Hazardous Materials Management in K-12 Schools

Hazardous Communications Plan

Schools are ***required*** to have a written Hazardous Communication Plan. This plan will provide your school with a clear path to managing, storing, and disposing of hazardous materials.

For more information or assistance in writing a plan see **Resource 3**.

What is hazardous waste?

Hazardous waste is any unwanted leftover substance that is toxic, ignitable, reactive, and/or corrosive, or is listed as hazardous in the Vermont Hazardous Waste Management Regulations. Whether or not it has been used, diluted, or soaked into rags — it requires special handling. **Resources 4 & 5**

You are required to follow proper protocols in handling, storage, and disposal of such materials as hazardous waste. It can not be poured down the drain or disposed of as trash.

How to tell if a material is hazardous

Read the label. If the label contains any of the following words, then the material cannot be discarded as regular trash:

Flammable: Easily catches fire, with a flashpoint of less than 140º F. *Examples:* nail polish remover, paint remover

Reactive: Explosive or unstable, reacts with water or shock. *Examples:* welding materials, solid sodium

Corrosive: Easily corrodes materials or human tissue, very acidic or alkaline (pH <2 or >12.5). *Examples:* muriatic acid, lye, sodium hydroxide.

Toxic: Can cause local or systemic health damage and may result in adverse health effects, such as asphyxiation, poisoning, cancer, genetic issues, or damage to a fetus. *Examples:* containing cadmium, chromium, lead, mercury or pesticides

STILL NOT SURE? RESOURCES 3 & 5 CAN HELP!

Storage of hazardous materials

Each hazardous product has its own characteristics and storage requirements; read the Safety Data Sheets (SDS) to ensure safe storage. Below are some general storage tips.

Store hazardous products in a protected and locked location with a warning label on door.

Organize chemicals by compatibility, not alphabetically making sure materials are compatible with storage container.

Label all containers, shelves, and cabinets.

Restrict access to storage space; do NOT use storage area as a prep area or allow students entry.

Do not store chemicals on the floor, or above eye level.

Ventilate storage areas adequately.

Secure gas tanks and cylinders, vertically, with a chain.

Ensure appropriate fire extinguishers are immediately accessible.

Disposal of hazardous waste

Determine disposal options. Hazardous waste must be disposed of through well managed channels with highly trained personnel who understand the various classifications of hazardous materials.

Call CSWD's Environmental Depot to make an appointment to drop off your materials. **Resource 2**

Hire an independent company certified to handle hazardous waste for transport and disposal.

Call the Environmental Assistance Office for help in making a hazardous waste determination and to review your disposal options. **Resources 3 & 5**

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Examples of Common Hazardous Materials

Area	Materials
Garage	Antifreeze, lead-acid batteries, auto body filler, brake fluid, gasoline, grease, motor oil, oil filters, solvents, transmission fluid, wax.
Science labs	Flammable liquids (acetone), oxidizers (bleach), corrosive materials (acids and bases), reactives (sodium metal), toxic chemicals (cyanides), mercury thermometers.
Custodial & Maintenance	**CLEANING SUPPLIES:** Ammonia, chlorine bleach, drain openers, tile cleaners, strippers, varnish, petroleum based finishers **MAINTENANCE SUPPLIES:** Glues, paint & thinner, roofing tar, stains, ballasts and capacitors, fluorescent light bulbs , thermometers and thermostats. **GROUNDSKEEPING:** Fertilizers, herbicides, insecticides, poisons.
Art & Woodworking	Photographic chemicals, some acrylic paints, paint thinners, wood stains, glues/adhesives, spray fixatives, oil-based paints, petroleum-based inks.
Cosmetology	Hair dyes, nail polish & remover, hair spray, hair gel, certain lipsticks.
General	Batteries*, fluorescent light bulbs, thermometers, electronics.

Single use (""primary"") batteries are not hazardous but they are recyclable at various locations. **Check www.call2recycle.org/locator for recycling locations near your facility.*

Resources

1 CSWD School Outreach Coordinator
No-cost assistance educating staff and students in reducing and disposing of hazardous materials
(802) 872-8100 ext. 211 • schools@cswd.net

2 CSWD Environmental Depot
The safe place for hazardous waste
(802) 865-4663 for appointment • cswd.net/hazardous-waste

3 Vermont DEC Environmental Assistance Office (EAO)
Free assistance with chemical inventory, storage and disposal, lab safety, and Chemical Hygiene Plan
(800) 974-9559 • www.dec.vermont.gov/environmental-assistance

4 Vermont hazardous waste management regulations
Regulations and statutes for managing hazardous materials in Vermont.
www.dec.vermont.gov/waste-management/hazardous/regulations

5 Hazardous Determination Fact Sheet
Any organization that generates waste must determine whether that waste is classified as hazardous and needs proper disposal protocols. This fact sheet can help guide you through the classification process.
www.dec.vermont.gov/waste-management/hazardous/resources/environmental-fact-sheets

6 Vermont Environmentally Preferable Purchasing Program (EPP)
Directs buying choices toward products that are less harmful to the environment and safer for human health.
https://bgs.vermont.gov/purchasing-contracting/contract-info/current

7 Hazardous Waste Program, King County, Washington
Sample workshops and lesson plans on hazardous waste, from a leader in materials management.
www.hazwastehelp.org/educators/index.aspx

8 Facilities & Maintenance Directors Association (FMDA)
A services and supplies buying group for school facilities.
Marty Spalding: (802) 864-8453 or mspauldi@bsdvt.org

9 ""Less is Better: A guide to minimizing waste in laboratories""
American Chemical Society 2002.
https://www.acs.org/content/acs/en/about/governance/committees/chemical-safety/publications-resources.html

10 Partnership to Reduce Mercury in Schools
New York State Dept. of health
www.health.ny.gov/environmental/chemicals/mercury/schools

11 Integrated pest management for schools
www.epa.gov/ipm/epas-approach-integrated-pest-management-schools

12 Transportation of Hazardous Materials
https://vtrans.vermont.gov/operations/technical-services/environmental/hazardous-materials

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Save Money, Lives and the Environment

Schools should strive not to generate hazardous waste in the first place by reducing or eliminating as many of their waste streams as possible. If a school is not producing hazardous waste, they can avoid disposal costs, potential spill cleanups, potential health and safety hazards, and record keeping requirements. Here are some tips on greening-up different areas of your school.

Schoolwide

- Replace mercury containing devices with updated versions that don't contain hazardous materials. ***Examples:*** thermostats, ballasts, thermometers, blood pressure devices, and elemental mercury in nurse's offices, gymnasiums, and science, art, and boiler rooms.
- Student & staff education

Resources 1, 7 & 10

Maintenance

Integrated Pest Management

- Make structural repairs to prevent pests from getting into a building
- Use baits and traps as needed
- Improve sanitation practices
- Provide proper receptacles and limit food and drink to designated areas.

If pesticides are needed:

- Use the least-toxic chemical controls that will be effective.
- Hire a licensed pest-control professional to apply pesticides.
- Apply when students are not present and on days preceding weekends or holidays when the fewest students are present.

Post signage to restrict use of pesticide treated areas.

Resource 11

Classrooms

Purchase strategies

- Order only what you will use within a school year.
- Using powders to mix your own solutions can cost less and last longer.
- Don't be conned by "economy size" quantities of chemicals; if the chemicals don't get used, the cost of disposal exceeds the cost of smaller quantities that are actually used.

Substitute less-toxic/non-toxic for hazardous materials

- Acid-base experiments can be conducted using vinegar and ammonia instead of conventional acids and bases.
- Use water-soluble paints instead of oil-based paints.

Scale down experiments/projects

- Work in groups instead of partners or solo.
- Model conservation of materials and other resources like electricity.

Reuse and recycle products when able

- Design closed-loop experiments where the product of one experiment becomes the reactant for the next.

Resource 9

Custodial

Green Cleaning

- Use non-toxic or less-toxic cleaning products or no products at all. Take inventory of what you have then order only what you will use.
- Evaluate contracts with suppliers and cleaning services to ensure that they are following Vermont law (Title 18: Chapter 39: Cleaning Products In Schools).
- Require vendors who provide cleaning products or services to provide and use only environmentally preferable cleaning products, and provide free training to users; per Vermont law, cited above.
- Schedule time and frequency of cleaning to limit exposure.
- Properly manage and dispose of outdated, unknown, and unneeded chemicals.

Resources 6 & 8

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Green cleaning success in local schools

Essex High School and Technical Center

"Using water, various scrub pads, and a buffer machine, the custodians are able to strip the heavily traveled floors and restore them to near newness without touching any harsh chemicals, such as strippers. "Big thing is no one is falling down or slipping on stripper which is very slippery," says property services manager Dave R. "By eliminating chemicals you save a step."

Clean floors the chem-free way!

1. Flood floor with water only and buff with the appropriate pad:
   - General cleaning: blue 3M 5300 pad
   - Stripping: Scotch Brite brown 20" pad
   - Deep cleaning: Black 3M 7200 pad
2. Vacuum up dirty water or use an auto scrubber and skip step 3.
3. Mop floor with clean water, then vacuum it up.
4. Let the floor dry.
5. Wax floor with 2 - 3 coats if using blue and black pads. If using brown pads, apply 5 coats.

— A big thanks to Essex High School & Technical Center for sharing this tip!

Brewster Pierce Memorial School

Head custodian Sandy Heyman has been "going green" at her school for over 20 years. "I was concerned about the kids with allergies and asthma and I didn't feel good about using chemicals," says Heyman. Her advice to schools looking to green up their grounds: "Give it a chance. People need to embrace the Green Seal products and think about the future of the kids and adults at their school. It's a good-conscience effort to keep everyone at school safe."

Heyman worked closely with a distributor to find safe, green products to replace harsher ones. She consulted with other schools as well as staff at BPMS to gain more insight. "It's a team effort. We even got rid of the low-odor markers."

"Weigh pros and cons of what is important in your school; a healthy environment is top priority for me." *–Sandy Heyman*

Champlain Valley Union High School

"We purchase our products through the Facilities and Maintenance Directors Association, created to save every school in Vermont money and that only allows the purchase of friendly or green products," says Kurt Proulx, CVU's Director of Maintenance. **Resource** 8

CVU Custodian Greg Munsell keeps the school's cafeteria sort station ship-shape.

An interview with Kurt Proulx, Director of Maintenance at Champlain Valley Union High School

Q: How did/does CVU determine what cleaning products to use?

A: We purchase our products through the Facilities Maintenance Directors Association, which was created to save every school in Vermont money and that only allows the purchase of friendly or green products. But there are still some products that have not made the green list yet or that don't have a recommended replacement, like disinfectants.

Q: Why does CVU choose to use less toxic/non-toxic products?

A: CVU will always move forward with products that help protect our community, not only in the products that we use but also with the time and place they are used in the building. We attend green conferences and follow the guidelines as best we can. We purchase as many of the green cleaning chemicals as we can. The floor finish we use is a green finish. It does cost more to use this finish as it does not hold up as well as the old finishes did.

Q: Did you run into any issues when making the switch?

A: The products that we use that are considered "green" are our floor finish, window cleaners, and paints for the building interior. We are currently trying to find a replacement for our general disinfectant and restroom disinfectant. We have tried the recommended ones such as peroxide and ozone water (electrically charged water) but both have had adverse effects on one or more of the custodial staff. The only issue so far making the change has been finding products that are safe for our staff to use and ones that all of the staff can agree on using. Neutral disinfectant seemed to work well. We're currently trying another "green" neutral disinfectant for comparison.

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