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Work Health and Safety

Hazardous Substances Risk Management

INTRODUCTION

Hazardous substances are any chemicals or other materials that may put people at risk. They include pesticides, acids, solvents, cleaners, paints, asbestos, wood dust and welding fumes.

Burns, poisonings, allergic reactions and cancer – these are some of the consequences of unsafe use of hazardous substances at work. Safe Work Australia, estimates that, in Australia:

- 5,000 cancers each year are from occupational causes, including exposure to hazardous substances;
- 800 deaths each year are the result of cardiovascular disease caused by chemicals at work;
- In a recent year, nearly 500 mesothelioma deaths were caused by asbestos; and
- 15% of all asthma cases are caused by chemicals at work.

Hazardous substances are a major workplace hazard. It is vital to secure the health and safety of workers by undertaking adequate risk management.

This film will show you how to **identify** chemical hazards, **assess** the risk of injury or harm, and **control** the risk.

Identify the hazards

Let's see how hazardous substances at work can be identified.

Talking to workers during a walk-through inspection is the best way to start identifying the hazardous substances in the workplace. During the walk-through inspection it's important to read the labels on the chemical containers and also check the Material Safety Data Sheet or MSDS to see if the substance being used is hazardous.

The MSDS is provided by the supplier or manufacturer of the chemical. The MSDS is important because it will state whether the substance is Hazardous and explain how to use it safely. Workers must have easy access to the MSDS. The MSDS must be the most up to date version, as they are updated at least every 5 years.

Containers of hazardous substances in the workplace must be clearly labelled with the original supplier's label.

If chemicals are transferred to another container and not used immediately, that container must be labelled with at least the chemical name and risk and safety phrases.

This film is about hazardous substances, which can harm health. Please note that if the substance is also a dangerous good (which you can tell from the diamond shaped label), further requirements may apply, for example, for storage, transport and signage.

Chemicals do not only come in containers. It's important to consider whether there are other sources of hazardous substances, such as exhaust gases from fuel powered equipment, welding fumes, dust from natural products, or decomposition products such as hydrogen sulphide in sewers. It may not be possible to locate an MSDS for these products and in such cases workers will have to be provided with alternative but equivalent information about the hazards and safe handling requirements.

Register

Once the hazardous substances have been identified, they must be listed in a hazardous substances register, which must also reference the risk assessments that have been done. The register must also hold the relevant MSDS be kept up to date and be easily accessible to workers as it is the main source of information about hazardous substances at the workplace.

Retailers do not need to have a register of hazardous substances or hold copies of the MSDS for products that are in containers smaller than 30 kilograms or 30 litres and are only opened by the customer off the premises. Material Safety Data Sheets are still available for hazardous substances bought from retailers, by contacting the manufacturer or importer using the contact details on the label.

Risk Assessment

A risk assessment involves noting the hazards of the substance, considering how it is used at the workplace, and identifying gaps where exposure could occur and cause health problems. The purpose is to make sure control measures are adequate in preventing exposure. Risk assessments must be done for all hazardous substances used at work, and must be recorded.

The first step is to work out who will do the risk assessment, and who should be consulted. The person doing the assessment should have an understanding of the task as well as how to do a risk assessment. This will often be the manager of the area, with the assistance of the health and safety officer where there is one. Assistance from an occupational hygienist may be needed for detailed risk assessments.

At this stage, also consider whether there are any other chemicals that have the same hazards as the one being assessed, and that are used in the same way. If this is the case, they can be assessed as a group instead of doing separate risk assessments for each. For example, a variety of brands and colours of 2-pack vehicle spray paint could be assessed as a group.

At this assay laboratory, ore samples for analysis have been assessed in groups on the basis of whether or not there is a likelihood of asbestos being present.

Similarly, if a chemical is used with the same controls at more than one workplace controlled by the same business, one risk assessment could cover both workplaces. An example of this could be the use of a hazardous cleaning product in a chain of hairdressing salons.

The risk assessment process does not need to be recorded if the product is not classified as hazardous. Therefore, before starting the assessment, check the MSDS to determine if the substance is hazardous.

Next, read the MSDS to ensure you have a clear understanding of the hazards of the chemical, and the procedures and equipment required to use it safely. Also consider the procedures and equipment needed in the event of a spill, fire, or incident requiring first aid.

Inspect the work area and talk to workers to determine how the hazardous substances are **really** being used. Note whether this differs to the procedures outlined in the MSDS. Also, consider whether it is really necessary to use this chemical at all for the task.

If the chemical is being used in accordance with the MSDS and all controls have been maintained, this is called a “simple and obvious” risk assessment and all that is needed is to note in the hazardous substances register the date of the assessment, who did the assessment, and that controls in operation were in accordance with the MSDS.

Where the risk assessment finds that controls need to be improved, or where processes are complex or there is uncertainty about the risks, a detailed assessment with a report must be completed. The assessment report does not need to be in a particular format, but should include the Date of the assessment, who did the assessment, the Hazards of the chemical, the Adequacy of controls at the time of the assessment, the Conclusion about risk at the time of the assessment, the need for improvements, and details of any actions to be taken, who will implement the actions and the completion date and sign off.

A more detailed assessment by an occupational hygienist may be needed if:

- The effectiveness of ventilation is not known or there is no mechanical ventilation; or
- People in the workplace are reporting health problems that may be due to the chemical; or
- There is a potential for serious health effects if controls are inadequate; or
- It is a complex work environment and it is difficult to estimate the workers exposure to the hazardous substance.

A more detailed assessment by an occupational hygienist may include checking ventilation systems or measuring the levels of a hazardous substance in the air to see if exposure standards are likely to be exceeded. If results are more than half of the exposure standard, controls should be improved so that levels in the air are minimized as far as practicable.

Make sure risk assessment reports are available to all workers who could be exposed to the chemical. Review the risk assessment if the process changes significantly, if problems are reported, or at least every five years.

Controlling the risk

If the risk assessment determines the risk is significant and not adequately controlled at the moment, risk control measures must be introduced.

The hierarchy of controls is used to select the most effective controls or combination of controls. The controls are in order from most to least effective.

- Elimination
- Substitution
- Engineering
- Safe work practices
- Personal protective equipment

The hierarchy is used because it's important to consider introducing the higher level and more effective measures first, instead of relying on just personal protective equipment and safe work practices which can more easily fail.

ELIMINATION

Sometimes it is possible to eliminate chemicals entirely, for example by using microfibre cleaning cloths instead of cleaning chemicals.

SUBSTITUTION

Substitution is about choosing a safer chemical, or a safer form of the chemical. For example, using a water based paint instead of an oil based paint, or using a solid reagent in pellet form instead of in a dusty form.

ENGINEERING

Engineering controls include ventilation systems, automatic systems, enclosed systems or other engineering measures that contains the hazardous substance or limits workers' exposure.

This robot handles ore samples in an isolated area, reducing the need for workers to handle dusty material.

SAFE WORK PRACTICES

Safe work practices may involve restricting the number of people exposed to a hazardous substance; reducing exposure time; keeping the work area clean; prohibiting eating, drinking and smoking in contaminated areas; keeping lids on containers when not in use; and providing decontamination facilities.

Safe working procedures should be documented. This can be in the form of a safe work method statement.

The business also has a duty to inform and train workers who use or may be exposed to hazardous substances. These workers must be informed of the hazards of the chemical, and trained in the safe working procedures, use of controls, emergency and first aid procedures, and the use of personal protective equipment.

Records of this training must be kept. These help the business to determine who has been trained, and also who may need refresher training.

Personal protective equipment or PPE is the least preferred risk control option as it may become ineffective, or not be used, or not be correctly used. It is most effective when used with higher level controls.

PPE must be made to the requirements of the relevant Australian Standard, and be well maintained. The business must ensure PPE has been chosen to suit the task and the worker; is readily available, clean and in good condition; and that workers use it when required. PPE must be provided to workers free of charge. Workers have a duty to wear the PPE provided, for those tasks where they have been instructed to wear it.

All controls need to be inspected and tested at regular intervals as part of ongoing monitoring of exposure levels.

Emergency planning

Controls and plans need to be in place for any emergencies involving hazardous substances. Such emergencies may include a large spill, fire, hazardous reaction, or situation where a worker is exposed to the hazardous substance. The MSDS contains information to assist in planning for emergency management, for example, if it is necessary to install eye wash equipment, safety showers, specific types of fire extinguishers, or hold specific antidotes in case of exposure.

Health Surveillance

For certain substances, including lead, silica, isocyanates and organophosphate pesticides, health surveillance must be carried out if there is a risk to health from the substance. In addition, health surveillance must be conducted for any hazardous substance if there is a risk to health from the substance and there is a method of detecting health problems.

Health surveillance involves doctor's examinations and, for some chemicals, biological tests such as blood or urine tests, to confirm that exposure is below accepted levels. Health surveillance helps the business to check that controls are adequate. Where health surveillance is needed, workers should be given information and training about the reason for the health surveillance and what it involves.

Conclusion

Hazardous substances, if not safely used, can cause health effects, either immediately, or many years into the future.

Make sure that workers know about the **hazards** of the chemicals they use, and that the **risks** have been assessed and are being properly **controlled**. If you're not sure if controls are adequate, get advice from an occupational hygienist, or from your regulatory authority.