

Know The Hazard – Lewis Anderson, MLT. – August 1999

ALL chemicals should be stored below eye level. This simply reduces the likelihood of something falling from above, breaking and contaminating the laboratory or causing injury. This also reduces the chance that a chemical may become hidden at the back of a shelf where no one can see it.

The location and proper storage of chemicals is very important. You do not want to store two chemicals together, which by themselves may not be dangerous, but together may be deadly. For example, hydrogen peroxide solution of 30 % must not come in contact with alcohols. These two chemicals together form an explosive compound.

The storage of chemicals using ONLY the alphabet to sort them can be very dangerous – two or more chemicals, either beside each other, or on shelves above or below each other can result in very adverse reactions. Once the reactions start, they may be almost impossible to stop. There are some general principles that should be followed:

- Corrosive materials should not be stored on shelves with metal supports as the chemicals will corrode and thus weaken the metal. Paint any adjacent metal surface area to prevent corrosion. Store corrosive material away from oxidizing materials, as oxidizing materials release oxygen and the corrosive material will take up the oxygen thus producing an unstable combination.
- There are two types of reactive materials. The first is water-reactive material, for example: sodium, potassium and hydrides. Protect water-reactive chemicals from automatic sprinklers, combustibles or oxidizing materials that require water to be extinguished.
- The second is unstable reactive material, for example: aldehydes and ethers. These materials should be stored away from heat, sparks, impact or shocks. Store highly unstable material (eg. Some peroxides) in cold storage facilities. You must remember to check containers for expiry date, expansion due to pressure build up and check solutions for colour change or precipitates. If any of these are found, correctly dispose of material.
- If a chemical is toxic, it may be fatal or cause permanent damage if it is inhaled or swallowed or if it enters the body through skin contact. These chemicals should be stored in a locked cabinet away from any oxidizing material, flammable material, or corrosive material. Often when two chemicals combine, there may be an odourless gas formed. Since the gas is odourless, by the time anybody realises there is a danger, it may already be too late.

In the laboratory today, a lot of the reagents we use are commercially prepared. If you have non-essential chemicals, chemicals that have expired or even chemicals whose labels you cannot read, please dispose of these chemicals in a safe and proper manner. You must remember that one type of chemical group, either flammable, corrosive, reactive, or toxic can combine with another chemical in another group to give a very unstable compound of known or unknown hazard. Also remember that in a fire fighting situation, use the proper fire fighting equipment. For example, do not use water on water-reactive chemicals.

Check your chemical storage. Dispose of expired chemicals in safe manner. This has been a very brief and general article on the proper storage of chemicals. For information on specific chemicals, read the MSDS that comes with every chemical.

References:

1. Saskatchewan Labour, Occupational Health and Safety: Recommendations for Lab Chemical Storage.
2. Health and Safety Guidelines for the Laboratory, Lyn Montgomery, ASCP Press, 1995.
3. A Guide to Chemical Substance Regulations, Saskatchewan Human Resources, Labour and Employment, Occupational Health and Safety Branch, 1988.
4. Hazardous Laboratory Chemicals Disposal Guide, M. A. Armour, CRC Press, 1991.
5. National Institutes of Health, Division of Safety, Occupational Health Branch website.