Working with Chemicals, Confined Spaces and Respirators

FOR THE FARMER

ACC WorkSafe

WORKING WITH CHEMICALS, CONFINED SPACES AND RESPIRATORS

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Confined spaces

About 10% of all work-related deaths in New Zealand happen in confined spaces. Every year some of these deaths are on farms and in most cases more than one person is involved.

There are many confined spaces on farms such as tanks, vessels, milk vats, silos, bins, vaults, offal pits, drains and underground pipes – spaces where gases can collect or where oxygen is depleted from the breathing air.

- Gases can collect in places including open-topped tanks, furnaces and ovens, particularly when welding.
- Rusting tanks often consume oxygen from the atmosphere.
- Decomposing organic matter in the bottom of tanks releases sulphides.
- Some farm processes produce a range of toxic or oxygen-displacing gases – eg, pig vats.

Assess the risk

You, your employees and contractors need to know the risks of working in confined spaces and how to assess those risks before entering.

- A person familiar with potential risks in a confined space should assess the risks of every confined space before anyone enters, every time.
- Only enter a confined space if you have been trained in the potential risks.
- Do not attempt work if you are unfamiliar with the physical characteristics of gases and the procedures for working in areas where these may collect.
- When working in a confined space remain in visual contact with someone outside who can contact emergency services.

Rescue personnel must be trained in the removal of a person from a confined space.

Plan a good system for communicating with those in the confined space.

Communication needs to be available with the relevant emergency services.

Regularly practise personnel retrieval techniques.

Employ expertise to measure gases

- Always use an expert to measure gas concentrations prior to and during the work.
- Gas-sensing equipment needs regular calibration as the electrochemical sensors are easily poisoned and can give incorrect readings.

Chemicals

Some effects of chemicals are evident in a relatively short time but many of them do not show up for several decades.

Working with glues, paint, paint strippers, some agri-chemicals and solvents can have long-term health effects that are not immediately obvious. These can severely limit the quality of your life in the future.

When working with chemicals:

- always refer to the Material Safety Data Sheet (MSDS) supplied by the manufacturer or distributor of the chemical
  - This will have the latest health information (but make sure the MSDS has been published within the past five years).

- The information may also be available from the National Poisons Centre on 0800 POISON (0800 764 766).
- Information is available on the Internet but you should always ensure it is current and comes from a reputable source.

⇢ your employees and contractors who are using chemicals should also read and understand the relevant MSDS. The sheets can sometimes be complicated and difficult to understand so you may need to discuss the safety information with them. If aspects of the MSDS are unclear, seek advice from the manufacturer or an occupational hygienist.

Assess the risk

When assessing the risk of using chemicals think about:

⇢ how many people will be exposed to the chemical and for what period of time

⇢ the type of protection required

⇢ the limitations of personal protective equipment

⇢ the method of application

⇢ the training and experience of those who will use it.

Ask yourself:

⇢ is it really necessary to use the chemical?

⇢ is there another way of doing this task?

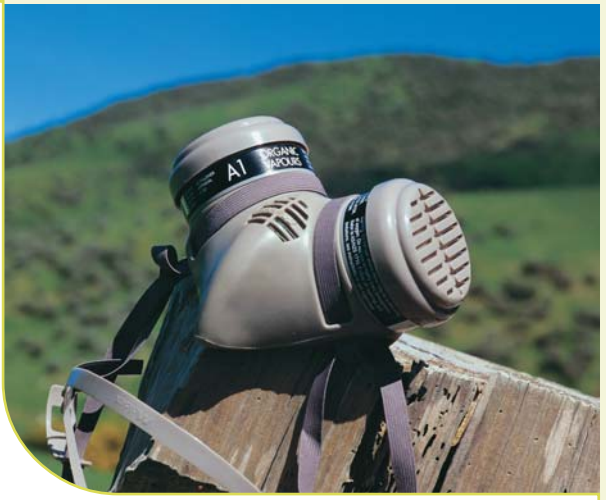
⇢ is it possible to use a chemical with less risk to people?

USE PERSONAL PROTECTIVE EQUIPMENT

The MSDS that accompanies chemicals will have information about the type of personal protective equipment that should be worn when using them. Details are specific. Do not substitute equipment and clothing, it could result in severe personal injuries. If a respirator is necessary it should be chosen and worn with considerable care.
See the separate section in this brochure about using respirators.

Storing chemicals

Find out which chemicals can and cannot be stored together and the correct method for their storage and transportation. This information is available from the MSDS, the manufacturer or local council. Information may also be available in the Hazardous Substances and New Organisms Act at www.hsno.govt.nz



⇢ Keep containers closed and clearly labelled.

⇢ Leaking containers can present a serious environmental or health hazard. Bunding of chemical containers is often recommended.

⇢ Know what to do if there is a spill or leak. There may be risks to people and the environment.

⇢ Return empty containers to the supplier if possible. Otherwise organise disposal that will not harm people or the environment. Often local councils can help.

⇢ Always lock the storage area and keep stocks to a minimum.

⇢ Ensure good ventilation and an adequate supply of fresh water when using chemicals.

Respirators

Farming operations can involve exposure to respiratory hazards such as gases and fine dust particles. These can result in respiratory disease or death.

Using respirators is recommended only after all alternative methods of protecting people from workplace airborne hazards have been exhausted.

Respirators are usually uncomfortable to wear, particularly for long periods, and some people are unable to wear respirators because of psychological and physical reasons.

Choosing equipment

There are many different types of respirators. Many are for specific types of applications. The correct choice of equipment is important.

⇢ Select the respirator recommended for the specific hazard and its concentration.

⇢ It is dangerous to use either incorrect respirators or incorrect cartridges.

- Get advice on respiratory protection from an occupational hygienist or someone experienced and knowledgeable in the application under consideration.
- Respirators come in a variety of sizes to suit different face shapes.
- In some situations, specific respiratory equipment is required – eg, IDLH (Immediately Dangerous to Life and Health), or in confined spaces.
- Respirator types include:
  - disposable respirators (generally only suitable in low risk situations)
  - half-face rubber respirators
  - full-face respirators
  - PAPR (Power Assisted Air Purifying Respirators)
  - FPBR (Fan Supplied Positive Pressure Breath Responsive) respirators
  - SCBA (Self-Contained Breathing Apparatus).

Choice of cartridges and filters

- Respirators and cartridges must not be interchanged. There are many types of cartridges and filters and every manufacturer has equipment that is unique to them.
- There are many gas cartridges to protect against the inhalation of specific gases.
- Similarly, it is important to choose the correct filter for the application.

THE IMPORTANCE OF FIT

All respirators depend on an air seal between the respirator and your face. It is important that the seal is checked before you use the respirator and before entering the contaminated area. A beard or other facial hair between the sealing surface of the respirator and the face must be removed. The exception may be with certain types of respiratory equipment such as PAPRs, FPBRs and air-line equipment.

Training and education

Training is essential. Check with your distributor for local courses or seek personal advice.

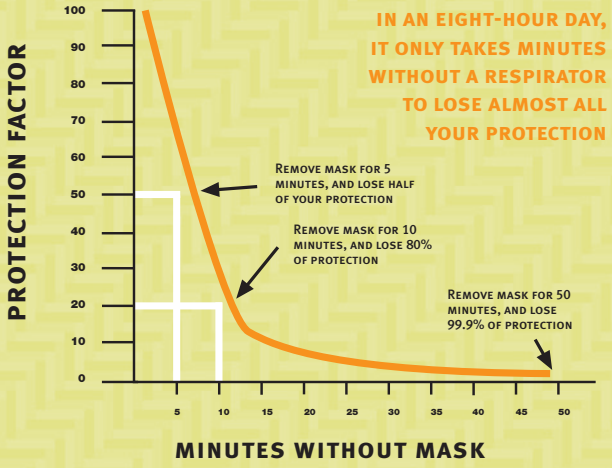
- Training must include:
  - reasons why the respirator is necessary
  - the limitations and capabilities of the respirator
  - what to do if the respirator fails
  - how to inspect equipment
  - how to check for seals between respirator and face
  - procedures for maintenance and storage
  - how to recognise medical signs and symptoms that may limit the effective use of respirators.
- Training must be updated within 12 months.

Maintaining equipment

- All respiratory equipment must be maintained and cleaned on a regular basis and stored in airtight containers when not in use.
- Cartridges and filters must be replaced at regular intervals, well before the end-of-service life.

Importance of "wear-time"

The following diagram shows the importance of wearing your respirator 100% of the time. ACC is grateful to Safety Equipment Australia (www.sea.com.au) for the use of this diagram.



Further resources for the farmer...

visit → www.acc.co.nz/injury-prevention

or call → 0800 THINKSAFE (0800 844 657)