

NASA-LaRC SAFETY NEWSLETTER

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ONE PART PER TRILLION ?

Over the past 40 years, scientists have developed the ability to detect smaller and smaller amounts of any substance in our food and water.

In the 1950s, trace amounts of both man-made and natural chemicals could be detected at one part per million. Any level below that was considered zero. By 1965, one part per billion was detectable. Zero had become smaller. Today, one part per trillion has become a reality, and one part per quadrillion isn't far away. All the while, ZERO keeps getting smaller.

The ability to detect residues at lower concentrations translates into the ability to research risks and benefits at lower concentrations.

The following comparisons may help give you a better perspective of actual amounts when described in "parts per ...".

Think of one part per million as :

- 1 inch in 16 miles.
- 1 cent in \$10,000
- 1 minute in 2 years
- 1 postage stamp on the surface of a baseball diamond.

Think of one part per billion as :

- 1 inch in 16,000 miles
- 1 cent in \$10,000,000
- 1 second in 32 years

Think of one part per trillion as :

- 1 inch in 16 million miles (more than 600 times around the earth)
- 1 second in 320 centuries
- 1 flea on 360 million elephants

Source: *The Bottom Line*, July 1991; *Virginia Cooperative Extension Service "Extension Echoes"*, November, 1991.

PROPER HANDLING OF SOLVENTS

The proper handling of solvents requires adequately trained personnel. Other persons shall not be granted access to the stores or permitted to handle such materials. Because of the nature and variety of these chemicals, their hazards include poisoning, evaporation, fire, and explosion. Care should be exercised that incompatible solvents are not stored together. All containers should be properly sealed and kept in suitable areas. Suitable protective clothing shall be worn and the laboratory must be equipped with safety equipment commensurate with the hazards of the solvent, such as an eyewash station, a safety shower, and a fume hood. It is also necessary to have a spill cleanup kit on hand and readily available to handle spills. Some operations involving the handling of solvents require shielding, special hoods or special protective clothing such as gloves, aprons, face shields, goggles, coats, or special garments.

IT'S YOUR RESPONSIBILITY !

With so much talk about government regulations on company policies and procedures, it's easy to forget that safety is primarily a **personal responsibility**. Workplaces can be covered with warning signs, safety posters and bulletin boards. Safeguards can be installed on each piece of equipment. We can attend training sessions and be told of safe ways to do work, but none of these things can ensure freedom from accidents unless we want to prevent them. It's up to us !

Unless we realize that our own actions determine whether or not accidents occur and unless we accept responsibility for these actions, injuries will occur. Who puts tools and equipment into motion and controls their movement ? Who, but the individual, can control the placement of his body, the movement of his arms, legs and eyes and, most importantly, the activity of his brain ? A person's ability to direct his own actions and control his environment carries with it the responsibility to use this direction and control so that his own creations do not injure himself or others.