

# Isocyanates

## Information Sheet

Isocyanate compounds are found in a diverse range of industries using chemicals such as two pack spray paints, lacquers, adhesives, certain coatings/ linings and in foam production, such as insulation or fillers. Industries also include motor vehicle repair, printing (inks, framing and laminating), boat maintenance or furniture manufacture. The most widely used isocyanates are TDI (toluene di-isocyanate), MDI (methylene diphenyl di-isocyanate) and HDI (hexamethylene di-isocyanate).



### Routes of Exposure

Isocyanates enter the body primarily through inhalation or skin exposure. For example, polyurethane foam production results from the generation of gas, e.g. carbon dioxide which can promote the release of isocyanates as vapour/aerosols.

### Health Effects

There are several potential health effects associated with exposure to isocyanates. Some examples are provided below:

- Inhalation of isocyanates can cause respiratory irritation/sensitisation in people or lead to occupational asthma. Individuals with a history of asthma should not work in areas with the potential for isocyanate exposure.

- Skin sensitisation can occur due to the irritant nature of isocyanates in contact with the skin surface, which may result in dermatitis.

### Occupational Exposure Limits

There is an Occupational Exposure Limit Value (OELV) for all Isocyanates of 0.02mg/m<sup>3</sup> (8hr); 0.07mg/m<sup>3</sup> (15 minute) except Toluene di-isocyanate which is 0.001mg/m<sup>3</sup> (8hr); 0.003mg/m<sup>3</sup> (15 minute). As a result, employers must reduce employee's exposure as far as is reasonably practicable and not exceed the OELV.



## Recommended Control Measures

- Employers should firstly consider elimination of isocyanates or substitution with less hazardous alternatives.
- If this is not possible, work with isocyanates should be isolated away from other areas of the workplace using engineering controls, for example, local exhaust ventilation (LEV), spray booths with appropriate PPE (e.g. airline respirators, suitable gloves, overalls and goggles).
- Good personal hygiene should be practiced and separate storage areas to prevent the contamination of work clothing to regular clothing.
- Hands should always be washed before eating, drinking, smoking and before leaving work.
- Biological monitoring for isocyanates in workers urine as an additional precautionary measure .

## Health Advice

There are preventative measures that can be taken by the employee or the employer such as:

- Make respiratory health surveillance programme available for all relevant employees, e.g. lung function testing.
- Make a skin health surveillance programme available for dermatitis (skin checks for dryness/soreness).
- It is important to seek medical advice if there are persistent symptoms and report these to the employer.

## Key Points

Always assume that exposure is likely to occur and protect according to the level of risk identified from risk assessment.

- ✓ Prepare written risk assessments (required by law) highlighting the key hazards, risks and controls in place.
- ✓ Seek to eliminate the isocyanate containing substance (s) or substitute with isocyanate-free materials.
- ✓ Consult relevant Safety Data Sheets (SDS) and product labels to assist in determining appropriate control measures.
- ✓ Avoid skin contact and inhalation of isocyanate based products.
- ✓ Health surveillance for dermatitis and asthma should be made available.
- ✓ Ensure ventilation is adequate and functioning properly.
- ✓ Hands always washed before eating, drinking, smoking and leaving work.
- ✓ Ensure appropriate PPE is correctly selected, used and maintained.

## Further information:

- The Health and Safety Authority's website **[www.hsa.ie](http://www.hsa.ie)**
- Contact the Health and Safety Authority at **[wcu@hsa.ie](mailto:wcu@hsa.ie)** or LoCall **1890 289 389**.

