



Just the Facts...

Solvents - Individual

SOLVENTS HAVE A WIDE RANGE OF USES IN DEGREASING, CLEANING, STRIPPING, AND THINNING

GENERAL INFORMATION	<p>A solvent is a liquid that can dissolve another substance and form a solution. When the term “solvent” is used, it usually refers to an “organic” solvent –one of a group of chemicals that can dissolve organic (carbon-containing) compounds. Solvents are used in degreasing, cleaning, stripping, and thinning. Organic solvents are frequently composed of mixtures of chemicals. The use of more than one chemical in a solvent has many benefits. Although this often increases its value as a solvent, it also affects the toxicity.</p> <p>Water is also a solvent and it is frequently called the “universal solvent”. <i>Water dissolves many inorganic chemicals, but, by itself, water is a poor solvent for organic compounds. To aid in dissolving or cleaning organic materials, a soap or detergent is used with the water.</i> Only organic solvents will be addressed in this fact sheet.</p>
ROUTINE USES IN THE DEPLOYED SETTING	<p>Solvents are used in the cleaning of weapons, metal objects, and electronic parts; in pressure washers and heated cleaners; in solutions for pesticides, paints, and lubricants; and as refrigerants; degreasers; coolants; and adhesives.</p>
PERSONAL PROTECTIVE EQUIPMENT (PPE) and COUNTERMEASURES AVAILABLE FOR DEPLOYED PERSONNEL	<p>Eye contact from splashed solvents can be prevented by the use of safety glasses, goggles, or a face-shield. Repeated skin contact with an organic solvent requires the use of either gloves or a barrier cream. Skin areas in contact with solvents should be washed with water and a mild soap, and then well-dried. A hand cream can be used to replace the fats and oils removed by the solvent.</p> <p>Solvents should be used with adequate ventilation in an open area with fresh air, or with local exhaust ventilation, or, an appropriate respirator should be worn. Volatile solvents evaporate forming “vapors”—not “fumes”. Vapors are gases that cannot be removed from the air by simple filtration. Fumes are very small particles that can be filtered from the air. The selection of a respirator or respirator cartridge/ canister depends on whether a vapor (a gas) or fume (a small particle) is present! Solvent vapors can present a serious health problem if a significant amount is inhaled. A significant amount of a solvent depends upon its concentration and the duration of the exposure).</p> <p>Solvents may be flammable or explosive, and precautions must be taken to prevent ignition.</p>
EXPOSURE LEVELS HISTORICALLY ENCOUNTERED	<p>DATA IF AVAILABLE</p> <p>There are many solvents used by the military. When used with adequate ventilation provided by local exhaust or moving fresh air (not re-circulated air), the average solvent vapor level in the air is below permitted exposure standards. If ventilation is not adequate, the level of solvent vapor in the air near the work area, and in the operator’s breathing zone, may exceed exposure standards.</p>
AVAILABLE EXPOSURE DATA	<p>DATA IF AVAILABLE</p> <p>Be sure to mention to your healthcare provider if your work area, or any tasks that you have performed, have been evaluated by Preventive Medicine personnel.</p>

<p>SIGNS & SYMPTOMS OF ACUTE AND CHRONIC EXPOSURE</p>	<p>Eye contact will often cause immediate burning and tearing. Low level, long-term exposure may cause the eyes to feel dry or become red (blood-shot).</p> <p>Skin contact with an organic solvent can result in loss of the protective fats and oils in the skin. There are differences in how fast this happens, but prolonged contact with any solvent can irritate or damage the skin. This causes the appearance of red irritated skin, rash, or other skin lesion at the site of contact.</p> <p>Organic solvents may evaporate and form a vapor that can be inhaled. Because of the ability to dissolve fat, organic solvents can also affect the nerves in your body, including the nerves in the brain. The breathing of moderate and high concentrations of organic solvents can cause irritation of your eyes and nose, drowsiness, fatigue, loss of coordination, irregular heart beats, depression of breathing, and even coma and death! Excessive exposure to some solvents can result in permanent damage to the nerves or brain.</p>
<p>REVERSIBILITY OF ACUTE AND CHRONIC HEALTH EFFECTS</p>	<p>After stopping skin contact or inhalation exposure, the effects of the solvent generally disappear. Skin rashes from direct contact may take a week or so to clear up. The healing time may be shortened with the use of a drug which is often applied to the skin—but the exposure needs to be stopped. Generally, you will feel much better soon after inhalation exposure is stopped and you breath fresh air. The effects of solvent inhalation may take several hours to completely disappear based upon the solvent, its concentration, and the length of time that it was inhaled.</p> <p>In rare instances of short-term exposures to very high solvent levels, or long term, repeated exposure to moderate or high solvent levels, permanent damage to the nerves can occur.</p>
<p>TREATMENT REQUIRED/AVAILABLE FOR EXPOSURE</p>	<p>The immediate treatment for solvent exposure is to stop the exposure when effects occur. Prevention of the solvent exposure is even more desirable!</p> <p>Eye contact: immediately rinse the affected eye(s) with water for 15 minutes. After solvent contacts the eye, an individual should seek medical evaluation.</p> <p>Skin contact: rashes can be treated by simply stopping or avoiding skin contact. Medication may be applied to the skin, taken orally, or injected if needed, to treat the acute rash depending upon the severity.</p> <p>Inhalation exposure: Immediate treatment is to stop continued exposure. Simply moving to fresh air accomplishes this. Oxygen may be needed in more severe solvent exposures, such as exposures resulting in breathing difficulties or loss of consciousness.</p> <p>Generally, there is no medical treatment required for past exposure. In rare instances where the solvent exposure was high enough to injure nerves, the damage may be permanent and require rehabilitation with physical and occupational therapy.</p>
<p>LONG TERM MEDICAL SURVEILLANCE REQUIREMENTS OF HEALTH EFFECTS MONITORING</p>	<p>Solvent levels can be measured in the body during and shortly (within a few days) after exposure. There is no long-term medical monitoring for routine solvent exposure.</p>
<p>SPECIAL RISK COMMUNICATION INFORMATION</p>	<p>When you are no longer exposed to a liquid solvent or the vapor, the chemical is eliminated from your body. In some cases, a persistent rash may occur at the site of solvent exposure. The presence of such rashes should be brought to the attention of your medical provider.</p> <p>In rare cases, where acute solvent exposure resulted in significant respiratory problems or a loss of consciousness, there may be lasting effects associated with breathing or mental tasks. If you feel that you have had that type of an exposure, bring this to the attention of your healthcare provider.</p>