



WHMIS Quick Facts

Workplace Hazardous Materials Information System



Routes of Workplace Exposure

There are **four main routes of exposure** by which chemicals can contact and/or enter our bodies. Many chemicals can cause direct effects at the point of contact, such as irritation of the skin, eyes, mouth or nose.

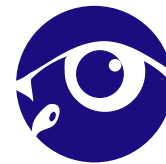
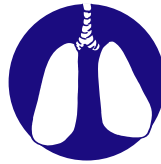
Some chemicals can also be absorbed into the body and cause harmful effects on other body systems like the blood, liver or nervous system.

Inhalation (Breathing)

Skin Contact

Eye Contact

Ingestion (Swallowing)



Routes of Exposure

Some chemicals are not harmful by any route of exposure, while others are harmful by some or all of the routes of exposure.

Inhalation (Breathing) – Chemicals in the air can be inhaled into the body through the mouth or nose. In the workplace airborne chemicals may occur in different forms such as gases, vapours, dusts or mists.

Skin Contact – Many chemicals can cause direct effects at the point of contact with the skin. Some chemicals can be absorbed into the body through the skin.

Eye Contact – Chemicals can also come in contact with the eyes as dusts, mists, gases, vapours, or when liquids are splashed. Some chemicals can be absorbed through the eyes causing harmful effects elsewhere in the body.

Ingestion (Swallowing) – Chemicals can be ingested through the mouth. In workplaces, ingestion can result from hand-to-mouth contact, consuming contaminated food or drink, or smoking cigarettes that have come into contact with a chemical or unclean hands. Sometimes workplace chemicals are accidentally swallowed.

Note: In some workplaces, like hospitals or veterinary clinics, **injection** is also a possible route of exposure. Biological or chemical substances can be injected into the body by accidentally puncturing the skin with a contaminated needle or other sharp device. **Following Universal Precautions is the best means of protection.**

Protective Measures

To prevent harmful health effects, take steps to eliminate or reduce the hazard. Control at the source, such as substitution with a less hazardous material or industrial process, is the best method.

Bear in mind the specific hazards of the material and the extent and pattern of exposure.

Workplace Control Measures

Route of Exposure	Controls / Practices (apply to all routes of exposure)	Personal Protective Equipment (PPE)*
Inhalation	Engineering Controls (isolating or removing the hazard): <ul style="list-style-type: none"> • Enclose process • Provide local exhaust ventilation 	Respirators and protective clothing suitable for the chemical
Skin Contact		Chemical protective clothing suitable for the chemical – gloves to full suits
Eye Contact	Administrative Practices <ul style="list-style-type: none"> • Time work so fewer workers are exposed, • Work upwind of mixing operations, • Shower after shift • Change clothes • No food in work areas 	Chemical safety goggles, face shield
Ingestion		Chemical protective clothing suitable for the chemical – gloves to full suits

* Personal Protective Equipment (PPE) can be unreliable. If it fails, it can leave a person unprotected.

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