | 51317-24-9 | explosive; shock sensitive; probably carcinogenic to humans |
| Lead Trinitroresorcinate (Lead Styphnate) | PbC ₆ H(NO ₂) ₃ (OH) ₂ | 15245-44-0 | explosive; probably carcinogenic to humans |

| Appendix A - Prohibited Chemicals | | | |
|--|---|------------|---|
| Name | Formula | CAS # | Hazard* |
| Lithium Nitrate | LiNO_3 | 7790-69-4 | oxidizer; shock sensitive |
| Lithium Nitride | Li_3N | 26134-62-3 | highly flammable; powder is easily ignited and burns with intense heat; may ignite spontaneously in moist air |
| Lithium Peroxide | Li_2O_2 | 12031-80-0 | oxidizer; toxic; explosive |
| Magnesium (except Mg ribbon & turnings) | Mg | 7439-95-4 | reacts with water to liberate hydrogen gas; flammable solid; easily ignited |
| Magnesium Peroxide | MgO_2 | 14452-57-4 | strong oxidizer |
| Mannitol Hexanitrate | $\text{C}_6\text{H}_8\text{N}_6\text{O}_{18}$ | 15825-70-4 | explosive; strong oxidizer |
| Mercury (except in sealed devices) | Hg | 7439-97-6 | corrosive; poison; severely and subtly toxic |
| Mercury Compounds (e.g., Nessler's Reagent, mercuric chloride, mercuric potassium iodide, mercuric fluoride) | | | poison; severely and subtly toxic |
| Methyl Acetylene | C_3H_4 | 74-99-7 | highly flammable; may form explosive peroxides upon concentration |
| Methyl Cyclopentane | C_6H_{12} | 96-37-7 | highly flammable |
| Methyl Isocyanate | CH_3NCO | 624-83-9 | water-reactive; highly flammable; polymerizable |
| Methyl Methacrylate Monomer | $\text{C}_5\text{H}_8\text{O}_2$ | 80-62-6 | may form explosive peroxides; flammable; explosive (vapor) |

| Appendix A - Prohibited Chemicals | | | |
|---|-------------------|------------|---|
| Name | Formula | CAS # | Hazard* |
| meta-Trinitrocresol (3-Methyl-2,4,6-trinitrophenol) | $C_7H_5N_3O_7$ | 602-99-3 | explosive; strong oxidizer |
| Nessler's Reagent (Mercuric Potassium Iodide and Sodium Hydroxide) | $Hg+KI+NaOH$ | 7783-33-7 | |
| Nicotine | $C_{10}H_{14}N_2$ | 54-11-5 | poison; acutely toxic |
| Nitroglycerin | $C_3H_5N_3O_9$ | 55-63-0 | explosive; strong oxidizer |
| Nitrosoguanidine | $C_2H_5N_5O_3$ | 70-25-7 | explosive; highly flammable; water-reactive; decomposes at elevated temperatures |
| Osmic Acid (Osmium Tetroxide) | OsO_4 | 20816-12-0 | acutely toxic; may be fatal if inhaled or ingested |
| ortho-Toluidine (e.g., Toluidine Blue) | C_7H_9N | 95-53-4 | carcinogenic to humans; poison |
| Pentaerythrite Tetranitrate (PETN) | $C_5H_8N_4O_{12}$ | 78-11-5 | explosive; strong oxidizer |
| Perchloric Acid | $HClO_4$ | 7601-90-3 | strong oxidizing agent; corrosive; contact with organics may result in explosion; can cause serious or permanent injury |
| Phenol | C_6H_6O | 108-95-2 | combustible; corrosive; may be fatal if inhaled, ingested, or absorbed through skin |
| Phenyl Thiourea | $C_7H_8N_2S$ | 103-85-5 | extremely toxic; poison; emits toxic fumes when heated |

Appendix A - Prohibited Chemicals

| Name | Formula | CAS # | Hazard* |
|--|---|------------|---|
| Phosphorus (yellow or white) | P | 7723-14-0 | flammable solid; self-ignition possible; evolves dangerous gas if burned |
| Phosphorus Halides and Oxides (e.g., phosphorus trichloride, phosphorus trioxide, phosphorus, pentabromide) | | | water-reactive; corrosive; toxic |
| Phosphides (e.g., magnesium aluminum phosphide, potassium phosphide, sodium phosphide) | | | poison; water- reactive |
| Phthalic Anhydride | C ₈ H ₄ O ₃ | 85-44-9 | explosive; water- reactive |
| Picramide | C ₆ H ₄ N ₄ O ₆ | 489-98-5 | explosive; strong oxidizing agent |
| Picrates and Picryl Compounds (e.g., ammonium picrate, lead picrate, potassium picrate, picryl sulfonic acid, picryl chloride) | | | explosive |
| Picric Acid (2,4,6-Trinitrophenol) | C ₆ H ₃ N ₃ O ₇ | 88-89-1 | extremely reactive; explosive when dry |
| para-Nitrophenol (4-Nitrophenol) | NO ₂ C ₆ H ₄ OH | 100-02-7 | poison; forms explosive mixtures |
| Polyvinyl Nitrate (PVN or polyethenyl nitrate) | (C ₂ H ₃ NO ₃) _n | | explosive; shock sensitive |
| Potassium Amide | KNH ₂ | 17242-52-3 | may form explosive peroxides |
| Potassium Cyanide | KCN | 151-50-8 | acutely toxic |
| Potassium Dinitrobenzofuroxan (KDNBF) | KC ₆ H ₂ N ₄ O ₆ | 29267-75-2 | explosive |
| Potassium Nitrite | KNO ₂ | 7758-09-0 | strong oxidizer |
| Potassium Perchlorate | KClO ₄ | 7778-74-7 | explosive |
| Potassium Periodate | KIO ₄ | 7790-21-8 | strong oxidizer |

Appendix A - Prohibited Chemicals

| Name | Formula | CAS # | Hazard* |
|---|--------------------------|------------|---|
| Potassium Peroxide | K_2O_2 | 17014-71-0 | water-reactive; strong oxidizer |
| Potassium Superoxide | KO_2 | 12030-88-5 | water-reactive; strong oxidizer |
| RDX | $C_3H_6N_6O_6$ | 121-82-4 | explosive |
| Silanes and Chlorosilanes (e.g., silane; dichlorosilane; tetramethylsilane; trichlorosilane) | | | flammable; reactive; highly toxic |
| Silicon Tetrachloride | $SiCl_4$ | 10026-04-7 | air- and water- reactive; corrosive |
| Silver Acetylide | Ag_2C_2 | 13092-75-6 | explosive; shock sensitive |
| Silver Cyanide | $AgCN$ | 506-64-9 | acutely toxic; may be fatal if inhaled, ingested, or absorbed through skin |
| Silver Dinitroresorcinate (Silver Styphnate) | $Ag_2C_6H(NO_3)_2(OH)_2$ | | reactive; ignitable; shock sensitive |
| Silver Fulminate | $AgCNO$ | 5610-59-3 | explosive |
| Silver Cyanate | $AgOCN$ | 3315-16-0 | toxic |
| Silver Nitride | Ag_3N | 20737-02-4 | shock sensitive; explosive |
| Silver Oxalate | $Ag_2C_2O_4$ | 533-51-7 | shock sensitive |
| Silver Tetrazene | | | shock sensitive |
| Sodium Amide | $NaNH_2$ | 7782-92-5 | may form explosive peroxides; water- reactive; highly flammable |
| Sodium Chlorate | $NaClO_3$ | 7775-09-9 | oxidizer; explosive |
| Sodium Chlorite | $NaClO_2$ | 7758-19-2 | oxidizer; explosive |
| Sodium Cyanide | $NaCN$ | 143-33-9 | acutely toxic |

Appendix A - Prohibited Chemicals

| Name | Formula | CAS # | Hazard* |
|---|-----------------------------------|------------|---|
| Sodium Dithionite (Sodium Hydrosulfite) | $\text{Na}_2\text{S}_2\text{O}_4$ | 7775-14-6 | spontaneously combustible; water-reactive; pyrophoric |
| Sodium Methylete | NaCH_3O | 124-41-4 | spontaneously combustible; water-reactive; pyrophoric |
| Sodium Perborate | NaBO_3 | 7632-04-4 | air- and water-reactive; explosive |
| Sodium Perchlorate | NaClO_4 | 7601-89-0 | oxidizer; water-reactive; explosive |
| Sodium Permanganate | NaMnO_4 | 10101-50-5 | oxidizer; explosive |
| Sodium Peroxide | Na_2O_2 | 1313-60-6 | oxidizer; water-reactive; toxic; explosion and fire risk in combination with powdered metals and organics |
| Strontium Perchlorate | SrCl_2O_8 | 13450-97-0 | shock sensitive |
| Styrene Monomer | C_8H_8 | 100-42-5 | highly flammable; may form explosive peroxides; polymerizable |
| Sulfur Trioxide | SO_3 | 7446-11-9 | air- and water-reactive; corrosive; poison; inhalation hazard |
| Sulfuryl Chloride (Sulfonyl Chloride) | $\text{Cl}_2\text{O}_2\text{S}$ | 7791-25-5 | air- and water-reactive; corrosive; poison; inhalation hazard |
| Sulfuryl Chloride Fluoride | ClFO_2S | 13637-84-8 | poison; water-reactive; corrosive |
| tert-butyl Hypochlorite | $\text{C}_4\text{H}_9\text{ClO}$ | 507-40-4 | spontaneously combustible; pyrophoric; fire will produce irritating, corrosive, and/or toxic gases |

Appendix A - Prohibited Chemicals

| Name | Formula | CAS # | Hazard* |
|--|---|------------|--|
| Tetrafluoroethylene | C ₂ F ₄ | 116-14-3 | may form explosive peroxides; highly flammable; probably carcinogenic to humans |
| Tetrahydrofuran | C ₄ H ₈ O | 109-99-9 | highly flammable; oxidizes in air to form explosive peroxides |
| Tetrahydronaphthalene | C ₁₀ H ₁₂ | 119-64-2 | highly flammable; vapors may form explosive mixtures with air; may form explosive peroxides upon concentration |
| Tetranitromethane | CN ₄ O ₈ | 509-14-8 | oxidizer; poison; possibly carcinogenic to humans; inhalation hazard; explosive |
| Tetraselenium Tetranitride | Se ₄ N ₄ | 12033-88-4 | shock sensitive |
| Tetrazene (tetrazolyl guanyltetrazene hydrate) | C ₂ H ₆ N ₁₀ ·H ₂ O | 31330-63-9 | shock sensitive; explosive |
| Tetryl (2,4,6-trinitrophenylmethylnitroamine) | C ₇ H ₅ N ₅ O ₈ | 479-45-8 | oxidizer; explosive |
| Thallium Nitride | Tl ₃ N | 12033-67-9 | shock sensitive |
| Thermit (example: could be a mixture of aluminum powder, iron oxide, ferro managanese, and ferro vanadium) | | | flammable solid; dangerous fire risk; once started, reaction is very difficult to stop |
| Thermite Igniting Mixture (example: could be a mixture of aluminum, barium nitrate, iron oxide and a binder such as dextrin on a copper stick) | | | becomes a fire hazard if exposed to a flame or high temperatures |
| Thiocarbonyl Tetrachloride (Perchloromethyl Mercaptan) | CCl ₄ S | 594-42-3 | poison; inhalation hazard |

Appendix A - Prohibited Chemicals

| Name | Formula | CAS # | Hazard* |
|---|---|------------------------|--|
| Thionyl Chloride | SOCl_2 | 7719-09-7 | violently water-reactive; lachrymator; highly corrosive; toxic |
| Titanium (Powder) | Ti | 7440-32-6 | spontaneously combustible; may ignite on contact with moist air or moisture |
| Titanium Tetrachloride | TiCl_4 | 7550-45-0 | water-reactive; corrosive; acutely toxic; may be fatal if inhaled |
| Triethyl Aluminum | $(\text{C}_2\text{H}_5)_3\text{Al}$ | 97-93-8 | spontaneously combustible; flammable gas is produced on contact with water |
| Triisobutyl Aluminum | $(\text{C}_4\text{H}_9)_3\text{Al}$ | 100-99-2 | spontaneously combustible; reacts violently with water producing flammable gas |
| Trimethyl Aluminum | $(\text{CH}_3)_3\text{Al}$ | 75-24-1 | spontaneously combustible; flammable gas is produced on contact with water |
| Trinitroanisole | $\text{C}_7\text{H}_5\text{N}_3\text{O}_7$ | 606-35-9 | explosive; strong oxidizer |
| Trinitrobenzene | $\text{C}_6\text{H}_3\text{N}_3\text{O}_6$ | 99-35-4 | explosive; flammable solid; strong oxidizer |
| Trinitrobenzoic Acid | $\text{C}_7\text{H}_3\text{N}_3\text{O}_8$ | 129-66-8 or 35860-50-5 | explosive; highly flammable; strong oxidizer |
| Trinitronaphthalene (1,3,5-Trinitronaphthalene) | $\text{C}_{10}\text{H}_5\text{N}_3\text{O}_6$ | 2243-94-9 | explosive; strong oxidizer |
| Trinitroresorcinol | $\text{C}_6\text{H}_3\text{N}_3\text{O}_8$ | 82-71-3 | explosive; strong oxidizer |

| Appendix A - Prohibited Chemicals | | | |
|--|------------------|-----------|---|
| Name | Formula | CAS # | Hazard* |
| Trinitrotoluene (TNT or 2,4,6-Trinitrotoluene) | $C_7H_5N_3O_6$ | 118-96-7 | explosive; strong oxidizer |
| Uranium and Uranium Compounds (e.g., uranium oxide, Uranyl Acetate, Uranyl Nitrate, uranium hexafluoride, uranium tetrafluoride) | | | toxic by inhalation or ingestion |
| Urea Nitrate | $CH_4N_2O.HNO_3$ | 124-47-0 | explosive; strong oxidizer |
| Vinyl Acetate | $C_4H_6O_2$ | 108-05-4 | may form explosive peroxides; possibly carcinogenic to humans; reactive |
| Vinyl Acetylene | C_4H_4 | 689-97-4 | may form explosive peroxides; reactive |
| Vinyl Chloride | C_2H_3Cl | 75-01-4 | carcinogenic to humans; may form explosive peroxides; reactive |
| Vinyl Ethers (e.g., divinyl ether; 2-chloroethylvinyl ether; butyl vinyl ether) | | | may form explosive peroxides upon concentration |
| Vinylidene Chloride (1,1-Dichloroethene or 1,1-DCE) | $C_2H_2Cl_2$ | 75-35-4 | may form explosive peroxides |
| Zinc Peroxide | ZnO_2 | 1314-22-3 | oxidizer; used as an oxidant in explosives; toxic |

* The hazard information provided for the listed chemicals is not intended to address all safety concerns. Before attempting to work with any chemical, review and comply with information provided on the SDS.

| Appendix B - Restricted Chemicals | | | |
|--|--|-------------|--|
| Name | Formula | CAS # | Hazard* |
| 2-Butanone (Methyl Ethyl Ketone or MEK) | $\text{CH}_3\text{COC}_2\text{H}_5$ | 78-93-3 | highly flammable; may form explosive peroxides |
| Acetamide | CH_3CONH_2 | 60-35-5 | possibly carcinogenic to humans |
| Acetanilide (n-Phenylacetamide or Acetamidobenzene) | $\text{CH}_3\text{CONHC}_6\text{H}_5$ | 103-84-4 | combustible; irritant |
| Acetic Acid | CH_3COOH | 64-19-7 | flammable; corrosive |
| Acetic Anhydride | $(\text{CH}_3\text{CO})_2\text{O}$ | 108-24-7 | water-reactive; corrosive; flammable |
| Acetone | CH_3COCH_3 | 67-64-1 | highly flammable; inhalation hazard |
| Acetylcholine Bromide | $\text{C}_7\text{H}_{16}\text{BrNO}_2$ | 66-23-9 | toxic; irritant |
| Acridine Orange | $\text{C}_{17}\text{H}_{19}\text{N}_3$ | 10127-02-3 | irritant |
| Adipoyl Chloride | $\text{CLOC}(\text{CH}_2)_4\text{COCl}$ | 111-50-2 | corrosive |
| Alizarin Red | $\text{C}_{14}\text{H}_7\text{NaO}_7\text{S}$ | 130-22-3 | toxic |
| Alkyl Aluminum Chloride | Unavailable | Unavailable | water reactive |
| Aluminum (Powder) | Al | 7429-90-5 | water-reactive; strong reducing agent; pyrophoric |
| Aluminum Acetate | $\text{Al}(\text{C}_2\text{H}_3\text{O}_2)_2\text{OH}$ | 142-03-0 | toxic |
| Aluminum Bromide | AlBr_3 | 7727-15-3 | air- and water-reactive; corrosive |
| Aluminum Chloride Hexahydrate | $\text{AlCl}_3 \cdot 6\text{H}_2\text{O}$ | 7784-13-6 | water-reactive; corrosive |
| Aluminum Fluoride | AlF_3 | 7784-18-1 | water-reactive; corrosive; inhalation hazard |
| Aluminum Hydroxide | $\text{Al}(\text{OH})_3$ | 21645-51-2 | possibly toxic |
| Aluminum Nitrate | $\text{Al}(\text{NO}_3)_3 \cdot 9\text{H}_2\text{O}$ | 7784-27-2 | strong oxidizer |
| Aluminum Tetrahydroborate (Aluminum Borohydride) | $\text{Al}(\text{BH}_4)_3$ | 16962-07-5 | poison; air- and water-reactive; pyrophoric; strong reducing agent |

| Appendix B - Restricted Chemicals | | | |
|---|--|------------|---|
| Name | Formula | CAS # | Hazard* |
| Ammonia, Anhydrous | NH ₃ | 7664-41-7 | poison; water-reactive; inhalation hazard; corrosive |
| Ammonia Solutions in Water | NH ₃ | 7664-41-7 | corrosive; reactive; toxic |
| Ammonium Acetate | NH ₄ C ₂ H ₃ O ₂ | 631-61-8 | inhalation hazard; irritant |
| Ammonium Bicarbonate | NH ₄ HCO ₃ | 1066-33-7 | inhalation hazard; irritant |
| Ammonium Dichromate | (NH ₄) ₂ Cr ₂ O ₇ | 7789-09-5 | chromium (VI) compounds are carcinogenic to humans; strong oxidizer; poison |
| Ammonium Bromide | NH ₄ Br | 12124-97-9 | inhalation hazard; irritant |
| Ammonium Carbonate | NH ₄ CO ₃ | 10361-29-2 | inhalation hazard; irritant |
| Ammonium Chloride | NH ₄ Cl | 12125-02-9 | toxic; inhalation hazard; irritant |
| Ammonium Chromate | (NH ₄) ₂ CrO ₄ | 7788-98-9 | chromium (VI) compounds are carcinogenic to humans; strong oxidizer; poison |
| Ammonium Fluoride | NH ₄ F | 12125-01-8 | corrosive; toxic |
| Ammonium Hydroxide | NH ₄ OH | 1336-21-6 | inhalation hazard; severely corrosive |
| Ammonium Iodide | NH ₄ I | 12027-06-4 | inhalation hazard |
| Ammonium Molybdate Tetrahydrate | (NH ₄) ₆ Mo ₇ O ₂₄ ·4H ₂ O | 12054-85-2 | toxic |
| Ammonium Nitrate (500 g limit) | NH ₄ NO ₃ | 6484-52-2 | shock sensitive; oxidizer |
| Ammonium Oxalate Monohydrate | (NH ₄) ₂ C ₂ O ₄ ·H ₂ O | 6009-70-7 | corrosive; toxic |
| Ammonium Phosphate, Dibasic (Diammonium | (NH ₄) ₂ HPO ₄ | 7783-28-0 | respiratory hazard; potential for skin and |

| Appendix B - Restricted Chemicals | | | |
|---|--|------------|--|
| Name | Formula | CAS # | Hazard* |
| Hydrogen Phosphate | | | eye damage |
| Ammonium Phosphate, Monobasic (Ammonium Dihydrogen Phosphate) | $\text{NH}_4\text{H}_2\text{PO}_4$ | 7722-76-1 | respiratory hazard; potential for skin and eye damage |
| Ammonium Sulfate | $(\text{NH}_4)_2\text{SO}_4$ | 7783-20-2 | respiratory hazard |
| Ammonium Sulfide | $(\text{NH}_4)_2\text{S}$ | 12135-76-1 | respiratory hazard; corrosive; poison; flammable |
| Ammonium Tartrate | $(\text{NH}_4)_2\text{C}_4\text{H}_4\text{O}_6$ | 3164-29-2 | irritant |
| Ammonium Thiocyanate | NH_4SCN | 1762-95-4 | inhalation hazard; strong reducing agent |
| Amyl Acetate | $\text{CH}_3\text{COOC}_5\text{H}_{11}$ | 628-63-7 | flammable; toxic |
| Aniline | $\text{C}_6\text{H}_5\text{NH}_2$ | 62-53-3 | acutely toxic |
| Aniline Hydrochloride | $\text{C}_6\text{H}_5\text{NH}_2 \cdot \text{HCl}$ | 142-04-1 | corrosive; acutely toxic |
| Anisoyl Chloride (Methoxybenzoyl Chloride) | $\text{C}_8\text{H}_7\text{ClO}_2$ | 100-07-2 | air- and water-reactive; corrosive; |
| Barium Acetate | $\text{Ba}(\text{C}_2\text{H}_3\text{O}_2)_2$ | 543-80-6 | acutely toxic |
| Barium Carbide | BaC_2 | 50813-65-5 | water-reactive; toxic |
| Barium Chloride, Dihydrate | $\text{BaCl}_2 \cdot 2\text{H}_2\text{O}$ | 10326-27-9 | poison; acutely toxic |
| Barium Nitrate | $\text{Ba}(\text{NO}_3)_2$ | 10022-31-8 | oxidizer; toxic |
| Benzaldehyde | $\text{C}_6\text{H}_5\text{CHO}$ | 100-52-7 | combustible |
| Benzene Phosphorus Dichloride | $\text{C}_6\text{H}_5\text{PCl}_2$ | 644-97-3 | air-and water-reactive; fumes in air; corrosive |
| Benzoic Acid | $\text{C}_6\text{H}_5\text{COOH}$ | 65-85-0 | concentrated dust may form explosive mixture |
| Benzyl Chloride | $\text{C}_6\text{H}_5\text{CH}_2\text{Cl}$ | 100-44-7 | probably carcinogenic to humans; poison; corrosive; toxic; lachrymator; releases toxic fumes when heated |

| Appendix B - Restricted Chemicals | | | |
|-------------------------------------|--------------------|-------------|---|
| Name | Formula | CAS # | Hazard* |
| Benzylsodium | C_7H_7Na | 1121-53-5 | water reactive; ignites spontaneously in air; |
| Benzylamine (Benzenemethanamine) | $C_6H_5CH_2NH_2$ | 100-46-9 | corrosive; poison; combustible |
| Beryllium Tetrahydroborate | $Be(BH_4)_2$ | 17440-85-6 | violently air- and water-reactive; beryllium compounds are carcinogenic to humans |
| Biphenyl (Diphenyl) | $C_6H_5C_6H_5$ | 92-52-4 | irritant; combustible |
| Bismuth Pentafluoride | BiF_5 | 7787-62-4 | water-reactive; toxic |
| Boric Acid | H_3BO_3 | 10043-35-3 | harmful if swallowed |
| Boron Bromide Diiodide | $BBrl_2$ | 14355-21-6 | violently water- reactive |
| Boron Dibromiodide | BBr_2I | unavailable | violently water- reactive |
| Boron Phosphide | BP | 20205-91-8 | water-reactive |
| Boron Trichloride | BCl_3 | 13517-10-7 | water-reactive; toxic |
| Bromine Fluoride | BrF | 13863-59-7 | water-reactive |
| Bromine Water | $Br_2 + H_2O$ | 7726-95-6 | corrosive; irritating fumes; toxic |
| Bromobenzene | C_6H_5Br | 108-86-1 | highly flammable; toxic |
| Bromodiethylaluminum | $C_4H_{10}AlBr$ | 760-19-0 | water-reactive |
| Bromoform | $CHBr_3$ | 75-25-2 | poison; lachrymator |
| Butanol (n-Butyl Alcohol) | $CH_3(CH_2)_3OH$ | 71-36-3 | highly flammable; toxic |
| Butyric Acid | $CH_3CH_2CH_2COOH$ | 107-92-6 | corrosive; combustible; stench agent; lachrymator |
| Calcium (100 g limit) | Ca | 7440-70-2 | water-reactive; flammable solid |
| Calcium Bromide | $CaBr_2$ | 7789-41-5 | toxic |
| Calcium Hypochlorite | $Ca(ClO)_2$ | 7778-54-3 | strong oxidizer; |

| Appendix B - Restricted Chemicals | | | |
|---|--|-------------|---|
| Name | Formula | CAS # | Hazard* |
| | | | reactive; toxic |
| Calcium Nitrate Tetrahydrate | $\text{Ca}(\text{NO}_3)_2 \cdot 4\text{H}_2\text{O}$ | 13477-34-4 | strong oxidizer; shock sensitive |
| Calcium Phosphide (CP) | Ca_3P_2 | 1305-99-3 | violently air- and water- reactive; strong reducing agent; poison |
| Camphor | $\text{C}_{10}\text{H}_{16}\text{O}$ | 76-22-2 | toxic; flammable solid; combustible |
| Carbon Disulfide (Carbon Bisulfide) | CS_2 | 75-15-0 | highly flammable; poison; severe fire risk |
| Cerium (IV) Sulfate (Ceric Sulfate) | $\text{Ce}(\text{SO}_4)_2$ | 13590-82-4 | strong oxidizer; corrosive; irritant |
| Cesium Amide | CsH_2N | 22205-57-8 | water-reactive |
| Cesium Phosphide | Cs_3P | 113737-02-3 | water-reactive |
| Chlorine Fluoride | ClF | 7790-89-8 | strong oxidizer; water-reactive |
| Chlorine Pentafluoride | ClF_5 | 13637-63-3 | water-reactive |
| Chloroacetic Acid | $\text{C}_2\text{H}_3\text{ClO}_2$ | 79-11-8 | acutely toxic; corrosive |
| Chloroacetyl Chloride | $\text{C}_2\text{H}_2\text{Cl}_2\text{O}$ | 79-04-9 | air- and water-reactive; corrosive; poison; inhalation hazard |
| Chlorobenzene | $\text{C}_6\text{H}_5\text{Cl}$ | 108-90-7 | highly flammable; inhalation hazard |
| Chlorodiisobutyl Aluminum (Diisobutylaluminum Chloride) | $\text{C}_8\text{H}_{18}\text{AlCl}$ | 1779-25-5 | water-reactive; highly flammable |
| 2-Chlorophenyl Isocyanate | $\text{C}_7\text{H}_4\text{ClNO}$ | 3320-83-0 | poison; highly flammable |
| Chromic Acid | CrO_3 | 1333-82-0 | chromium (VI) compounds are carcinogenic to humans; strong oxidizer; poison |
| Chromium (III) Nitrate Nonahydrate (Chromium | $\text{Cr}(\text{NO}_3)_3 \cdot 9\text{H}_2\text{O}$ | 7789-02-8 | oxidizer; toxic |

| Appendix B - Restricted Chemicals | | | |
|---|--|------------|---|
| Name | Formula | CAS # | Hazard* |
| Trinitrate) | | | |
| Chromium (III) Sulfate (Chromic Sulfate) | $\text{Cr}_2(\text{SO}_4)_3 \cdot n\text{H}_2\text{O}$ | 10101-53-8 | corrosive; toxic |
| Chromium Trioxide | CrO_3 | 1333-82-0 | chromium (VI) compounds are carcinogenic to humans; strong oxidizer; poison |
| Cobalt (II) Nitrate Hexahydrate (Cobaltous Nitrate) | $\text{Co}(\text{NO}_3)_2 \cdot 6\text{H}_2\text{O}$ | 10026-22-9 | cobalt and cobalt compounds are possibly carcinogenic to humans; acutely toxic |
| Copper (II) Bromide (Cupric Bromide, Anhydrous) | CuBr_2 | 7789-45-9 | toxic; irritant |
| Cyclohexane | $\text{CH}_2(\text{CH}_2)_4\text{CH}_2$ | 110-82-7 | highly flammable; poison |
| Dichloromethane (Methylene Dichloride) | CH_2Cl_2 | 75-09-2 | probably carcinogenic to humans; poison |
| Diethyl Aluminum Chloride | $\text{C}_4\text{H}_{10}\text{AlCl}$ | 96-10-6 | water-reactive; highly flammable; inhalation hazard |
| Diethyl Zinc (DEZ) | $\text{C}_4\text{H}_{10}\text{Zn}$ | 557-20-0 | air- and water-reactive; highly flammable |
| Diisopropyl Beryllium | $\text{C}_6\text{H}_{14}\text{Be}$ | 15721-33-2 | water-reactive; beryllium compounds are carcinogenic to humans |
| Dimethyl Magnesium | $\text{C}_2\text{H}_6\text{Mg}$ | 2999-74-8 | air- and water-reactive; spontaneously flammable in air |
| Diphenylmethane-4,4- Diisocyanate | $\text{C}_{15}\text{H}_{10}\text{N}_2\text{O}_2$ | 101-68-8 | Poison |
| Diphenylamine | $(\text{C}_6\text{H}_5)_2\text{NH}$ | 122-39-4 | Poison |
| Ethanol (Ethyl Alcohol) | $\text{C}_2\text{H}_5\text{OH}$ | 64-17-5 | highly flammable |
| Ethyl Acetate | $\text{CH}_3\text{COOC}_2\text{H}_5$ | 141-78-6 | highly flammable; toxic; may form |

| Appendix B - Restricted Chemicals | | | |
|---|--|-------------------------|--|
| Name | Formula | CAS # | Hazard* |
| | | | explosive peroxides |
| Ethyl Methacrylate | $\text{CH}_2\text{CCH}_3\text{COOC}_2$ | 97-63-2 | highly flammable; polymerizable |
| Ethylene Dichloride (1,2-Dichloroethane) | $\text{C}_2\text{H}_4\text{Cl}_2$ | 107-06-2 | highly flammable; possibly carcinogenic to humans; poison; emits toxic gases if heated or burned |
| Ethylenediamine | $\text{NH}_2\text{CH}_2\text{CH}_2\text{NH}_2$ | 107-15-3 | highly flammable; air-reactive; corrosive |
| FAA Solution (Formalin-Aceto-Alcohol Solution) | | | flammable; acutely toxic; carcinogenic to humans |
| Fehlings Solution A (Copper (II) Sulfate and Water) | | | acutely toxic |
| Fehlings Solution B (Sodium Hydroxide; Potassium Sodium Tartrate; and Water) | | | caustic; toxic |
| Ferric Chloride, Anhydrous (Iron (III) Chloride) | FeCl_3 | 7705-08-0 | corrosive; inhalation hazard |
| Ferric Nitrate Nonahydrate (Iron (III) Nitrate Nonahydrate) | $\text{Fe}(\text{NO}_3)_3 \cdot 9\text{H}_2\text{O}$ | 7782-61-8 | strong oxidizer; irritant; explosion hazard with heat |
| Fluorine Monoxide (Oxygen Difluoride) | F_2O | 7783-41-7 | strong oxidizer; air- and water-reactive; poison; corrosive |
| Fluorosulfonic Acid | HSO_3F | 7789-21-1 | corrosive; air- and water-reactive |
| Formalin | CH_2O | 50-00-0 | toxic; corrosive; carcinogenic to humans |
| Formic Acid | HCOOH | 64-18-6 | flammable; corrosive |
| Gasoline | UNDEFINED | 8006-61-9 or 86290-81-5 | highly flammable; possibly carcinogenic to humans |
| Glutaraldehyde | $\text{OCH}(\text{CH}_2)_3\text{CHO}$ | 111-30-8 | water-reactive; toxic |

| Appendix B - Restricted Chemicals | | | |
|---|----------------------|------------|---|
| Name | Formula | CAS # | Hazard* |
| Gold Acetylide | C_2Au_2 | 70950-00-4 | explosive; shock sensitive; water reactive |
| Hematoxylin | $C_{16}H_{14}O_6$ | 517-28-2 | toxic |
| n-Heptane | $CH_3(CH_2)_5CH_3$ | 142-82-5 | highly flammable; toxic |
| Hexamethylene Diisocyanate (HDI) | $C_8H_{12}N_2O_2$ | 822-06-0 | water-reactive; toxic |
| Hexamethylenediamine (1, 6-Diaminohexane) | $H_2N(CH_2)_6NH_2$ | 124-09-4 | corrosive; toxic |
| n-Hexane | $CH_3(CH_2)_4CH_3$ | 110-54-3 | highly flammable; toxic |
| Hydriodic Acid | HI | 10034-85-2 | acutely toxic; corrosive |
| Hydrobromic Acid | HBr | 10035-10-6 | acutely toxic; water-reactive; corrosive |
| Hydrochloric Acid (Muriatic Acid) | HCl | 7647-01-0 | toxic; severely corrosive |
| Hydrogen Peroxide (30% or less) | H_2O_2 | 7722-84-1 | readily decomposes with almost anything; strong oxidizer; explosion hazard; corrosive |
| Hydroquinone (Benzene-1, 4-diol) | $C_6H_4(OH)_2$ | 123-31-9 | toxic |
| Hydroxylamine Hydrochloride | $NH_2OH \cdot HCl$ | 5470-11-1 | toxic; strong reducing agent |
| Iodine | I_2 | 7553-56-2 | poison; strong oxidizing agent |
| Iodine Monochloride (Chlorine Iodide) | ICl | 7790-99-0 | toxic; water-and air-reactive; strong oxidizing agent; corrosive |
| Iron (powder) | Fe | 7439-89-6 | metal dust may present a fire hazard and a health hazard |
| Isoamyl Alcohol (3-Methyl-1-butanol or Isopentyl Alcohol) | $(CH_3)_2CHCH_2CHOH$ | 123-51-3 | highly flammable; toxic |

| Appendix B - Restricted Chemicals | | | |
|--|--|------------|---|
| Name | Formula | CAS # | Hazard* |
| Isobutyl Alcohol | $(\text{CH}_3)_2\text{CHCH}_2\text{OH}$ | 78-83-1 | highly flammable; toxic |
| Isopropyl Alcohol | $(\text{CH}_3)_2\text{CHOH}$ | 67-63-0 | highly flammable; toxic; may form explosive peroxides |
| Kerosene | UNDEFINED | 8008-20-6 | highly flammable; toxic |
| Lead Nitrate | $\text{Pb}(\text{NO}_3)_2$ | 10099-74-8 | oxidizer; toxic; probably carcinogenic to humans |
| Lead Tetraoxide, (Red Lead Oxide) | Pb_3O_4 | 1314-41-6 | oxidizer; acutely toxic; probably carcinogenic to humans |
| Lithium Amide | LiNH_2 | 7782-89-0 | water-reactive; toxic; flammable; dangerous fire and explosion hazard |
| Lithium Bromide | LiBr | 7550-35-8 | acutely toxic |
| Lithium Ferrosilicon | Fe-Si-Li | 70399-13-2 | water-reactive; acutely toxic; highly flammable |
| Lithium Silicon | Li-Si | 68848-64-6 | water-and air-reactive; acutely toxic; strong reducing agent |
| Lithium Sulfate | $\text{Li}_2\text{SO}_4 \cdot \text{H}_2\text{O}$ | 10102-25-7 | toxic |
| Magnesium (ribbon) | Mg | 7439-95-4 | flammable solid; water-reactive |
| Magnesium Nitrate Hexahydrate | $\text{Mg}(\text{NO}_3)_2 \cdot 6\text{H}_2\text{O}$ | 13446-18-9 | oxidizer; toxic |
| Manganese Carbonate | MnCO_3 | 598-62-9 | toxic |
| Manganese Dioxide (Manganese Black; Manganese Oxide; Manganese Peroxide; Manganese Superoxide) | MnO_2 | 1313-13-9 | toxic |
| Manganese (II) Nitrate Hexahydrate (Manganous Nitrate Hexahydrate) | $\text{Mn}(\text{NO}_3)_2 \cdot 6\text{H}_2\text{O}$ | 10377-66-9 | strong oxidizer; toxic |
| Methyl Alcohol (Methanol) | CH_3OH | 67-56-1 | highly flammable; toxic |

| Appendix B - Restricted Chemicals | | | |
|--|--------------------------|------------|--|
| Name | Formula | CAS # | Hazard* |
| Methyl Aluminum Sesquibromide | $C_3H_9Al_2Br_3$ | 12263-85-3 | water-and air-reactive; toxic; dangerous fire and explosion hazard |
| Methyl Aluminum Sesquichloride | $C_3H_9Al_2Cl_3$ | 12542-85-7 | water-and air-reactive; toxic; dangerous fire and explosion hazard |
| Methyl Chloride (Chloromethane) | CH_3Cl | 74-87-3 | highly flammable; toxic |
| Naphthalene (Moth Balls, Moth Flakes) | $C_{10}H_8$ | 91-20-3 | possibly carcinogenic to humans; highly flammable |
| 1-Naphthol (alpha-Naphthol) | $C_{10}H_7OH$ | 90-15-3 | toxic |
| n-Butyllithium | C_4H_9Li | 109-72-8 | spontaneously flammable in air; toxic |
| Nickel (II) Nitrate Hexahydrate | $Ni(NO_3)_2 \cdot 6H_2O$ | 13478-00-7 | nickel compounds are carcinogenic to humans; oxidizer |
| Nickel (II) Sulfate Hexahydrate | $NiSO_4 \cdot 6H_2O$ | 10101-97-0 | nickel compounds are carcinogenic to humans |
| Nitric Acid | HNO_3 | 7697-37-2 | acutely toxic; strong oxidizer; water-and air-reactive |
| Nitrobenzene | $C_6H_5NO_2$ | 98-95-3 | possibly carcinogenic to humans; acutely toxic; flammable |
| Nitrogen | N_2 | 7727-37-9 | may displace oxygen, which could cause asphyxiation; compressed gas cylinder hazards; liquid nitrogen presents a low temperature hazards |
| Octyl Alcohol (Octanol or Caprylic Alcohol) | $CH_3(CH_2)_6CH_2OH$ | 111-87-5 | flammable; toxic |
| ortho-Dichlorobenzene (1, 2-Dichlorobenzene) | $C_6H_4Cl_2$ | 95-50-1 | flammable; toxic |
| Oxalic Acid, Dihydrate | $H_2C_2O_4 \cdot 2H_2O$ | 6153-56-6 | acutely toxic |

| Appendix B - Restricted Chemicals | | | |
|---|---|-------------|---|
| Name | Formula | CAS # | Hazard* |
| (Ethanedioic Acid) | | | |
| Oxygen | O ₂ | 7782-44-7 | strong oxidizer; fire and explosion hazard; compressed gas cylinder hazards |
| para-Dichlorobenzene (1, 4-Dichlorobenzene) | C ₆ H ₄ Cl ₂ | 106-46-7 | possibly carcinogenic to humans; flammable |
| Pentyl Alcohol (Amyl Alcohol or Pentanol) | CH ₃ (CH ₂) ₄ OH | 71-41-0 | highly flammable; toxic |
| Petroleum Ether (500 mL limit) | UNDEFINED | Unavailable | highly flammable; toxic |
| Phosphoric Acid | H ₃ PO ₄ | 7664-38-2 | toxic; corrosive |
| Phthalic Acid (1, 2-Benzenedicarboxylic Acid) | C ₆ H ₄ (COOH) ₂ | 88-99-3 | combustible; toxic |
| Polymethylene Polyphenyl Isocyanate (Polymeric Diphenylmethane Diisocyanate or MDI) | (C ₈ H ₅ NO) _n | 9016-87-9 | water reactive; toxic |
| Polyvinyl Alcohol | CH ₂ CH(OH) | 9002-89-5 | combustible; toxic |
| Potassium Bromate | KBrO ₃ | 7758-01-2 | possibly carcinogenic to humans |
| Potassium Chromate | K ₂ CrO ₄ | 7789-00-6 | chromium (VI) compounds are carcinogenic to humans; strong oxidizer; poison |
| Potassium Dichromate (Potassium Bichromate) | K ₂ Cr ₂ O ₇ | 7778-50-9 | chromium (VI) compounds are carcinogenic to humans; strong oxidizer; poison |
| Potassium Ferricyanide (Red Prussiate) | K ₃ Fe(CN) ₆ | 13746-66-2 | contact with acids liberates toxic gas |
| Potassium Ferrocyanide (Tetrapotassium Hexacyanoferrate or Yellow Prussiate) | K ₄ Fe(CN) ₆ ·3H ₂ O | 14459-95-1 | toxic; contact with acids liberates toxic gas |

| Appendix B - Restricted Chemicals | | | |
|--|---|------------|---|
| Name | Formula | CAS # | Hazard* |
| Potassium Hydroxide (Potash Lye) | KOH | 1310-58-3 | corrosive; toxic |
| Potassium Iodate | KIO ₃ | 7758-05-6 | oxidizer; toxic |
| Potassium Nitrate | KNO ₃ | 7757-79-1 | strong oxidizer |
| Potassium Permanganate | KMnO ₄ | 7722-64-7 | strong oxidizer; explodes on sudden heating |
| Potassium Persulfate | K ₂ S ₂ O ₈ | 7727-21-1 | strong oxidizer; toxic |
| Potassium Sulfide | K ₂ S | 1312-73-8 | pyrophoric; spontaneously combustible; strong reducing agent; acutely toxic |
| Propane | CH ₃ CH ₂ CH ₃ | 74-98-6 | highly flammable; compressed gas cylinder hazards; vaporizing liquid may cause frostbite; toxic; will displace oxygen, which may cause asphyxiation |
| Propionic Acid | C ₃ H ₆ O ₂ | 79-09-4 | corrosive; flammable; toxic |
| Propyl Alcohol (n-Propanol or Propanol) | C ₃ H ₈ O | 71-23-8 | highly flammable; toxic |
| Pyridine (Azine or Azabenzene) | C ₅ H ₅ N | 110-86-1 | highly flammable; toxic |
| Pyrosulfuryl Chloride (Sulfur Pentoxydichloride) | Cl ₂ O ₅ S ₂ | 7791-27-7 | water- and air-reactive; corrosive; toxic |
| Silver Nitrate | AgNO ₃ | 7761-88-8 | strong oxidizer; corrosive; toxic |
| Silver Sulfate | Ag ₂ SO ₄ | 10294-26-5 | toxic |
| Sodium Bisulfite | NaHSO ₃ | 7631-90-5 | strong reducing agent; corrosive; toxic |
| Sodium Chromate | Na ₂ CrO ₄ | 7775-11-3 | chromium (VI) compounds are carcinogenic to |

| Appendix B - Restricted Chemicals | | | |
|--|--|------------|--|
| Name | Formula | CAS # | Hazard* |
| | | | humans; strong oxidizer; poison |
| Sodium Cobaltinitrite (Sodium Hexanitrocobaltate) | $\text{Na}_3\text{Co}(\text{NO}_2)_6$ | 13600-98-1 | cobalt and cobalt compounds are possibly carcinogenic to humans; toxic |
| Sodium Dichromate Dihydrate | $\text{Na}_2\text{Cr}_2\text{O}_7 \cdot 2\text{H}_2\text{O}$ | 7789-12-0 | chromium (VI) compounds are carcinogenic to humans; strong oxidizer; poison |
| Sodium Fluoride | NaF | 7681-49-4 | corrosive; poison |
| Sodium Hydroxide (Lye) | NaOH | 1310-73-2 | water-reactive; corrosive; toxic |
| Sodium Hypochlorite | NaClO | 7681-52-9 | strong oxidizer; corrosive; toxic |
| Sodium Iodate | NaIO_3 | 7681-55-2 | strong oxidizer; toxic |
| Sodium Iodide | NaI | 7681-82-5 | toxic |
| Sodium Metabisulfite | $\text{Na}_2\text{S}_2\text{O}_5$ | 7681-57-4 | strong reducing agent; corrosive; toxic |
| Sodium Nitrate | NaNO_3 | 7631-99-4 | strong oxidizer; toxic |
| Sodium Nitrite | NaNO_2 | 7632-00-0 | strong oxidizer; poison |
| Sodium Phosphate Tribasic Dodecahydrate | $\text{Na}_3\text{PO}_4 \cdot 12\text{H}_2\text{O}$ | 10101-89-0 | corrosive; toxic |
| Sodium Potassium Alloy | K_2Na | 11135-81-2 | water-reactive; in contact with water releases flammable gases which may ignite spontaneously; corrosive |
| Sodium Sulfide Nonahydrate | $\text{Na}_2\text{S} \cdot 9\text{H}_2\text{O}$ | 1313-84-4 | explosive; flammable solid; strong reducing agent; corrosive; toxic |
| Sodium Thiocyanate | NaSCN | 540-72-7 | strong reducing agent; toxic |
| Sodium Thiosulfate Pentahydrate | $\text{Na}_2\text{S}_2\text{O}_3 \cdot 5\text{H}_2\text{O}$ | 10102-17-7 | toxic |

| Appendix B - Restricted Chemicals | | | |
|--|--|------------|--|
| Name | Formula | CAS # | Hazard* |
| Stannic Chloride | SnCl_4 | 7646-78-8 | air- and water-reactive; corrosive; toxic |
| Strontium Nitrate | $\text{Sr}(\text{NO}_3)_2$ | 10042-76-9 | strong oxidizer |
| Sulfur Chloride (Sulfur Dichloride) | Cl_2S_2 | 10025-67-9 | water-reactive; corrosive; toxic |
| Sulfur Pentafluoride | S_2F_{10} | 5714-22-7 | water-reactive; poison |
| Sulfuric Acid (<10%) | H_2SO_4 | 7664-93-9 | strong oxidizer; severely corrosive; water-reactive; toxic |
| Sulfuric Acid (>10%) (2.5 L limit) | H_2SO_4 | 7664-93-9 | strong oxidizer; severely corrosive; water-reactive; toxic |
| tert-Butyl Alcohol (t-Butanol or 1,1-Dimethyl Ethanol) | $(\text{CH}_3)_3\text{COH}$ | 75-65-0 | highly flammable; irritating vapor and liquid |
| Terpineol (Terpene Alcohol) | $\text{C}_{10}\text{H}_{17}\text{OH}$ | 98-55-5 | flammable; toxic |
| Thiophosphoryl Chloride | Cl_3SP | 3982-91-0 | air- and water-reactive; corrosive; toxic |
| Tin | Sn | 7440-31-5 | metal dust may present a fire hazard and a health hazard |
| Toluene (Methyl Benzene) | C_7H_8 | 108-88-3 | highly flammable; toxic |
| Toluene Diisocyanate (TDI) | $\text{C}_9\text{H}_6\text{N}_2\text{O}_2$ | 584-84-9 | water-reactive; acutely toxic |
| Trichloroethane-1,1,1 (Methyl Chloroform) | $\text{C}_2\text{H}_3\text{Cl}_3$ | 71-55-6 | poison; flammable |
| Trichloroethylene (Acetylene Trichloride) | C_2HCl_3 | 79-01-6 | carcinogenic to humans; poison; flammable |
| Triethanolamine | $\text{C}_6\text{H}_{15}\text{NO}_3$ | 102-71-6 | toxic |
| 2,2,4-Trimethylpentane | C_8H_{18} | 540-84-1 | highly flammable; toxic |
| Tri-n-Butylaluminum | $\text{C}_{12}\text{H}_{27}\text{Al}$ | 1116-70-7 | air- and water-reactive; strong reducing agent; |

| Appendix B - Restricted Chemicals | | | |
|--|--|------------|---|
| Name | Formula | CAS # | Hazard* |
| | | | pyrophoric; toxic |
| Trioctyl Aluminum | $(\text{CH}_3(\text{CH}_2)_7)_3\text{Al}$ | 1070-00-4 | water-reactive; acutely toxic; flammable |
| Triphenyltetrazolium Chloride (Red Tetrazolium or Vitastain) | $\text{C}_{19}\text{H}_{15}\text{N}_4\text{Cl}$ | 298-96-4 | toxic |
| Trisodium Phosphate (Sodium Phosphate) | Na_3PO_4 | 7601-54-9 | toxic |
| Tungsten | W | 7440-33-7 | Metal dust may present a fire hazard and a health hazard. |
| Turpentine | $\text{C}_{10}\text{H}_{16}$ | 8006-64-2 | Highly flammable; toxic |
| Vanadium Trichloride | VCl_3 | 7718-98-1 | Toxic; air- and water-reactive; corrosive |
| Xylene | C_8H_{10} | 1330-20-7 | Highly flammable; toxic by inhalation or absorption through skin. |
| Zinc (Powder) | Zn | 7440-66-6 | Strong reducing agent; water-reactive; pyrophoric; metal dust may present a fire hazard and a health hazard |
| Zinc Acetylide | | | shock sensitive; water-reactive |
| Zinc Nitrate Hexahydrate (500 g limit) | $\text{Zn}(\text{NO}_3)_2 \cdot 6\text{H}_2\text{O}$ | 10196-18-6 | Strong oxidizer |
| Zinc Phosphide | Zn_3P_2 | 1314-84-7 | Strong reducing agent; water reactive; toxic |

* The hazard information provided for the listed chemicals is not intended to address all safety concerns. Before attempting to work with any chemical, review and comply with information provided on the SDS.

Appendix B2 - Restricted Chemicals (Demonstration Use Only)

| Name | Formula | CAS # | Hazard* |
|--|--|--------------|--|
| Aluminum Chloride, Anhydrous (25 g limit) | AlCl_3 | 7446-70-0 | air-and water-reactive; fumes in moist air form toxic gas |
| Ammonium Dichromate (100 g limit) | $(\text{NH}_4)_2\text{Cr}_2\text{O}_7$ | 7789-09-5 | oxidizer; chromium (VI) compounds arecarcinogenic to humans |
| Ammonium Persulfate (100 g limit) | $(\text{NH}_4)_2\text{S}_2\text{O}_8$ | 7727-54-0 | strong oxidizer; explosion hazard |
| Antimony Metal (50 g limit) | Sb | 7440-36-0 | poison; combustible powder; strong reducing agent |
| Bromine (3 - 1 g ampules limit) | Br_2 | 7726-95-6 | strong oxidizer; reacts violently with organics; acutely toxic by inhalation and ingestion |
| Calcium Carbide (100 g limit) | CaC_2 | 75-20-7 | water-reactive; reacts violently with water to generate acetylene gas; serious fire risk |
| Chromium Oxide (Chromic Oxide) (20 g limit) | Cr_2O_3 | 1308-38-9 | strong oxidizer; poison; corrosive |
| Collodion (a solution of pyroxylin in ether and alcohol) (100 mL limit) | $\text{C}_{25}\text{H}_{33}\text{O}_{13}(\text{NO}_3)_7$ | 9004-70-0 | highly flammable |
| Cyclohexanone (100 mL limit) | $\text{C}_6\text{H}_{10}\text{O}$ | 108-94-1 | highly flammable; vapors may travel a considerable distance and ignite; may form explosive peroxides |
| Cyclohexene (100 mL limit) | C_6H_{10} | 110-83-8 | highly flammable; vapors may travel a considerable distance and ignite; may form explosive peroxides |

Appendix B2 - Restricted Chemicals (Demonstration Use Only)

| Name | Formula | CAS # | Hazard* |
|--|----------------|--------------|--|
| Cyclopentanone (100 mL limit) | C_5H_8O | 120-92-3 | highly flammable; vapors may travel a considerable distance and ignite; may form explosive peroxides |
| Diglyme (Diethylene Glycol Dimethyl Ether) (500 mL limit) | $(CH_3O)CH_2$ | 111-96-6 | combustible; oxidizes readily in air to form explosive peroxides |
| Dinitrophenylhydrazine (100 g limit) | $C_6H_6N_4O_4$ | 119-26-6 | flammable solid; explosive when dry |
| Hydrides, Borohydrides (e.g., aluminum borohydride, aluminum hydride, magnesium aluminum hydride, phosphorous hydride, sodium borohydride)(100 g limit) | Unavailable | | strong reducing agents; air-and water-reactive |
| Hydrogen (limited to lecture bottle of 4 cu. ft. or less) | H_2 | 13333-74-0 | flammable gas; burns with a pale blue, almost invisible flame; may displace oxygen, which could cause asphyxiation; compressed gas cylinder hazards |
| Lithium (20 g limit) | Li | 7439-93-2 | water-reactive; highly flammable solid; readily ignited by and reacts with many extinguishing agents |
| Magnesium (turnings) (100 g limit) | Mg | 7439-95-4 | water-reactive; flammable solid; strong reducing agent |

| Appendix B2 - Restricted Chemicals (Demonstration Use Only) | | | |
|---|--|------------|---|
| Name | Formula | CAS # | Hazard* |
| Methyl Isobutyl Ketone (4-Methyl-2-Pentanone or MIBK) (250 mL limit) | $\text{CH}_3\text{COCH}_2\text{CH}(\text{CH}_3)_2$ | 108-10-1 | highly flammable; vapors may travel a considerable distance and ignite; may form explosive peroxides; possibly carcinogenic to humans |
| Pentane (100 mL limit) | C_5H_{12} | 109-66-0 | highly flammable |
| Phosphorus, Red (Amorphous) (50 g limit) | P | 7723-14-0 | water-reactive; flammable solid; can change to white phosphorus if heated; strong reducing agent; acutely toxic |
| Potassium (1-container with 5 demonstration-size pieces) | K | 7440-09-7 | violently water-reactive; may form explosive peroxides; combustible; flammable solid; ignites when exposed to water or moisture; may ignite spontaneously in air; |
| Potassium Chlorate (100 g limit) | KClO_3 | 3811-04-9 | explosive; strong oxidizer |
| Silver Oxide (100 g limit) | Ag_2O | 20667-12-3 | strong oxidizer; contact with other material may cause fire |
| Sodium (100 g limit) | Na | 7440-23-5 | violently water-reactive; strong reducing agent; flammable solid; may ignite spontaneously in air |
| Wright's Stain (Hg Containing) (100 mL limit) | UNDEFINED | 68988-92-1 | contains mercury; poison; acutely toxic |

* The hazard information provided for the listed chemicals is not intended to address all safety concerns. Before attempting to work with any chemical, review and comply with information provided on the SDS.

Attachment D

Safety Equipment Testing Log

Equipment Testing Documentation Log

For _____

| Date | Room | Equipment | Condition of Equipment | Initials of Tester |
|------|------|--------------------------|------------------------|--------------------|
| | | Eye Wash Station | | |
| | | Safety Showers | | |
| | | Fume Hood | | |
| | | GFCI | | |
| | | Master Gas Valve | | |
| | | Electrical Shut Off | | |
| | | Fire Extinguisher | | |
| | | Fire Blanket | | |
| | | Eye Ware Sanitizer | | |
| | | Spill Kit | | |
| | | Emergency Posting Info | | |
| | | PSD Science Storage Plan | | |

* Use one sheet for each room.

Attachment E

Sink Disposal Guidelines

ACID NEUTRALIZATION TANK

SINK DISPOSAL GUIDELINES

Hazardous wastes cannot be discarded down the drain. Collect hazardous wastes in compatible containers. Properly label the container. Call the Environmental Compliance Branch if you have any waste disposal questions. (Ext. 28682)

The following categories of waste **CANNOT** be sink disposed:

1. **FOODSTUFFS** or provisions that could spoil or rot.
2. **FLAMMABLE SOLVENTS**
Alcohols, alkane aromatics, ketone, xylene, toluene, ether, acetone, acetonitrile, pyridine (aqueous alcohol solutions of less than 20% concentration may be sink disposed, collect higher concentrations for disposal as needed.)
3. **HALOGENATED SOLVENTS**
Methylene chloride, chloroform, carbon tetrachloride, trichloroethane, freons and haloethanes.
4. **TOXIC CHEMICALS AND SOLVENTS**
Acrylamide monomer, phenol, formamide, cyanides, sulfides, carcinogens and mutagens.
5. **HEAVY METALS**
Arsenic, barium, cadmium, chromium, copper, lead, mercury, selenium, silver, zinc, and other metals.
6. **NON-WATER SOLUBLE WASTES**
Vacuum pump oil, mineral oil, kerosene, gels and solid wastes.
7. **INFECTIOUS OR BIO HAZARDOUS WASTES**
Human tissue, lab specimens, infectious agents or pathogens
(properly disinfected liquid wastes are acceptable for sink disposal)
8. **RADIOACTIVE MATERIALS**
Consult with the Environmental Compliance Branch (303-367-3000 ext. 28685) before disposing of any radioactive waste material.

Appendix E: Recommended Procedures for Chemical Storage

Classification of Chemicals

Caustic or Corrosive Chemicals

These chemicals can be found in three different states:

- *Corrosive Liquids* – include mineral acids, organic solvents, organic acids and solutions of strong bases. These liquids comprise the most important category of corrosive substances because this form is most commonly used and involve in external injuries. The more concentrated the substance and the longer the contact, the faster and more intense the damage.
- *Corrosive Solids* – include caustic sulfides and hydroxides of elements such as sodium and potassium and their salts. These are probably the least hazardous and their effects are dependent upon the amount of moisture in the skin, the degree of solubility and duration of contact. These solids can cause serious injury as a result of the amount of heat produced when they come in contact with a liquid.
- *Corrosive Gases* – include ammonia, acetic acid, and nitric acid. These gases present the most serious health hazard because they are easily absorbed through the skin, or by inhalation. They can produce primary and secondary effects depending upon the concentration and time of exposure.

Storage and Handling of Caustic or Corrosive Chemicals:

- Store corrosives in an appropriate corrosive cabinet.
- Keep certain items in the original shipping package, i.e. acids and bases in the shipping Styrofoam.
- Wear a chemical splash face shield when handling corrosive materials.
- Store corrosive materials as near the floor as possible to minimize damage of bottles falling from the shelves.
- Purchase only small amounts – less than 2.5 Liters when possible.
- Store Nitric Acid away from other acids.

Flammable Liquids

Flammable liquids are materials that will easily ignite, burn, or serve as fuel for a fire. Flash point is defined as the temperature at which sufficient vapors are produced to form an ignitable mixture with the air near the surface of the liquid or within the container used. There are Class I, II and III of flammable materials. These are further divided as follows:

- Class IA - Flash point < 73°F (22.7°C) and boiling point >100°F (37.8 C).
- Class IB - Flash point <73°F (22.7°C) and boiling point at or >100°F (37.8 C).
- Class II – Flash point >100°F (37.8 C) and < 140°F (60°C).
- Class IIIA – Flash point >140°F (60°C) and < 200°F (93.3°C).
- Class IIIB – Flash point > 200°F (93.3°C).

Storage and Handling of Flammable Chemicals:

- Store all flammables in a dedicated flammables cabinet.
- Try to keep cool, between 55°F and 70°F at all times.
- Store away from sources of ignition.
- Store away from all oxidizers.
- Never store flammables in a refrigerator unless the refrigerator is explosion-proof.
- Avoid storing any chemicals, especially flammable materials, in direct sunlight.
- Chemicals must be transported in an appropriately designed carrier.

Compressed Gas

Compressed gases are any materials or mixtures in containers having an absolute pressure in excess of 40 psi at 70°F (20°C) or in excess of 104 psi at 130°F (54.5°C). Handling of compressed gases may be considered more

hazardous than the handling of liquid and solid materials because of the following properties: high pressure, ease of diffusion, low ignition points for flammable gases, low boiling points, and in some cases lack of visual and/or odor detection of hazardous gases. Because of these properties, failure to follow proper procedures can result in both personal and property damage.

Storage and Handling of Compressed Gases:

- Compressed gases should be handled as high energy sources, and therefore, as potential explosives.
- Avoid exposure of cylinders to heat. Do not store gas cylinders in direct sunlight.
- Propane is not allowed to be stored inside a school.
- Always protect the cylinder valve stem.
- Never lubricate, modify, force or tamper with a cylinder valve.
- Do not extinguish a flame involving a combustible gas until the gas is shut off, otherwise it can ignite, possibly causing an explosion.
- Gas cylinders must be secured in place. They must be protected to prevent valve damage which may be caused by falling.
- Medical and reserve oxygen tanks shall be stored in the health clinic.

Other General Storage and Handling Guidelines:

- Carcinogens, mutagens and teratogens (including pesticides) are not recommended for use in school laboratories.
- Poisons must be handled with caution. Skin contact should be avoided. Before using a chemical labeled "POISON," read the precautions listed on the container label and MSDS. Know antidotes and emergency treatment.
- Oxidizers should be stored together and separate from other chemicals. Schools that have more than 10 pounds of oxidizers shall store them in an approved cabinet. Ammonium Nitrate must be stored in a designated cabinet and only 500-grams is allowed at one time per school.

Attachment F

Miscellaneous Items

Suggested Shelf Storage Pattern – Inorganic

Suggested Shelf Storage Pattern – Organic

[Chemical Disposal Form](#)

SUGGESTED SHELF STORAGE PATTERN—INORGANIC

| | |
|--|---|
| <p style="text-align: center;">INORGANIC #10 Sulfur, Phosphorus, Arsenic, Phosphorus Pentoxide</p> | <p style="text-align: center;">INORGANIC #7 Arsenates, Cyanides, Cyanates (Store away from any water.)</p> |
| <p style="text-align: center;">INORGANIC #2 Halides, Sulfates, Sulfites, Thiosulfates, Phosphates, Halogens, Acetates, Oxalates, Phthalates, Oxides</p> | <p style="text-align: center;">INORGANIC #5 Sulfides, Selenides, Phosphides, Carbides, Nitrides</p> |
| <p style="text-align: center;">INORGANIC #3 Amides, Nitrates (not Ammonium Nitrate), Nitrites, Azides (Store Ammonium Nitrate away from all other substances—)</p> | <p style="text-align: center;">INORGANIC #8 Borates, Chromates, Manganates, Permanganates, Molybdates, Vanadates</p> |
| <p style="text-align: center;">INORGANIC #1 Metals & Hydrides (Store away from any water.) (Store flammable solids in flammables cabinet.)</p> | <p style="text-align: center;">INORGANIC #6 Chlorates, Bromates, Iodates, Chlorites, Hypochlorites, Perchlorates, Perchloric Acid, Peroxides.</p> |
| <p style="text-align: center;">INORGANIC #4 Hydroxides, Oxides, Silicates, Carbonates, Carbon</p> | <p style="text-align: center;">MISCELLANEOUS</p> |

SUGGESTED SHELF STORAGE PATTERN—ORGANIC

| |
|---|
| <p>ORGANIC #2 Alcohols, Glycols, Sugars, Amines, Amides, Imines, Imides (Store flammables in a dedicated cabinet.)</p> |
| <p>ORGANIC #3 Hydrocarbons, Oils, Esters, Aldehydes (Store flammables in a dedicated cabinet.)</p> |
| <p>ORGANIC #4 Ethers, Ketones, Ketenes, Halogenated Hydrocarbons, Ethylene Oxide</p> |
| <p>ORGANIC #5 Epoxy Compounds, Isocyanates</p> |
| <p>ORGANIC #7 Sulfides, Polysulfides, etc.</p> |