

GUIDE TO MANAGING RISKS OF EXPOSURE TO CARCINOGENS IN THE WORKPLACE

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1. INTRODUCTION

This guide provides information on how to manage health and safety risks associated with the storage, handling, use and disposal of chemical carcinogens in the workplace. For further information on duties relating to managing the risks of hazardous chemicals in the workplace, please refer to the [Model Code of Practice on Managing Risks of Hazardous Chemicals in the Workplace](#).

1.1. What is covered?

This guide covers hazardous chemicals, as defined under the *Model Work Health and Safety (WHS) Regulations*, which are classified as carcinogenic.

It does not specifically provide information on asbestos or lead, as these are covered in other guidance material; nor does it cover biological carcinogens, like the Human Papilloma Virus, or environmental carcinogens, like solar ultra-violet light.

1.2. What are carcinogens?

A carcinogen is a substance or a mixture which causes cancer. Cancer is a term for diseases in which abnormal cells divide uncontrollably and form tumours.

For the purpose of this guide a workplace carcinogen is a chemical that is used, handled, stored, or disposed of at the workplace. This includes carcinogens that are generated as a result of work processes, for example diesel exhaust.

Chemicals are classified under the *Globally Harmonised System of Classification and Labelling of Chemicals* (GHS) as carcinogenic on the basis there is evidence they cause or could cause cancer in workers.

The GHS classifies substances or mixtures as carcinogenic based on the inherent properties of the substance or mixture. The following classification categories of carcinogens apply under the GHS:

Category 1A known to have carcinogenic potential for humans (the placing of a substance in Category 1A is largely based on human evidence)

Category 1B presumed to have carcinogenic potential for humans (the placing of a substance in Category 1B is largely based on animal evidence), and

Category 2 suspected human carcinogens (the placing of a substance in Category 2 is based on evidence obtained from human and/or animal studies but which is not sufficiently convincing to place the substance in Category 1).

1.3. Why is it important to minimise exposure to workplace carcinogens?

Unlike many toxic health effects of chemicals, a carcinogenic effect may take many years to develop and there may be no early warning of adverse effects. A diagnosis of cancer may not be made until long after exposure ceases and it may not be simple to link the disease to an exposure at work.

For the majority of carcinogens, there is no safe level of exposure. That is, the level of exposure will not reliably predict the risk of developing cancer. This combined with the latency in developing and diagnosing cancer makes it crucial to apply a precautionary approach which eliminates or minimises any exposure to carcinogens.

1.4. Prohibited and restricted carcinogens

Some carcinogens have been identified as presenting an unacceptable risk to workers and are prohibited or have restricted uses under the WHS Regulations. These are listed in Schedule 10 of the WHS Regulations, and can be divided into the following two categories:

- **Prohibited carcinogens**, which are considered too hazardous to be used in industry, but may be used for genuine research or analysis with authorisation from the relevant WHS regulator.
- **Restricted carcinogens**, which may only be used for specific purposes as listed in Schedule 10 of the WHS Regulations. This also requires approval from the relevant WHS regulator.

People who carry out activities involving carcinogens as part of their business or undertaking have duties under the WHS laws. In addition to the primary duties of care, there are specific duties related to prohibited or restricted carcinogens, which are set out in Table 1.

Table 1 Duties under the WHS Regulations regarding prohibited and restricted carcinogens

WHO	DUTIES
Persons conducting a business or undertaking	<p>Must not use, handle or store a prohibited or restricted carcinogen without authorisation from the relevant work health and safety regulator.</p> <p>Must provide a written statement to a worker who uses, handles or stores a prohibited or restricted carcinogen at the end of the worker's engagement. The statement must include:</p> <ul style="list-style-type: none"> ➤ the name of the carcinogen ➤ the time the worker may have been exposed ➤ how and where the worker may get records of possible exposure, and ➤ whether the worker should undertake regular health assessments and the relevant tests to undertake. <p>Must keep records of the name, date of birth and address of each worker likely to be exposed to a prohibited or restricted carcinogen. These records must be kept for 30 years after the authorisation to use the carcinogen ends.</p> <p>Provide health monitoring for any worker exposed to a carcinogen listed under Schedule 14 of the WHS Regulations, or where a significant risk to a worker's health is identified.</p>
Suppliers	<p>Must not supply prohibited or restricted carcinogens to workplaces without receiving evidence that the regulator has authorised or granted an exemption for that workplace to use, handle or store the substance.</p>

2. IDENTIFYING HAZARDS

2.1. Find out what could cause harm

The first step in eliminating and minimising risks associated with carcinogens is to identify which chemicals used, handled, stored or disposed of at the workplace are carcinogenic. A way to do this is to look at the labels and the safety data sheets (SDS) of the chemicals.


The presence of carcinogens generated at the workplace must also be considered, like diesel exhaust from the operation of diesel powered forklifts, or wood dust from sanding or cutting.

2.2. Identifying carcinogens from labels and safety data sheets

A chemical that has been classified as a carcinogen under the GHS should display the 'health hazard' pictogram and the hazard statements associated with the carcinogen classification.

The classification elements for category 1 and 2 carcinogens which will appear on labels and SDS are shown in Table 2.

Table 2 Relevant GHS classification elements for a carcinogen

CLASSIFICATION	PICTOGRAM	SIGNAL WORD	HAZARD STATEMENTS
Category 1 Carcinogen		DANGER	May cause cancer
Category 2 Carcinogen		WARNING	Suspected of causing cancer

Additional information specific to carcinogens can be found in the following sections of the SDS:

- Section 2** contains hazard classification statements for all the hazards of the chemical, including the pictogram, signal word and hazard statements listed above.
- Section 11** contains important toxicological information about the substance including information on whether potential exposure to the hazardous chemical has immediate or delayed health effects or both and which routes of exposure are known to cause harm.
- Section 15** contains information on the legal restrictions placed on the use of the chemical.

Further information about SDS can be found in the [Model Code of Practice for the Preparation of Safety Data Sheets for Hazardous Chemicals](#).

2.3. Generated carcinogens

Carcinogens which occur as a by-product of a work process present their own, unique challenges. Examples of carcinogens which may be generated at a workplace include:

- [diesel exhaust](#) produced during the operation of diesel powered vehicles and plant, for example a diesel powered forklift left idling indoors when loading or unloading.
- wood dusts produced when timber is cut, sanded or machined. SafeWork NSW provides information on [controlling the risks associated with wood dust](#).
- polycyclic aromatic hydrocarbons (PAHs) found in fossil fuel products or formed from incomplete combustion of organic matter, such as coal tar used in asphalt.

Generated carcinogens won't have labels, and there may not be any reference to them on a SDS. However, there is often information available on managing risks of exposure to generated carcinogens to assist with managing the risks. For example, Safe Work Australia has published a *Guide for Managing the Risks of Exposure to Diesel Exhaust in the Workplace*.

Further information about generated carcinogens relevant to particular industries and types of work is available from WHS regulators, industry associations, unions, technical specialists, occupational hygienists and safety consultants.

3. ASSESSING THE LEVEL OF RISK

3.1. Route of exposure

It is important to consider the route of exposure for the chemical. Some substances may only be carcinogenic if they are absorbed through the skin, whereas others may only be carcinogenic if they are inhaled. Others may be carcinogenic *via* all routes of exposure. Knowing the route of exposure is a key factor in working out which controls will be most effective for eliminating or minimising the risks.

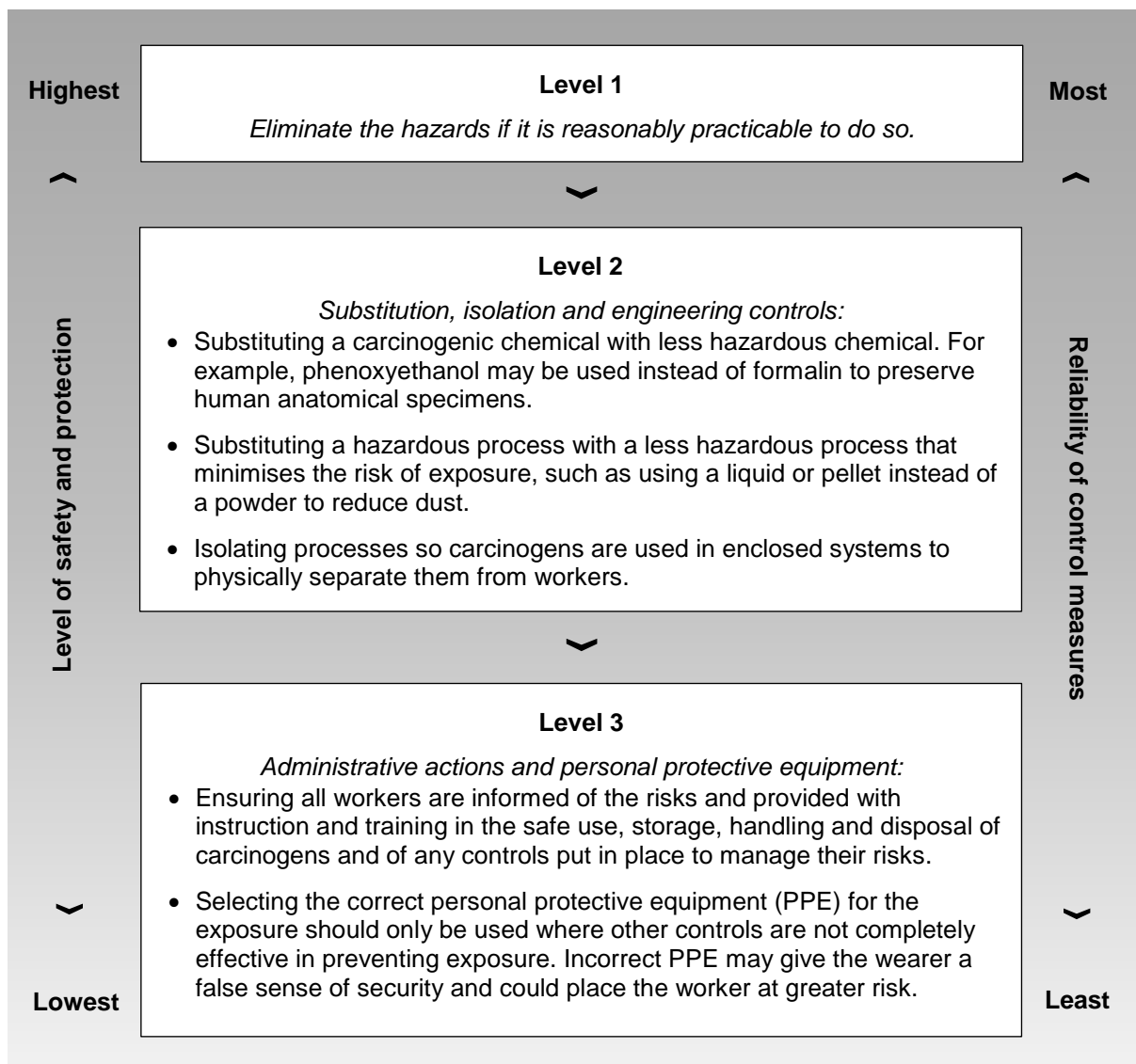
3.2. Other hazards

Chemical carcinogens, as with other chemicals, may present risks such as flammability or corrosivity. These other properties should be taken into account when deciding how to eliminate or minimise risks.

3.3. Controlling the risk

The ways of controlling risks are ranked from the highest level of protection and reliability to the lowest. This ranking is known as the hierarchy of risk control and is shown in Figure 1, along with examples of controls for carcinogens. The WHS Regulations require duty holders to work through this hierarchy when managing risk under the WHS Regulations.

Figure 1 Hierarchy of risk control measures



Hazards should be eliminated where possible, as this is the most effective control. This may include considering whether it is necessary to undertake the task. If elimination is not reasonably practicable, the risk should be minimised by working through the other alternatives in the hierarchy.

Any controls already in place should be checked to ensure they are working effectively, for example, local exhaust ventilation and fume hoods may need testing to check they are working properly. It is critical to provide training to workers in the correct use and of any controls which have been selected.

Due to the significant risk to health associated with exposure to carcinogens a detailed risk assessment is recommended. More information is provided in the [Model Code of Practice on Managing Risks of Hazardous Chemicals in the Workplace](#).

4. FURTHER INFORMATION

The [International Agency for Research on Cancer](#) provides a range of information on managing carcinogens, chemicals where evidence of a carcinogenic effect is emerging, and current research.

Safe Work Australia provides guidance for medical practitioners carrying out or supervising a health monitoring program for workers who may be exposed to [polycyclic aromatic hydrocarbons](#).

Safe Work Australia also provides guidance for persons conducting a business or undertaking who are required to provide [health monitoring for workers](#).