Solvents in Construction

Hazard Alert

Solvents are liquids used to:
• Dissolve greases, oils, and paints
• Thin or mix pigments, paints, glues, pesticides, and epoxy resins.
• Remove paint and other materials from surfaces, such as steel.

Solvents are in adhesives, carpet glues, cleaning fluids, epoxy resins, hardeners, lacquers, mastics (asphalt or coal-tar), paints, paint thinners, and primers. They're used to clean tools, too.

Examples of solvents are acetone, alcohol, benzene, epichlorohydrin, esters, gasoline, glycol ethers, heptane, hexane, kerosene, ketones, methanol, methylene chloride, mineral spirits, naphtha, toluene, trichloroethane (methyl chloroform), turpentine, and xylene.

The Hazards

You can be exposed to solvents if you:
• **Breathe them** (This can happen when you mix glue or paint – or spray or brush them – because solvents evaporate fast.)
• **Get them on your skin** (Many solvents can go through your skin. For some solvents, the danger is as bad as if you breathe them).
• **Swallow them.** Solvents get into body fat in the skin, nerves, and brain.
Many solvents can catch fire, even in cold weather.

Protect Yourself

Very small exposures over many months can harm you. So can one large exposure. A very large exposure can kill you.

Working with solvents can make you feel dizzy, uncoordinated, like you are drunk — or cause headaches, nausea, stomach pains, skin rashes, cracking or bleeding skin, or irritated eyes, nose, and throat.

Some solvents can blind you, destroy your kidneys or liver, affect your nervous system, or cause an irregular heart beat. Some can cause cancer.

This is what you can do:
• **Read the labels and the MSDS** (material safety data sheet) for each solvent you will use.

• **Never heat solvent**s by welding or torch cutting near solvent vapors or on surfaces that have solvent residue. Some solvents can produce deadly gases when heated.

(Please turn the page.)

• **Replace solvents when you can.** If you use water-based (latex) paints, you don't need to use thinners or cleaners that have solvents. Use water-based strippers and lacquers (with less solvent).

• **Don't get solvents on your skin.** Don't use solvents to wash paint off your hands. When you clean oil-based paint from brushes or you work with solvents, wear gloves. **Wear gloves that protect against the solvent you are using**; check the manufacturer's instructions to make sure.

• **Wash your hands before you smoke, eat, or drink.** If you don't, you can swallow solvents by mistake. Don't smoke, eat, or drink where solvents are used.

• **Try not to breathe solvents.** Use the smallest container you can. Keep lids on paint or glue cans or degreasing units when they are not being used. Throw out rags that have solvents on them. Keep your face away from solvents. Use a long-handled paint roller.

• **Work with solvents only in well-ventilated areas.** You can't always smell solvents. Be sure enough air is moving in and out of the work area to dilute solvent vapors to safe levels or use local-exhaust ventilation to remove vapors at the source. (For instance, you may have to glue tile or spray-paint a wall where there are solvents.) If your employer tells you to work in an enclosed area or tank or trench where there may be solvent vapors, do not go in unless your boss is following OSHA's confined-space program and someone has checked the air levels (with instruments).

• **Be sure the wiring in fans** and other electrical equipment is specially designed or wired so it won't cause a fire or explosion (intrinsically safe wiring).

• **Respirators and gloves are used when nothing else helps.**

  • **Paper dust masks will not protect you against solvents.** You need at least a half-mask respirator approved by the National Institute for Occupational Safety and Health (NIOSH) that has an organic-vapor cartridge. Respirator cartridges must be changed regularly — often once per shift, or more.

  • **An organic-vapor cartridge may not be enough** against some solvent vapors that can cause cancer, like methylene chloride. For those chemicals, OSHA and NIOSH recommend only supplied-air respirators with air hoses.

• **OSHA says you must have a full respiratory protection program,** if respirators are used. This means proper selection and fitting of respirators, medical screening of workers for fitness to wear a respirator, and worker training. Correct storage and cleaning of respirators, and an evaluation of the program are needed too.

• **To prevent fires,** when you throw out rags that have solvents, put them in fire-resistant, covered containers.

• **If you think there is a problem, exposure levels can be measured** with special equipment.

For more information, call your local union, the Center to Protect Workers' Rights (CPWR) (301-578-8500 or www.cpwr.com), the National Institute for Occupational Safety and Health (1-800-35-NIOSH or www.cdc.gov/niosh), or OSHA (1-202-693-2020 or www.osha.gov). Or go to www.elcosh.org.

 CPWR is a research, development, and training arm of the Building and Construction Trades Dept., AFL-CIO: CPWR, Suite 1000, 8484 Georgia Ave., Silver Spring, MD 20910. (Edward C. Sullivan is president of the Building and Construction Trades Dept. and of CPWR and Sean McGarvey is secretary treasurer.) Production of this card was supported by grant 1 U54 OH008307 from the National Institute for Occupational Safety and Health and grants U45-ES09764 and U45-ES06185 from the National Institute of Environmental Health Sciences. The contents are solely the responsibility of the authors and do not necessarily represent the official views of NIOSH or NIEHS.