

II. Purchasing Your Chemicals

Purchasing Smart

The American Chemical Society (ACS) estimates that unused chemicals can account for up to 40% of the waste annually generated by a school laboratory. The buildup of unneeded chemicals results from purchasing chemicals arbitrarily and can often lead to hazardous storage conditions. Having a well thought out plan in place before ordering the year's chemical supply will help prevent such waste. This process should begin long before the school year does, and involves accurately estimating types and quantities of chemicals to be used throughout the school year. Ward's Science wants this process to be as trouble-free as possible so you can provide a successful educational experience.

The following procedures will help make your chemical purchase efficient and cost effective:

- Take stock of leftover and stored chemicals in your classroom/laboratory to help you figure out what you have and what you need to order. Establish an inventory control program to trace future chemical usage from delivery to disposal. A computer tracking/inventory system, such as the Ward's Chemical Inventory Management System (CIMS), is ideal since it allows easier sharing of in-house chemicals between classrooms. Avoid donated chemicals because source and quality can be questionable and they can become a future waste problem. Ordering chemicals in the amounts needed, and stocking smaller containers of chemicals, will help prevent waste due to shelf life expiration. Once the Ward's chemical container is opened, use a "date opened" section of the label on the container to track the date the bottle was originally used. This will help prevent waste due to shelf life expiration.
- Before ordering chemicals, check with other science teachers in the school to see if they have any surplus chemicals that you can use; but beware of old chemicals. Many schools have an inventory of unused chemicals forgotten in storage or left over by former teachers. These chemicals may be useless or unstable, and possibly dangerous. Establish an "approved" list of usable chemicals in the school, and standardize chemical purchases from one supplier. This will minimize freight charges, hazardous material charges, redundant ordering, etc.
- Use a "first in, first out" policy. Old stock should be depleted first, to avoid expiration of their shelf life.
- Evaluate special storage and/or handling requirements. Costs beyond the price of a chemical may be incurred to provide for special storage requirements. Arrangements must be made to separately store chemicals if they are incompatible with one another or are light sensitive. Special provisions for the separate storage of solid and liquid chemicals are sometimes necessary as well. If your school does not have adequate storage and safety provisions for a chemical, you should not purchase that chemical.
- Shorten the time frame you are stocking for to increase the accuracy of quantity estimates. For example, estimates of quantities to supply you for one quarter or one semester are usually more accurate than estimates for quantities to last an entire year.
- Consider a centralized purchasing program. If one person does all the purchasing, individual teachers may be able to take advantage of bulk pricing and supply sharing. The hub of this purchasing program is the Chemical Hygiene Officer (CHO). The CHO should be a qualified science teacher (*see Section VII*), and will become the school's source for ordering chemicals. Before ordering a chemical, each teacher should work with the CHO to gain an understanding of possible hazards associated with

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that chemical and to establish any mandated emergency preparedness measures, including the procurement of any special neutralizing agents, fire extinguishing agents, and spill response materials. The CHO also ensures that Safety Data Sheets (SDS's) are obtained with each chemical purchase.

- Choose the demonstrations and experiments you will perform based on your budget, the chemicals you have on hand, and those you will purchase. When preparing to order chemicals, account for hidden costs, additional materials required, the initiation of special safety procedures, and the possibility of special clean-up and waste disposal requirements.
- Consider the disposal cost of a chemical at its time of purchase. Since many chemicals deteriorate with time, the disposal and waste costs may add significantly to the original purchase price. The actual cost of a chemical should be regarded as a combination of the initial purchase price plus the disposal costs, which can often offset the savings from buying in quantity. Ward's will provide chemicals in small amounts in an endeavor to support all of your chemical needs, including your waste minimization efforts.
- Try to use non-hazardous (or less hazardous) chemicals, or those that are suitable for reuse. See *Section III* for additional information.
- Purchase, store and dispense chemicals from the smallest bottle possible. For example, do not order or dispense from a 500-milliliter bottle if each student in a class needs only 1-milliliter.
- Purchase, store, and dispense chemicals in unbreakable plastic or PVC-coated glass bottles. Concentrated acids should never be stored in uncoated glass bottles.
- Purchase and store all highly toxic or reactive materials in a secondary device.
- Coordinate chemical delivery, when feasible, to occur during summer break. Make clear to school custodians that they may only deliver the chemical packages to the classroom/laboratory, and may not handle or unpack the chemicals. Custodians must have limited contact with chemical packages and should immediately contact the science teacher when the chemicals are delivered. Science teachers should be responsible for handling and unpacking their purchases.

Hazardous Material Surcharges

Transportation of *hazardous* chemicals in the United States and Canada is federally regulated. Ward's Science ships all chemicals in compliance with these regulations. As of January 1, 2002, shipping companies including United Parcel Service (UPS), Federal Express (FedEx), Loomis, and Purolator have instituted a per hazardous materials package shipment charge. This cost is in addition to normal shipping and handling charges. Ward's Science will consolidate hazardous materials into as few packages where possible to reduce this cost. Select chemicals are now available with Ward's Safety Packs to eliminate hazardous shipping fees and enable faster shipping. Previously, these chemicals shipped freight within 7-14 days and incurred a hazardous shipping fee added to your order total. Ward's Safety Packs eliminate hazardous shipping fees and allow your chemicals to be shipped via UPS within 3-4 days. For a list of chemicals that include Safety Packs, visit wardsci.com/chemicalship.

