

Organic Solvents

Organic [Solvents](#) include many chemicals that may be designated as “Particularly Hazardous Materials” due to the degree and nature of toxicity. In addition to the handling of solvents for flammable, corrosive or other properties, toxicity and carcinogenicity must be considered when working with organic solvents in accordance with [Working with Particularly Hazardous Chemicals](#).

Organic solvents are used in FSU laboratories for a variety of purposes. While general laboratory safety guidelines apply to solvent use, special considerations should be taken, due to the nature of these chemicals.

A solvent is a liquid that dissolves a solid, liquid, or gaseous solute resulting in a solution. The most common solvent in everyday life is water. The term organic solvent refers to most other solvents that are organic compounds and contain carbon atoms. Solvents usually have a low boiling point and evaporate easily or can be removed by distillation, thereby leaving the dissolved substance behind. Solvents are usually clear and colorless liquids and most of them have a characteristic smell.

Most organic solvents are combustible, often highly volatile and extremely flammable and they should always be handled with care. Some solvents produce vapors, which are heavier than air. These may move on the floor or ground to a distant ignition source, such as a spark from welding or caused by static electricity. The vapors may explode from contact with a cigarette ember. Vapors of solvents can accumulate in confined places and stay there for a long time, presenting risks for health and property. EH&S recommends that solvents be used in a fume hood for these reasons.

Solvents enter the body by inhalation, by swallowing and through the skin. The effect depends on several factors, such as:

- how easily the solvent evaporates at the ambient temperature?
- the characteristics of that solvent; is it water soluble or able to dissolve fats?
- the concentration of the solvent in the air at the place of work?
- the type of work is involved, i.e. light or heavy? (Panting increases the amount inhaled.)
- how long the exposure lasts.
- if there are other chemicals present that these solvents can become vehicles to get into the body

Solvents, including their vapors and mists, have various effects on human health. Solvents irritate the eyes and the respiratory tract and many of them have a narcotic effect, causing fatigue, dizziness and intoxication. High doses may lead to unconsciousness and death. Work with solvents should be done within a fume hood for these reasons.

Solvents may damage the skin by removing the fat. This is a very common cause of skin disorders and dermatitis. Some solvents penetrate the skin and enter the blood circulation. Solvents may damage the liver, kidneys, heart, blood vessels, bone marrow and the nervous system. Certain solvents, such as benzene, are [carcinogens](#).

Personal Protective Equipment for Organic Solvent Handling

If gloves, goggles, or other protective clothing are needed to keep solvents away from skin, eyes, and clothing, make sure gloves are made of material that is not permeable to the solvents you are using. Refer to [Gloves](#) to select disposable gloves for a particular chemical. Personal protective equipment such as aprons, gloves and masks with filters should be available where needed, and they should be used

according to the recommendations. Contact EH&S for information on respirator use. Personal protective equipment should be stored in a clean place away from possible contact with solvent vapors. Workers must know safe work methods and emergency procedures (fire, spill, first aid) for the specific chemicals they use.

Many organic solvents are flammable. Refer to [flammable liquids](#) for more information. Equipment (fire extinguishers, absorbent material, etc.) should be provided for situations such as spillage or emergency.

Solvent Containers

Each vessel containing chemical stocks or solutions should have a label showing the chemical name and hazard warnings, including any waste containers used. If chemicals must be transferred from the original containers, the new containers should be labeled with the chemical name and hazard warnings. Containers are closed or covered when not in use. Compatible containers must be used. Transfer of solvents between containers may require grounding to prevent discharge of static electricity.

Solvent Disposal

EH&S will provide containers to dispose of solvents on request. Once you have received a container, and filled it, simply contact us at 644-0971 or 644-7682 and we will take them to our waste facility and return your waste receptacle.