

Managing Your Chemical Inventory – Part 1

A White Paper by the NSTA Safety Advisory Board

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What is chemical management?

Chemical management is a process that encompasses identification, management, and reduction of risk through all stages of chemical purchasing, storage, distribution, use, and disposal.

Who is responsible for managing the chemical inventory?

Many individuals throughout the school system have an important role in managing the chemical inventory:

- Board of Education - The Board of Education should establish a Chemical Hygiene Officer position and should adopt a Chemical Hygiene Plan that addresses chemical management.
- Superintendents – The Superintendent creates a budget line for safety and ensures that science safety is a priority. The Superintendent should ensure the Chemical Hygiene Plan is implemented and addresses chemical management.
- Chemical Hygiene Officer - The Chemical Hygiene Officer shall consult with the administration and teachers to promote the safer operation of science classrooms and laboratories focusing on the employer's chemical hygiene plan.
- Principal - The building principal in concert with the Chemical Hygiene Officer acts as a safety advocate for the school and for the teachers to manage the chemicals.
- Science Chairperson/Supervisor – Oversees the evaluation, purchase, storage, disposal, and safer use of chemicals in the instructional program with the assistance of the Chemical Hygiene Officer.
- Teachers – Teachers are responsible for and/or involved in the process of storing, using, evaluating, disposing, and purchasing of chemicals. Elementary and middle school teachers of science should seek the assistance of the district Chemical Hygiene Officer in cooperation with the Science Department Chair or Science Specialist if available.

- Business Manager - The Business Manager establishes procedures that allow for the purchase of chemicals throughout the year and works to address loss control issues including hazardous chemical risk management issues in science facilities.
- Facilities manager – The facilities manager should provide assistance relative to the disposal of chemicals by a licensed waste hauler or other environmentally appropriate means, and provides a chemical bunker for the safer storage of the chemical inventory.

How should the current condition of the chemical inventory be assessed?

Before you can effectively manage your chemical inventory, you need to assess the current status of your chemical inventory and the storage locations.

A safety pre-screening will identify unsafe conditions and unsafe practices such as sagging or damaged shelves, sources of ignition, obstructed aisles, inaccessible shelves, corroded or unstable containers, incompatible grouping of chemicals, availability of SDS sheets and an inventory, and the condition of the storage area.

Conducting a chemical inventory assessment will always produce many surprises:

- chemicals you never thought you had
- chemicals in damaged containers
- chemicals in poorly labeled containers
- chemicals in containers without labels
- hazardous chemicals/ unstable chemicals
- chemicals that are toxic
- chemicals in need of special handling
- chemicals that are never used
- chemicals that are seldom used
- chemicals in excessive quantities
- chemicals in large containers

If the pre-screening determines that it will be unsafe to conduct a chemical inventory due to existing hazards, a trained professional should be contacted to correct any unsafe conditions. A certified hazardous waste hauler should be considered to remove any hazardous chemicals which present an unsafe working condition.

Once it is established that it is safer to conduct the inventory, the process can begin. Your team should establish a plan for conducting the inventory.

How do I create an accurate chemical inventory?

1. You will need to select an inventory system; a data base or spreadsheet that contains a wealth of information on each one of your chemicals. There are commercial inventory systems available from various vendors.
2. Your team will need to record the following data for each chemical; the list should be modified according to your needs. The team should include at least two people.
 - Name of the chemical
 - Type of container
 - Concentration, molarity
 - Estimated quantity
 - Purchase date
 - Disposal date
 - Note if the chemical will remain in the Inventory
 - Note if the chemical will be disposed
3. The inventory system that you choose needs to have ease of operation and ease of input and display of data.
4. Once the inventory is complete, the information should be entered into your inventory program. The chemicals can then be reviewed for health hazards, physical/ chemical hazards, and environmental hazards.

How should the chemicals be organized?

1. Before organizing your chemicals, your shelving needs to be inspected. Check that your shelving is solid, sturdy and securely attached to the wall. Inspect shelving and shelving supports for corrosion, insect infestation (e.g. termites on wooden shelving), sagging, and cracking. Each shelf should have a front lip to prevent a chemical from sliding off the shelf.
2. All your chemicals need to be placed in compatibility groups. A suggested arrangement for storing your chemicals is the NIOSH system, also known as the Flinn system. The system allows chemicals to be placed into safer compatibility groups.

Do you need an SDS for each chemical in your inventory?

OSHA requires that you have an SDS for each hazardous chemical in the inventory (OSHA Brief: Hazard Communication Standard: Safety Data Sheets: <https://www.osha.gov/Publications/OSHA3514.html>). However, better professional practices encourage SDS's for all chemicals in your inventory. A Safety Data Sheet is the standard document available for every hazardous chemical manufactured or sold in the United States. It contains information in a specific format so science teachers, emergency personnel, and other users can find needed information. Every chemical in your inventory must have an SDS sheet.

When chemicals are ordered, an SDS sheet needs to accompany the order. The shipment must have an SDS sheet to be accepted. Everyday items used in your classroom, such as baking soda, vinegar, ammonia water, etc., if part of your inventory, require an SDS sheet.