



EXPOSURE TO OTOTOXIC SUBSTANCES CAN ALSO CAUSE HEARING LOSS

Ototoxic substances are chemicals that can result in hearing loss.

When absorbed into the bloodstream, ototoxic substances may damage the cochlea (inner ear) and/or the auditory nerve pathways to the brain – which can lead to hearing loss and tinnitus.

Hearing loss is more likely if a worker is exposed to a combination of ototoxic substances, or a combination of the substance and noise.

There are three major classes of ototoxic substances:

1. Solvents e.g., carbon disulphide, styrene toluene
2. Heavy metals e.g. arsenic, lead, manganese
3. Asphyxiants e.g. acrylonitrile, carbon monoxide, hydrogen cyanide

The most common routes of entry for these ototoxic substances are via skin absorption, inhalation and, to a lesser extent, ingestion (mainly due to poor personal hygiene practices at work).

Work activities that commonly combine noise and ototoxic substances include:

- ▶ painting
- ▶ printing
- ▶ boat building
- ▶ construction
- ▶ furniture making
- ▶ fuelling vehicles and aircraft
- ▶ manufacturing, particularly of metal, leather and petroleum products
- ▶ degreasing
- ▶ firefighting
- ▶ weapons firing

Some medications have also been identified as ototoxic substances. These include some anti-cancer, anti-inflammatory, anti-thrombotic, anti-malarial, anti-rheumatic and antibiotic drugs.

Quinine and salicylic acids (such as aspirin) are also considered to be ototoxic substances.

Some ototoxins can be absorbed through the skin and are considered particularly hazardous. Some substances, for example acrylonitrile, have a skin notation to alert to the possibility of significant skin absorption and increased body burden. For such substances compliance with an airborne exposure standard only, may not be fully protective.

It is recommended that the noise exposure of workers (based on a daily shift) exposed to any ototoxic substances, be reduced to 80 dB(A) or below. It is strongly recommended workers undergo audiometric testing and be given information on ototoxic substances.

Control measures such as substitution, isolation and local ventilation should be implemented to eliminate or reduce chemical exposures. Personal protective equipment should be used to prevent skin and respiratory absorption when other controls are insufficient.

