



# School Facilities Hazardous Materials Guidelines

From the Wyoming Department of Education and the Department of Environmental Quality



## **Wyoming Department of Education**

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# Table of Contents

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Introduction.....	1
Section I. Definition of Hazardous Waste.....	2
Section II. Purchasing Procedures.....	2
Section III. On-Site Chemical Management.....	3
Section IV. Chemical Storage.....	5
Section V. Chemical Inventory Procedures.....	6
Section VI. Hazardous Material Disposal Options.....	7
Section VII. Accident Prevention.....	8
Section VIII. Non-hazardous Disposal.....	9
Online References.....	9
Appendix A.....	10

## Introduction

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This seventh edition of the Wyoming Hazardous Materials Guidelines updates terminology, references, contacts, and web links printed in the 5th edition sent out in 2015. It fills, in part, the charge the department has regarding school safety and can serve as a resource for the proper and safe storage and disposal of toxic chemicals and other hazardous substances as required per W.S. 21-2-202 (a) (xxii). Contributions were made by the Department of Environmental Quality and the University of Wyoming.

These guidelines also serve to reinforce W.S. 21-3-110(a)(xxii), which requires the board of trustees in each district to, "...implement standards for the storage and disposal of toxic chemicals and other hazardous substances used by schools within the district for educational programs..."

In this document, the term "chemicals" is also used to cover over-the-counter substances such as lubricants, Isopropyl Alcohol, etc. The term "corrosive" can refer to either acids or bases.

It is necessary that every science/shop teacher and lab assistant be knowledgeable with the [chemical safety information](#), the [reproductive hazards](#) associated with the chemicals, and the chemicals that are associated with [carcinogenic effects](#) found on the University of Wyoming website.

The WDE strongly encourages districts to coordinate preparedness activities with local emergency planning committees.

*Note: These guidelines are not designed to answer every question regarding chemical or hazardous materials. Please be aware that websites and resources can change frequently. If you have an issue that is not addressed - or partly addressed - in these guidelines, please access additional resources including the Department of Environmental Quality at [deq.wyoming.gov](http://deq.wyoming.gov) or the [University of Wyoming](#).*

## Section I. Definition of Hazardous Waste

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A. One definition, as used in science, can be found on [dictionary.com](https://www.dictionary.com).

Hazardous Waste is a used or discarded material that can damage the environment and be harmful to health. Hazardous wastes include heavy metals and toxic chemicals used in industrial products and processes as well as infectious medical wastes and radioactive materials such as spent nuclear fuel rods.

B. By definition, if a laboratory chemical or material is determined to be needed, it is not a waste – even though it may still exhibit hazardous properties (corrosive, caustic, acidic, etc.). A harmful chemical that is no longer determined to be necessary to a course curriculum or has exceeded its shelf life can be considered a hazardous waste. This more narrow, regulatory definition under the Resource Conservation and Recovery Act (RCRA) is laid out in the regulations at 40 CFR 261.10 through 261.34.

## Section II. Purchasing Procedures

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A. Hazardous laboratory chemicals should be acquired in the smallest units reasonably possible. This will:

1. Provide for a minimal amount of potentially dangerous material to be stored in the school.
2. Be less expensive in the long run because there are no disposal costs and no changes in physical characteristics due to materials exceeding their shelf life.

B. All shipments shall have Safety Data Sheets (SDS), formerly known as Material Safety Data Sheets (MSDS), with each new chemical. Do not accept a shipment without these. For older chemicals, an SDS may be acquired from the manufacturer, supplier, or applicable web site. It is important that emergency services in your area have copies of all the SDS that are used in your school's curriculum.

C. All SDS on file must be no older than three years. User copies may be electronic if hard copies exist as a backup. Electronic copies alone would not suffice if power or computer access was down in an emergency.

## Section III. On-Site Chemical Management

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A. A chemical is considered hazardous anytime it carries the label of poisonous, dangerous, caution, flammable, or similar message. A school with laboratory chemicals is expected to utilize the SDS as a part of an overall chemical management plan. According to the [GHS Answer Center](#), the SDS sheets should list identifying information under the following basic headings:

1. Identification.
2. Hazard(s) Identification.
3. Composition/Information on Ingredients.
4. First Aid Measures.
5. Fire-Fighting Measures.
6. Accidental Release Measures.
7. Handling and Storage.
8. Exposure Controls/Personal Protection.
9. Physical and Chemical Properties.
10. Stability and Reactivity.
11. Toxicological Information.
12. Ecological Information.
13. Disposal Considerations.
14. Transport Information.
15. Regulatory Information.
16. Other Information.

B. Do not use chemicals that have exceeded the manufacturer's recommended shelf life or expiration date.

C. It is important to have an accurate chemical tracking system to make ordering, storing, dispensing, using, and disposing of hazardous chemicals more reliable and to prevent the buildup of unusable or excess chemicals.

D. Each school should have a [chemical spill response plan](#). One is accessible through the American Chemical Society. Basic procedures include:

1. Prevent the spread of dust and vapors.
2. Neutralize acids and bases if possible.
3. Control the spread of the liquid.
4. Absorb the liquid.
5. Collect and contain the cleanup residues.
6. Dispose of the wastes.
7. Decontaminate the area and affected equipment.

To maximize the efficiency of a spill response, it is a good idea to have the following elements and procedures set up ahead of time before an accident:

1. Evacuation plan to immediately get students and non-essential personnel out of danger.
2. Contact person.
3. Decision tree to determine incidental versus emergency spills (i.e. when to call for outside help).
4. Emergency response numbers on nearby telephone.
5. Location of spill equipment.
6. Map of chemical storage area.
7. List of who has been trained and authorized for chemical cleanup.
8. Instructions for Mercury spills (contact the DEQ for up-to-date recommendations concerning these procedures).

E. Non-hazardous liquid waste may be dried down – hazardous waste may not. As an example, latex paint may be dried out and placed in the regular trash to facilitate disposal. On the other hand, a substance such as picric acid is highly volatile when dried. Extreme care should be exercised to know what substances pose a danger when dried out.

F. The EPA has useful information regarding waste disposal on their [website](#).

In general, best practices for disposal include containers that are:

1. In good condition and not leaking.
2. Kept closed, except when adding or removing waste.
3. Labeled to identify what they contain.
4. Labeled to identify that the content is a hazardous or non-hazardous waste.
5. Stored only with compatible wastes.
6. Stored inside and protected from freezing, but not in the classroom.
7. Not mixed among virgin stock chemicals.

G. Avoid mixing hazardous and non-hazardous wastes.

H. For the safety of first responders, the front office should always have a current copy of the SDS of school chemicals. Also, chemistry teachers are advised to let the front office know when they are doing experiments with flammable or reactive chemicals.

## Section IV. Chemical Storage

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- A. The chemical storage area in a school should be separate and secured from other areas and should be off limits to students and shall comply with the latest available IFC and IBC codes.
- B. Shelving sections should be secure and equipped to prevent items from rolling off the shelves.
- C. Cabinets shall be utilized for their specific intended use.
- D. Other basic storage-related best practices:
  1. All cabinets, containers, or shelving shall be labeled to identify hazardous materials utilizing the National Fire Protection Association (NFPA) 704 marking system.
  2. Details regarding the four color-coded divisions can be found on [wikipedia](#).
  3. Acids and flammable materials should each have their own special storage cabinet.
  4. Oxidizers should be stored away from flammables.
  5. Each storage area shall be equipped with smoke detectors.
  6. Spill control materials (neutralizing agents, dry sand, and Solusorb or equivalent) shall be readily available.
  7. Storage areas shall be free from possible ignition sources.
  8. Emergency telephone numbers shall be posted in the chemical storage area, including the "Poison Control Network" number (1-800-222-1222) and a nearby/regional first responder number. A telephone and emergency first-aid supplies should also be located close by.
  9. Peroxide-forming chemicals should be stored in an airtight container in a cool, dark, dry place and be properly disposed of 12 months after opening.
  10. Chemicals should be divided into their chemically compatible families and then stored alphabetically within that compatible family.

*Note: The American National Standards Institute (ANSI) Standard Z358.1-2014 is generally used as a guide regarding emergency eyewash and emergency shower equipment.*



## Section V. Chemical Inventory Procedures

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A number of inventory programs are available to assist with the work.

See [Environmental Health Safety Freeware](#), [Quartz, Inc.](#), the [Oklahoma Department of Environmental Quality](#), etc.

### A. Prior to the inventory:

1. Have a qualified chemical expert present during all planning and operational aspects of the inventory. Never perform a chemical inventory alone.
2. Never involve students in the inventory. Conduct the inventory at a time when the fewest students are in the building.
3. Advise emergency personnel (fire department and police department) prior to performing a chemical inventory.
4. Have a sound understanding of all safety procedures before starting.

### B. Performing a chemical inventory:

1. Avoid touching or moving containers that may contain shock sensitive chemicals. Old chemicals may have grown unstable. There are many chemicals that lose stability with age and become explosive if suddenly moved or jarred. If questions exist about the shock sensitivity of a particular material, consult with a chemical expert or call the fire department, the University of Wyoming, or the DEQ for help.
2. Confirm the presence of an SDS for each chemical.
3. A staff person should record for each chemical:
  - a. Date of purchase and recommended shelf life.
  - b. Date of last inventory inspection.
  - c. Quantity on hand at the time of the last inventory inspection.
  - d. Current quantity or amount of material (include units).
  - e. Size of container.
  - f. Type of container (metal, plastic, glass, gas cylinder, etc.).
  - g. Assigned storage space.
4. Note key characteristics where appropriate, i.e. percent of solid versus liquid, presence of crystals on lid or inside bottle, presence of and percent of immersion oil covering metal salts, presence of paraffin coating around lid, unexpected viscosity, unexpected content color, etc.
5. Decide what must be disposed:
  - a. Determine the hazardous characteristics and storage requirements for each chemical.
  - b. Identify all chemicals that are unneeded or have an expired shelf life. See what chemicals are not required by the current curriculum.

- c. Identify all chemicals that are unstable, shock sensitive, explosive, highly toxic, or carcinogenic.
  - d. Utilize district or community resources as available to properly remove the chemicals from the school campus. If necessary, contact the DEQ for waste storage and disposal requirements.
  - e. If a hazardous chemical is no longer of use to a particular school or district; is stable, non-contaminated and not exceeding any expiration date, efforts should be made to contact other schools which may be able to use the chemical in question. This avoids disposal costs, purchase costs for receiving entity and yields waste minimization/pollution prevention (WM/P2) benefits connected to manufacture and distribution of the chemical.
6. If hazardous chemicals become missing:
- a. Double check your results.
  - b. If possible, check with previous records to establish the timeframe the chemicals left the storage area.
  - c. Ensure all applicable keys are accounted for.
  - d. Contact your school principal and district superintendent.
  - e. Contact your local police.

## Section VI. Hazardous Material Disposal Options

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- A. The district may remove hazardous material through a licensed service provider.
- B. Some communities provide one-day collection events where “hard to dispose of” materials can be taken on an infrequent basis. Contact your local city government for information. This will not necessarily be available in all communities.
- C. At this time, there are four permanent commercial hazardous waste collection facilities in the state. They are:
  - 1. [Campbell County](#) | 307-682-1153
  - 2. [City of Casper](#) | 307-235-8246
  - 3. [City of Cheyenne](#) | 307-637-6440 ext. 0
  - 4. [Teton County](#) | 307-733-7678Rules regarding what hazardous materials are received vary from site to site and are subject to change without notice. Some may have restrictions on accepting hazardous material from only adjacent counties.
- D. Federal grants are sometimes available which are aimed at funding the cleanup of toxic waste.
- E. The Regulated Materials Management Center (307-766-3698 or 307-766-3697) at the University of Wyoming can give advice and list vendors.
- F. Contact the manufacturer or the Disposal Consideration Section listed on the SDS for information regarding disposal.

## Section VII. Accident Prevention

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A. All districts are expected to take necessary steps to prevent accidents. This may include, but not be limited to:

1. Ensuring that applicable teachers, instructors, and aids are trained in lab safety procedures.
2. Ensuring that students are trained in lab safety and that lab participants know that they are responsible for their own actions and for following all applicable safety procedures.
3. Using as little flammable or ignitable liquid as possible in a lab—and only when absolutely necessary.

*Note: If a flammable or ignitable liquid must be used, make absolutely certain that there is qualified supervision present and that there is an adequate airflow to exhaust combustible fumes to ensure they do not collect in the experiment area. Verify that applicable hoods, fans, or other air moving means are available and in good working order.*

B. Alternative materials can sometimes be substituted in the place of hazardous chemicals while teaching the same principle.

C. Videos are sometimes available via the web or from external providers. They can also be produced in-house depicting a given experiment.

D. In certain situations involving highly flammable fluids or extraordinarily corrosive chemicals, a detailed walk-through may be conducted in place of direct student involvement.

E. Micro-scale techniques can often be utilized.

F. A “restricted use” policy can be imposed regarding select chemicals.

G. The chemicals proven most dangerous can be removed from the school entirely.

H. It is critical that the staff involved with the use of chemicals keep informed of how some chemicals become very dangerous when stored for long periods of time. One example of a resource that highlights accidents that can be avoided is the article [Management of time sensitive chemicals \(I\): Misconceptions leading to incidents](#).

Following shelf life or expiration date expectations will drastically lower this danger.

## Section VIII. Non-Hazardous Disposal

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- A. For questions regarding materials that may be safely disposed through standard means, contact your nearest waste-water treatment plant or the [DEQ's Solid and Hazardous Waste Division](#) at 307-777-7752 or 307-777-7937, Press 6.
- B. Liquid chemicals in any form are prohibited from being disposed into state landfills.

## On-Line References

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There are several web sites that promote or connect to specifics related to hazardous materials and lab safety:

[Labsafety.org](#)

[Flinn Scientific](#)

[The University of Wyoming](#)

[U.S. Chemical Storage](#)

[Wikibooks Chemical Information Sources](#)

[Chemical Safety](#)

[The Environmental Protection Agency](#)

[City of Casper](#)

[City of Cheyenne](#)

[City of Teton](#)

[EPA Resource Guide for School Administrators](#)

## Appendix A

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The [University of Wyoming website](#) can be used to locate an SDS if one is not available from the manufacturer or supplier.

A school environment generating greater than 2.2 pounds per month of any P-listed chemical (see the Department of Environmental Quality's reference for a [list of P-chemicals](#)) is classified as a Large Quantity Hazardous Waste Generator (LQG), and is therefore subject to the LQG Wyoming hazardous waste generator requirements. These LQG requirements can be found on the [Department of Environmental Quality website](#).

The 2016 Emergency Response Guidebook can be used for quick chemical property identification and hazards review. It is divided into four sections. A video presentation regarding the basics of using the guidebook is available on [YouTube](#).

Flinn Scientific has sample [fire safety inspection checklist](#) and list of [forty-five ideas for a safe chemistry laboratory](#).

An eyewash station must be located within 10 seconds of hazardous areas. See the [Eyewash Standard Guide](#).