

EXPOSURE LIMITS

An exposure limit is the maximum amount of a chemical or physical (i.e., noise) substance to which one may be exposed in a specified time period. Exposure limits are expressed according to the length of exposure:

Time-Weighted Average (TWA) exposure limit: This exposure limit is based upon the number of hours in a work shift (i.e., 8-hour TWA, 12-hour TWA). Therefore, the average exposure over the length of the work shift may not exceed the TWA exposure limit established for the hazard being measured (i.e., chemical, noise).

Short-Term Exposure Limit (STEL): Established for many chemical substances, this concentration is the maximum to which one may be exposed during a 15-minute period of time, up to four times per shift, with at least 60 minutes between exposures. This type exposure limit exists to prevent the individual being exposed from suffering from (1) irritation, (2) chronic or irreversible tissue damage, or (3) narcosis (dizziness, light-headedness) to the degree where an accident may occur.

Ceiling limit: The concentration that may not be exceeded any time. Ceiling limits are established for chemicals which can cause suffering even when exposed instantaneously, such as potent irritants.

Who Determines What These Exposure Limits Will Be?

Government agencies such as OSHA in the U.S., OHSA in Canada, and IMSS in Mexico, regulate exposures in the work place. In doing so, these agencies often establish exposure limits. The company is required to ensure that personal exposures do not exceed those limits established by the applicable government agency.

Other agencies recommend exposure limits. Perhaps the most well known (internationally) agency is the American Conference of Governmental Industrial Hygienists (ACGIH). It is this agency which establishes the often-used threshold limit values (TLVs).

When more than one exposure limit exists for a chemical (i.e., government required limit and ACGIH recommended limit), it is the company's practice to adopt whichever limit provides the most protection.

How Do We Know If Our Exposures Are Less Than The Limit?

Personal monitoring devices, such as air sampling pumps and noise dosimeters, are used to collect representative samples from which we determine exposures to these agents. The results of the sampling are then compared to appropriate exposure limits.

What Happens If Exposures Exceed The Limit?

When an exposure which exceeds the limit is found, then the first step taken is one which results in reducing exposure. This may be accomplished in the following ways:

- Installing engineering controls. For example, local exhaust ventilation to remove chemicals from the breathing zone, or building a noise barrier to block noise from reaching the ears.
- Chemical substitution. For example, substituting a chemical with one which is less hazardous, or substituting a "powder form" chemical with one which is in "pellet form".

- Personal protective equipment (PPE). This may include hearing protectors or respirator. PPE is used as a last resort, when engineering controls or substitution can not be implemented. PPE is also used during emergencies and while other means of control are being installed.

What Can You Do To Assure You Are Not Over-Exposed?

The following measures can be carried out to maintain low exposures:

Be familiar with, and recognize the signs and symptoms of over-exposure to the chemicals required to do your job. If you notice yourself or co-workers experiencing any of these affects, notify your supervisor immediately.

Report any noticeable problems with hearing (i.e., ringing, dullness/ numbness in hearing) to your supervisor immediately.

Use only the chemicals which have been assigned to do your job, and use them only in the intended manner.

Report noticeable increase in noise levels to your supervisor immediately. Noise levels can increase due to mechanical problems or as a result of a major change in production, such as increased motor speeds.

Report malfunctioning or missing engineering controls to your supervisor.

Read the MSDS that is available for the chemicals used in performing your job. The MSDS will provide any available exposure limit(s), as well as signs and symptoms of over-exposure to the chemical substance.