WORKSAFE
Mahi Haumaru Aotearoa

HEALTH & SAFETY AT WORK ACT · HSWA

QUICK GUIDE

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FOR BUSINESSES

Reducing harm when working with organic solvents

For every person who dies in New Zealand of a work-related accident, an estimated 10 people die from a work-related disease. Organic solvents are a major cause of these diseases.

This quick guide is for persons conducting a business or undertaking (PCBUs)[1] who use organic solvents and products containing organic solvents. It helps them comply with their obligations under the Health and Safety at Work Act 2015 (HSWA) and the Health and Safety at Work (Hazardous Substances) Regulations 2017 (the Regulations). It also provides advice on how to reduce exposure to organic solvents in the workplace.

In this guide, 'you', means the PCBU.

As a PCBU, you have a duty to ensure, so far as is reasonably practicable,[2] the health and safety of your workers, and of any other person who may be exposed to risk because of your work.

What is an organic solvent?

Organic solvents (for example, toulene, thinners and methyl ethyl ketone or MEK) are used to dissolve or disperse other substances.

What products can contain organic solvents?

Organic solvents are used in many industries including construction and manufacturing. Products containing organic solvents include:

- adhesives
- degreasing agents
- fillers
- general cleaning products
- lacquers
- metal cleaners
- ink
- paint, paint removers and paint thinners
- resins
- rust removers
- surface preparation products
- dry cleaning products, and
- fuels.

[1] A PCBU is a person or company carrying on a business but it can also be other types of organisations. For more information, see: worksafe.govt.nz

[2] 'So far as is reasonably practicable' means finding the balance between what is possible (providing the highest level of protection) and what is achievable (what is reasonable in the specific circumstances). See the Reasonably Practicable factsheet on our website for more information.

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Odour is not a reliable indicator of the presence of a solvent – you cannot smell some solvents until levels reach dangerous levels. In some cases, prolonged exposure reduces a person's ability to smell the solvent.

How can organic solvents enter the body?

Organic solvents enter the body in three ways:

- they can be absorbed through direct skin contact (for example, by washing hands in solvents)
- they can be swallowed
- solvent vapour can be inhaled and absorbed through the lungs and skin (and into the blood).

How can organic solvents affect health?

SHORT-TERM EXPOSURE[3]	LONG-TERM EXPOSURE[4]
A worker may have: – headaches – nausea – irritated eyes, nose, throat and skin. A worker may feel: – disorientated – drunk/high – drowsy.	A worker may have: – mood changes – memory problems – trouble concentrating A worker may feel: – tired – weak. Some organic solvents have been identified as being known or presumed, or suspected human carcinogens.

Without adequate ventilation and personal protective equipment (PPE), the short-term effects can progress to unconsciousness and death.

Identify the health risks

To identify how the organic solvent could harm health:

- read the container label
- get the solvent's safety data sheet (SDS) from the supplier and read it. The SDS will tell you what the health risks are, how to store and handle the product safely, and what to do in case of a spill or emergency.

[3] Short-term exposure may affect a person's health over minutes, hours or days. These effects usually disappear when work with the organic solvent stops.

[4] Long-term exposure may affect a person's health over weeks, months or years. These effects may not disappear quickly. The brain is most likely to be affected by long-term exposures.

Control measures to reduce exposure to organic solvents

You must first try to eliminate the risk where possible. This could mean changing the solvent used to a water-based product.

If the use of organic solvents cannot be eliminated, you must minimise the risks of using solvents so far as is reasonably practicable by using control measures.

There are two types of controls and control measures for hazardous substances.

- **Technical controls**: These are from the Regulations. You must put these in place whenever you have hazardous substances in your workplace.
- **Hierarchy of control measures**: Use the hierarchy of control measures to eliminate or minimise any risks that remain after the technical controls have been applied.

We suggest you follow these steps to minimise the risk from solvents:

1. Put in place any technical controls specified in the Regulations for the solvent.
2. Carry out a risk assessment to determine if there are any other risks you still need to manage.
3. Use the hierarchy of control measures to minimise the remaining risk.

These steps are explained below.

Step 1: Put in place technical controls specified in the Regulations

The Regulations set out specific controls for hazardous substances, including solvents, such as:

- ensuring any containers with solvents are clearly labelled with the product or chemical name, and include a hazard pictogram with the classification of the solvent
- making sure there are signs showing that a hazard is present, the type of hazard and the actions to take in an emergency
- ensuring your workers receive the appropriate information, training and instruction they need to work with solvents safely
- ensuring your workers receive practical, supervised experience or a site specific induction on how to safely handle solvents
- making sure the SDS is accessible to all workers.

The technical controls you need to apply will depend on the solvent's classification and the quantities of it you hold. Use the *Hazardous Substances Calculator* (the Calculator) at: www.hazardoussubstances.govt.nz to find out the key technical controls you must put in place.

Steps 2 and 3: Identify any remaining risks and put in place effective control measures

After applying the technical controls, check if there are any risks still remaining. If there are, use the control measures from the hierarchy of controls (Figure 1).

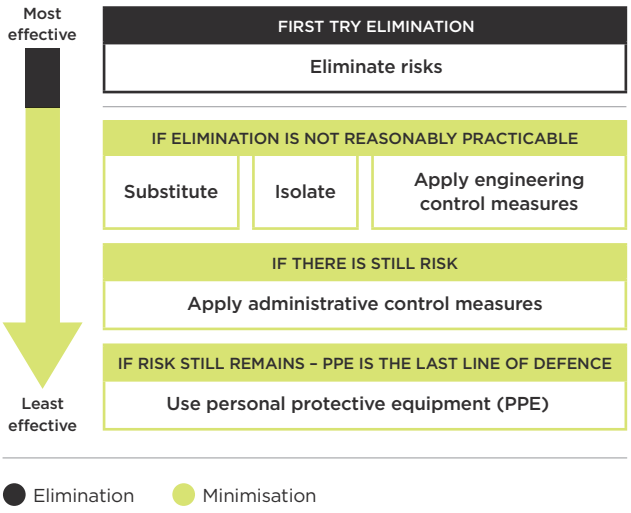


FIGURE 1: Hierarchy of control measures

For example:

- Substitution: use a water-based paint instead of a solvent-based paint.
- Isolation: carry out spray painting in a fully automated booth.
- Engineering controls: use physical control measures to minimise solvent exposure (for example, using local exhaust ventilation or improving general ventilation).
- Administrative controls: reduce the risk to individual workers by rotating work to restrict each worker's exposure.
- Personal protective equipment (PPE): use a suitable respirator and gloves made out of an appropriate material to protect the hands and arms. Make sure they fit properly.

Talk to your workers or health and safety representatives when making decisions about minimising risk. They may be able to provide feedback on the pros and cons of each option.

What duties do workers have?

Workers must take reasonable care to ensure their own health and safety at work. This includes using suitable PPE according to your instructions and informing you when the PPE needs cleaning or repair.

They must also take reasonable care that no one else is harmed by anything they do or do not do at work.

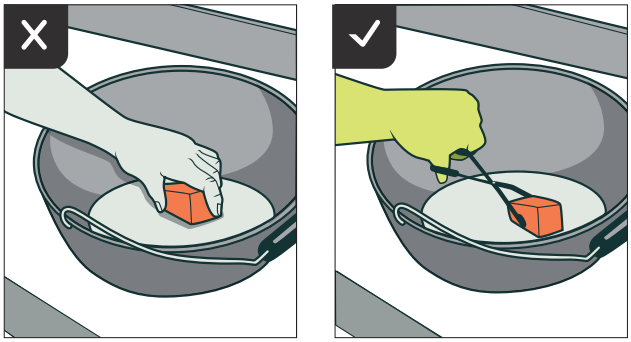
Common mistakes when handling solvents

Risks to health and safety are increased by workers handling solvents incorrectly.

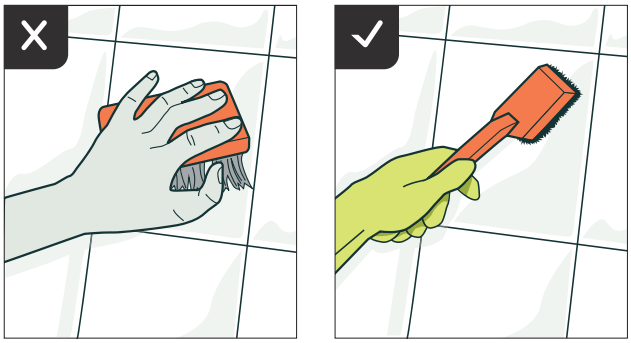
Here are some common 'do's' and 'do nots' when working with organic solvents.

Wash hands with hand cleaner not solvent

Use gloves and tools to avoid skin contact



Use long-handled tools



Keep a safe distance from solvents

FIGURE 2: Do's and do nots

Health monitoring

You have a duty to ensure, so far as is reasonably practicable, your workers' **health** and workplace conditions are monitored to prevent illness or injury.

Health monitoring involves:

- monitoring workers to identify changes in their health due to exposure to certain substances
- arranging for workers to undergo medical examinations by qualified medical personnel.

You must get workers' consent before any health monitoring takes place.

For solvent exposure, health monitoring may include workers completing a solvent health questionnaire and being checked for dermatitis by a competent person.

Exposure monitoring

There are workplace exposure standards (WESs) for most common solvents. A WES is the airborne level of solvent below which it is believed that most workers will be protected from discomfort or ill-health.

Further information

WorkSafe New Zealand

worksafe.govt.nz

The WorkSafe website has further guidance including information on:

- using local exhaust ventilation systems or respiratory protective equipment
- risk management – *Guide to hazardous substance risk management* and our quick guide on *Identifying, assessing and managing work risks*
- safety data sheets – *Guide to safety data sheets in the workplace*.

You can also get advice on hazardous substances at: hsinfo@worksafe.govt.nz

Hazardous substances toolbox

www.hazardoussubstances.govt.nz

This toolbox has a range of resources that help manage a workplace where hazardous substances are used, handled, manufactured or stored. These include the:

- *Practical guide to working safely with hazardous substances*
- *Emergency response flipchart*
- calculator.

Occupational health professional

You can search the HASANZ Register to find a verified occupational health professional for advice about reducing or measuring solvent exposure or health monitoring.

Abbreviations

TERM	DEFINITION
HSWA	Health and Safety at Work Act 2015
PCBU	Person Conducting a Business or Undertaking
PPE	Personal Protective Equipment
SDS	Safety Data Sheet
WES	Workplace Exposure Standard