# WorkSafe SmartMove

Additional resources

## Hazardous Waste in the Workplace

Know what they are and how to dispose of them safely

## Disclaimer



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## Reference

Department of Energy, Mines, Industry Regulation and Safety. (2022, April 2). *WorkSafe SmartMove Knowledge. Hazardous waste in the workplace*: *What they are and how to dispose of them safely*. Western Australian Government.

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# Contents

# Hazardous waste in the workplace

*An explosion and fire occurred in a residential building. Workers had just finished consolidating hazardous waste from smaller containers into two larger drums. The wastes, nitric acid and lacquer thinner, were incompatible. Thirty-six people were injured, including six firefighters and 14 members of the public. The building was extensively damaged.*

Schools and workplaces commonly have and use hazardous chemicals and dangerous goods. These products can be identified with corrosive, flammable, toxic, oxidising substance labels.

These products includes:

- Batteries
- Aerosols
- Paints
- Hazardous chemicals - poisons, household cleaners and chemicals, pool chemicals, garden chemicals and pesticides

Most of these products are corrosive in nature and can cause corrosive burns on skin. They can also be very reactive and if mixed with incompatible chemicals they can generate toxic fumes, fire or explosion.

At the end of their life cycle the used products cannot go into a general waste bin. They should be disposed of separately from general waste, such as through a local council hazardous waste collection program.

***Be aware!***

*Read product safety data sheet (SDS) and local/state regulations for advice and guidelines on disposal.*

*Do not throw cleaning chemicals into just any bin or dispose of them into the drain. They may leach into the soil and waterways causing environmental damage.*

*Use separate, clearly labelled containers for clean up of spilled materials to avoid accidental mixing of spilled chemicals.*

*Keep chemicals in their original packaging if possible. This is because original packaging:*

☼ *is already correctly labelled*

☼ *prevents escape of chemicals*

☼ *is designed to not be affected by the chemicals and is strong enough to withstand normal handling.*

## Recycling of hazardous chemicals

### Recycling of batteries

*Used batteries thrown away in household rubbish can cause catastrophic events. These discarded batteries are likely to be crushed or punctured during waste collection and processing at the waste and recycling sites. Particularly lithium and nickel-metal hydride (rechargeable) batteries can ignite*

*or explode when damaged and set fire to other materials. These can lead to incidents requiring dozens of firefighters and the evacuation of residents, potentially putting lives at risk.*

If batteries are not disposed of properly their casings may fall apart causing injuries or incidents.

For example, car batteries contain highly corrosive sulphuric acid. These chemicals can cause skin burns or have prolonged devastating effects on human health. They can also find their way into the soil and ground water affecting wildlife and environment.

Lithium batteries are commonly found in mobile phones, laptops, tablets, Bluetooth devices, electric toothbrushes, power tools and e-cigarettes. If disposed lithium batteries are damaged, short-circuited or over heated, they can catch fire or explode.

***Remember:***

*The 3S's of lithium battery safety:*

☼ ***S****eparate lithium batteries from other batteries and any flammable or combustible materials.*

☼ ***S****ecure battery terminals with tape or other insulating material to prevent short circuits.*

☼ ***S****tore batteries in fire resistant containers and in a cool dry location away from sources of heat.*

## Recycling of aerosols

*The driver of a recycling collection truck had a lucky escape while driving through town to a recycling facility. As the truck approached the town centre, a loud explosion occurred. This followed was with a huge plume of smoke and then large flames from the truck.*

*Thinking quickly, the driver spotted an open area carpark and managed to drive in and empty his burning load of recycling onto the ground. The driver then was able to move the truck to a safe position away from the burning load. It's believed the fire within the truck was caused by the explosion of an aerosol can.*

***Be aware!***

*Aerosols can contain pressurised liquid or gas. They can explode under certain conditions such as impact or heat. Keep aerosol cans away from direct sunlight.*

*Do not pierce, crush or flatten an aerosol as that will increase risk of explosion.*

*Disposal of full and partially empty cans is done through the local council hazardous waste collection program.*

## Recycling of flammable liquids

*A worker used an electric arc welder to attach a bracket to a sealed metal tank. The tank had previously contained flammable liquids including methanol. When the worker commenced tack welding the bracket to the outside of the tank, the tank started to make rumbling noises and an explosion occurred. The explosion blew the lid off the tank and pulled the tank supports out of the concrete floor. No-one was injured in this incident, but there was significant potential for serious injury or death.*

*Contributing factors:*

- *The tank was drained before the welding commenced; however residual flammable liquid remained inside the tank.*

- *The tank was not cleaned or checked to ensure it was free of flammable substances before welding commenced.*

Paints and solvents such as acetone, ethanol and methanol are highly flammable. Fumes of these products can ignite when mixed with air in the right ratio and in the presence of ignition sources.

***Be aware!***

*Even small (residual) amounts of flammable fumes can ignite.*

*Do not cut or pierce any container containing flammable liquid residue.*

*Keep containers with flammable liquid waste in a well ventilated area (preferably outdoors) away from ignition sources and sources of heat.*

## Steps to keep hazardous waste safe

### Step 1: Know your waste

Check whether the product is dangerous goods/hazardous waste by looking at its hazard labels and reading the product's safety data sheet (SDS) for information.

### Step 2: Separate and store hazardous waste safely

Store in a secure place, label containers with the type of waste they contain. This will prevent any run off or waste being reused.

### Step 3: Maintain good housekeeping practices around hazardous waste

Avoid accumulation of combustible materials and segregate from other incompatible chemicals

### Step 4: Follow the laws

Dispose of waste in line with state/local regulations.

***Notes:***

*Dangerous goods waste is primarily administered under the Dangerous Goods Safety Act 2004 and relevant regulations.*

*All workers must be aware of the hazards associated with dangerous goods waste. This is achieved through appropriate training, instruction and supervision.*

## Knowledge quiz

1. What **NOT** to do with hazardous chemicals?

   Select **one** correct answer.

   a. Throw hazardous chemicals into a waste bin or dispose of them into the drain

   b. Use separate, clearly labelled containers to avoid accidental mixing of hazardous chemicals

   c. Keep hazardous chemicals in their original packaging if possible

2. Why is it preferable to keep hazardous chemicals in the original packaging?

   Select **three** that apply.

   a. Original packaging is already correctly labelled
   b. Original packaging prevents escape of chemicals
   c. Original packaging is designed to not be affected by the chemicals and is strong enough to withstand normal handling
   d. Original packaging looks pretty

3. What **NOT** to do with aerosol cans?

   Select **one** correct answer.

   a. Flatten the aerosol can so you can get more space in a bin
   b. Always dispose full and partially empty aerosol cans through the local council hazardous waste collection program
   c. Keep aerosol cans away from direct sunlight

4. Flammable fumes can ignite if mixed with air in the right ratio and presence of ignition sources. Identify **five** ignition sources from items below:

   a. Heater
   b. Grinding equipment
   c. Mop
   d. Power switch
   e. Lighter
   f. Welding kit

5. The 3S's of lithium battery safety are:

> ***S****eparate lithium batteries from other batteries and any flammable or combustible materials*
>
> ***S****ecure battery terminals with tape or other insulating material to prevent short circuits*
>
> ***S****tore batteries in fire resistant containers and in a cool dry location away from sources of heat*

   a. True
   b. False