Environmental Protection Authority
Te Mana Rauhī Taiao

WORKSAFE NEW ZEALAND | MAHI HAUMARU AOTEAROA

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Working safely with hazardous substances in your collision repair workshop

The Environmental Protection Authority thanks Porirua Auto Crash Repairs for their assistance in allowing photographs to be taken at their premises. All of the photos used in this publication were taken at Porirua Auto Crash Repairs.

What does this document contain?

This document has been written for employers in the collision repair industry and provides information about how to safely manage the hazardous substances (products) you use at work.

It also gives you information about what you need to do under the Hazardous Substances and New Organisms Act (HSNO) in some general situations.

The poster that goes with this document has been developed to remind your staff about the importance of wearing proper personal protective equipment. Put it up in your workplace where people can see it.

The collision repair industry uses a number of hazardous substances on a daily basis. Generally, a collision repair workshop will have a flammable liquids store where these are stored, a paint mixing room and a spray booth.

In all of these areas, hazardous substances are present including:

- paints (which may contain isocyanates)
- solvent-based primers and lacquers (most likely containing isocyanates)
- thinners
- solvents for cleaning, such as methylated spirits
- rust removers
- epoxy resins, fillers and hardeners
- flammable degreasers
- petrol, and
- flammable, oxidising and non-hazardous gases.

Some collision repair workshops may also have a diesel tank for heating the spray booth.

All of these substances have different dangers associated with using them and should be used with care.

Health

Hazardous substances are dangerous - don't take them for granted

Working with hazardous substances (products) on a daily basis means it can be easy to take them for granted. But many of the products used in the collision repair industry can seriously damage your health if they aren't used safely.

It's easy to think that it won't happen to you. But the truth is that 500-800 New Zealanders die from work-related illnesses every year. Many of these deaths are thought to be related to exposure to hazardous substances at work.

Solvents and solvent-based products

Many people have their quality of life affected by exposure to hazardous substances. Solvent vapours are particularly dangerous, and people who often use solvents and solvent-based products without protecting themselves can experience symptoms such as:

- irritation of the eyes, lungs and skin
- headaches
- forgetfulness
- drowsiness
- feeling dizzy and/or nauseous
- feeling irritable, and
- mood changes.

Long-term effects can be more serious and cause:

- personality changes
- sleep disorders
- memory loss
- organ damage
- fertility problems
- damage to an unborn child, and
- death.

It's surprisingly easy to be exposed to solvents. Solvents release vapours into the air and can easily be breathed in.

When you get solvents on your skin they can go through your skin and get into your blood stream, affecting your internal organs.

If you have solvents on your hands after using them and then eat lunch or have a smoke, you also end up taking in the solvents.

Asthma and isocyanates

Some of the solvents and solvent-based paints used in your workshop may contain isocyanates. Exposure to isocyanates causes asthma and spray painters are therefore at a high risk of developing it.

Two-part paint products, sealers and lacquers are likely to contain isocyanates.

Check the ingredients on the label and the safety data sheet of your products for isocyanates and talk to your staff about the importance of protecting themselves from isocyanates.

Check your safety data sheet for ingredients that include the word *isocyanate*, *polyisocyanate* or *diisocyanate*.

For example:

- *Hexamethylene diisocyanate,* and
- *Aliphatic polyisocyanate*.

Isocyanates enter the body when you breathe in the fine spray mist. After spraying, even if you can no longer see any paint mist, you can still breathe in isocyanates and solvent vapours.

If spraying is done outside of a spray booth, isocyanates can travel in the air and affect other workers. So remind your staff that it's best practice to do all spraying in the spray-booth – even quick touch up jobs!

Keep your visor down!

Remind your staff that isocyanate mist can remain in the air for more than 20 minutes after they have finished spraying.

What can you do to keep safe?

Other products used in your workshop will also be hazardous substances and staff also need to know about the dangers of using those products as well.

Inventory

The best way to start managing the hazardous substances you have is to make a list of everything you've got. Often what you need to do to comply with HSNO will depend on what hazardous substances you use and how much you have.

A template of an inventory can be found on the Environmental Protection Authority's (EPA) website: www.epa.govt.nz. Search for *HSNO Hazardous Substance Inventory*.

Get a safety data sheet from your supplier

The best way to learn about the dangers of the hazardous substances you use is to check the safety data sheet for each one.

You need a safety data sheet for every hazardous substance at your workshop. Ask your supplier for one if any are missing. Safety data sheets contain important information about first aid, safe storage, cleaning up spills and what personal protective equipment should be worn by people using that product.

Get a safety data sheet, learn about the dangers of using your products and talk to your staff about them. Let them know that taking shortcuts on safety puts themselves and their workmates at risk and simply isn't acceptable.

It's particularly important for you to spend extra time discussing the dangers with people where English isn't their first language.

Eliminate, isolate, minimise

As the business owner, you must identify the hazards in your workplace and take action to eliminate, isolate and minimise those hazards. The hazards from hazardous substances are no exception.

Eliminate hazardous substances

Getting rid of hazardous substances and replacing them with ones that are less hazardous is the most effective way of protecting your staff.

For example, moving away from solvent-based paint systems to water-based paint systems would be ideal. However, this isn't always practical and even if you are using water-based paint systems the base coat and clear coat finish will still be solvent-based and possibly contain isocyanates.

Isolate the use of hazardous substances

Using spray booths is a good way to isolate the use of hazardous substances so that people working outside of the booth are protected from exposure to what's being sprayed.

But the person inside the booth needs to be protected by minimisation techniques, such as having a well maintained ventilation system and suitable personal protective equipment.

Minimise the risk from hazardous substances

Clear the air – your lungs are your life!

You need effective ventilation systems in your workshop and spray booths and these need to be regularly maintained to make sure they work properly. Check that ventilation systems function according to the manufacturer's specifications. This can greatly reduce exposure to vapour, dust, mist, gas or fumes given off by the hazardous substances used in your workshop.

Maintain your ventilation systems and respirators. Make sure they are working to the manufacturer's specifications.

Personal protective equipment

Personal protective equipment (PPE), such as overalls, gloves and respirators, is the last line of defence in protecting your own and your staff's health. Not all PPE is created equally though, so always check the safety data sheet to make sure you are using the right PPE for the hazardous substances you are using.

If your safety data sheet doesn't include detailed information about what PPE to wear when using the product, ask your supplier or contact WorkSafe for help.

You must make sure your staff know why it's important to wear PPE and how to use it properly.

Gloves

Nitrile gloves are suitable for most tasks in your workshop.

Latex gloves won't protect you from all of the hazardous substances used in your workshop. Latex gloves may "melt" when they come into contact with some products.

Respirators

A properly maintained supplied-air respirator provides better protection from isocyanate-containing mists and solvent vapours than a cartridge-type respirator.

The best supplied-air respirators are the loose-fitting helmet/hood type as these can also be used by people who wear glasses or have facial hair. Use clear plastic tear-away sheets to protect the respirator lens from the paint spray.

Nitrile gloves are suitable for most tasks in collision repair workshops while latex gloves may melt.

Supplied-air respirators provide the best protection from solvent vapours and isocyanates.

Summary of requirements discussed in this document

1. Know what hazardous substances you have and understand the harm they can cause

- Make a list of all of the hazardous substances that you have (page 4).
- Get a safety data sheet for each hazardous substance (page 4).
- Get to know the hazards of the substances you use (pages 3 and 4).

2. Eliminate, isolate and minimise

- If possible, get rid of hazardous substances and replace them with less hazardous ones (page 4).
- Isolate the use of hazardous substances (page 4).
- Minimise the risk from hazardous substances (pages 3 to 5).
  - Have well maintained ventilation systems.
  - Provide the right personal protective equipment, such as nitrile gloves and air-fed respirators.
- Manage staff exposure (page 5).

3. Be fire safe

- Be aware of flammable vapours (page 5).
- Establish hazardous atmosphere zones (page 5).
- Establish controlled zones, if required (page 6).
- Have the right type of fire extinguishers (page 6).

4. Be ready for a spill

- Have spill kits to clean up spills (page 6).
- Have secondary containment in place, if required (page 7).

5. Separate incompatible hazardous substances

- Keep hazardous substances that react with one another apart (page 7).

6. Have signs

- We recommend always having signs at your workshop (pages 7 and 8).

7. Test certificates

- Have an approved handler available, if required (page 9).
- Get a location test certificate, if required (pages 8 and 9).
  - If you need a location test certificate you will also need a site plan.
- Get a stationary container certificate, if required (page 9).

8. Emergency response plan

- We recommend always having a well-rehearsed emergency response plan in place (page 9).

Exposure management

When staff are frequently exposed to hazardous substances they should be monitored to make sure they don't suffer temporary or permanent damage to their health.

Monitoring exposure helps you determine:

1. the controls and protective equipment needed, and
2. whether the control measures and personal protective equipment you have in place are sufficient.

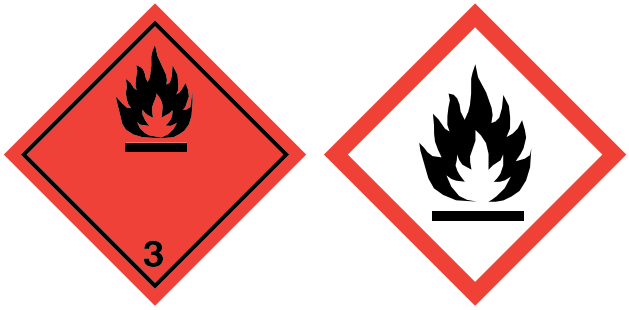
This monitoring could include air monitoring as well as monitoring staff blood and urine.

You must also assess the person's health in relation to the exposure. This might include lung function testing (to assess for asthma), skin allergy testing and neurological testing.

Talk to an occupational health nurse or other occupational health specialist, such as an occupational hygienist, if you need assistance.

Fire!

Most of the products used in a collision repair workshop are flammable liquids such as solvents and solvent-based paints. It's therefore essential that you are aware of the dangers of working with flammables and know what to do if something goes wrong.



Flammable vapours

Flammable liquids release flammable vapours. These vapours can build up in a workshop and if they aren't managed properly can ignite, resulting in a fire or explosion. The vapours can also travel significant distances.

Flammable fluids like thinners, solvents and fuels can accumulate static charges when they are flowing and can be ignited by static electricity. Extra care should therefore be taken when decanting flammable fluids.

Hazardous atmosphere zones

A hazardous atmosphere zone identifies an area where flammable vapours may be present around a place where flammable substances are used or stored. Special precautions are taken within the zone to prevent flammable vapour from igniting.

There are three types of hazardous atmosphere zones:

- Zone 0 – An explosive air-gas mixture is continuously present, present for long periods or frequently present.
- Zone 1 – An explosive air-gas mixture is likely to occur during normal operation.
- Zone 2 – An explosive air-gas mixture is not likely to occur during normal operation and, if it occurs, will persist for a short time period only.

Potential ignition sources include electrical equipment, naked flames, sparks from grinding and welding and hot surfaces.

The dimensions of each zone depends on several factors including the types of hazardous substances and the quality of the ventilation in place.

Within each zone, you need to consider whether potential ignition sources exist. Electrical equipment must be suitable for the zone or kept away from areas where vapour might build up, such as dangerous goods stores and workrooms.

Get advice and, if necessary, an electrical certificate from a registered electrical inspector if you aren't sure whether your electrical equipment is flameproof or is at a safe distance from a hazardous atmosphere zone.

Be aware of static electricity, especially when decanting flammable fluids.

Hazardous atmosphere zones in your collision repair workshop

At collision repair workshops, hazardous atmosphere zones typically exist where you find flammable liquids, LPG and acetylene.

For example, there is likely to be a hazardous atmosphere zone at:

- spray booths
- mixing rooms
- tinting operations
- vents of spray booths
- LPG cylinder areas, and
- parts wash vessels.

Diesel and oxygen do not require a hazardous atmosphere zone.

Controlled zones

A controlled zone is an area around a location where flammable or oxidising substances are stored or used. Within the controlled zone precautions are taken to protect the public *outside* of the controlled zone.

Every controlled zone is different and will depend on a variety of factors including:

- the amount of flammable or oxidising substances stored at your workplace
- how hazardous those substances are
- the type of storage - whether the hazardous substances are stored in tanks, drums, packages or cylinders, and whether they are stored inside or outside, and
- the construction of the buildings and the neighbouring environment.

You need to establish a controlled zone if you need a location test certificate. Talk to your test certifier if you are unsure what to do.

What else can you do?

- **Put a lid on it!**
  Keep containers closed when they are not being used. This helps to prevent flammable vapours getting into the air.
- **Use signs**
  Use signs around your workshop to let people know that there are flammable liquids present and that precautions need to be taken to prevent ignition.
- **Label them!**
  Keep flammable products in labelled containers.
- **Have ventilated storage**
  Store containers of flammable products in a well ventilated cabinet or store.
- **Beware of static electricity**
  Make sure metal containers are bonded and grounded properly to eliminate static electricity when decanting flammable liquids.
- **Be prepared for a spill**
  Clean up spills immediately with the proper equipment.

Fire extinguishers

When you have flammable substances onsite, it's best practice to always have fire extinguishers.

Fire extinguishers are used to put out fires when they first start and *before* they reach your hazardous substances to prevent a more serious situation from occurring.

If you have more than 250 L of flammable liquids you must have two fire extinguishers in your workshop.

You also need to make sure that:

- Your fire extinguishers are easily accessible and close to your flammable substances.
- Your fire extinguishers are of a sufficient standard. Generally, a fire extinguisher with a 30B rating will be suitable for your needs. Ask your equipment supplier for help.

Spills

Be prepared for a spill

You should be prepared to deal with a spill or leak of the hazardous substances you use and store at your workshop. The safety data sheet for each substance provides information about cleaning up spills.

For small spills, a spill kit might be sufficient to contain the spill. You can purchase spill kits from safety stores, or you can make a kit to suit your needs.

The equipment needed in your spill kit will depend on what hazardous substances you have and the amount that could possibly be spilled. You may need different spill kits to clean up spills of different sizes or involving different substances.

Generally, your spill kit should contain:

- personal protective equipment like overalls, gumboots, gloves, goggles and facemasks
- spill handling equipment like a shovel, but be aware that metal shovels could spark, which could be dangerous when you are cleaning up flammable substances
- spill containment equipment like drain guards or barriers and drip pans
- absorbent material like absorbent pads, charcoal, or sand (note that sawdust is not a suitable absorbent for flammable substances because it provides a fuel if a fire were to start), and
- a leak-proof disposal container to put the waste in once the spill has been cleaned up.

You need to make sure that your staff know where the spill kit is stored and how to use it.

Secondary containment (bunding)

Secondary containment ensures that liquid substances can be contained if they leak or spill from the container they are stored in. Secondary containment for above-ground tanks and drums is commonly in the form of a compound with bund walls.

You will need to have secondary containment in place if your spray booth is heated by a diesel burner and has a tank with more than 60 L of diesel.

Separate incompatible substances

Make sure that you store the hazardous substances that have the potential to react with one another separately.

If incompatible substances come into contact with each other they can cause a fire or explosion. Flammable substances like paints should be stored separately from oxidising substances such as body filler hardeners. Keep these stored well away from each other.

Check the safety data sheet for each hazardous substance to see what types of hazardous substances they are incompatible with.

Signs

Depending on the types and amounts of hazardous substances you have at your workshop, you may need signs to comply with HSNO.

Because of the flammable nature of products kept at collision repair workshops, we recommend always having signs to warn visitors that hazardous substances are present.

Signs are also important for emergency services when responding to an emergency. Emergency services use signs to decide on the course of action they will take and the protective equipment they will wear.

What to put on your sign

Signs must be made out of a durable material and clearly show in plain English or in pictograms:

- that hazardous substances are present
- the hazardous property of the substance and the type of hazard of each substance present
- precautions such as "Keep away" or "No smoking" to prevent unintended ignition, combustion, or thermal decomposition of the hazardous substance, and
- emergency actions such as "Call Emergency Services – Dial 111".

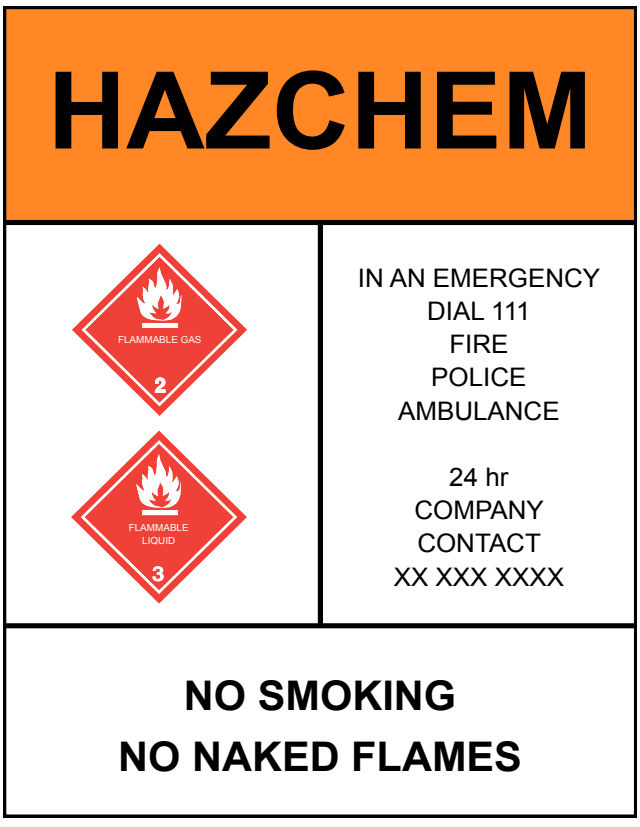
What's a pictogram?

A pictogram is a diamond shaped symbol used to show a particular hazard of a product. The red diamonds shown in the following examples of signs are the United Nations pictograms for transporting flammable liquids and gases.

Sign example: Flammable liquids and gases

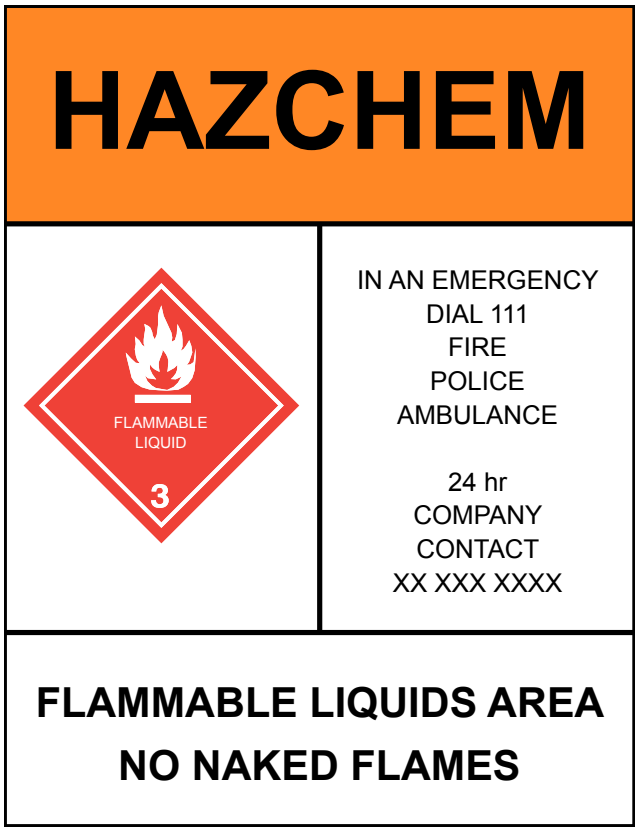
Collision repair shops are likely to have flammable liquids and gases.

The following sign is suitable if you have those substances at your workshop:



Sign example: Flammable liquids

The following sign warns people that you have flammable liquids at your workshop:



Where should I put the sign?

Signs need to be close to the place where the hazardous substances are stored, but not so close that people don't notice the sign before finding the hazardous substances.

Don't put the signs in places where they may be hidden. For example:

- beside doors or gates that cover the sign when the doors or gates are opened, and
- above doors, or anywhere the sign may be concealed by smoke in an emergency.

When hazardous substances are stored inside a building, signs must be put at each entrance to the building.

If the hazardous substances are in a particular room within a building, the entrance to that room must have a sign too. You must also place a sign at the entrance to the land where the building is located.

If the hazardous substances are located outdoors or in a tank, a sign must be positioned immediately next to that area or tank.

For a small workshop a sign at the main entrance to the building, for example by the roller door, is likely to be sufficient.

Test certificates

A test certificate confirms that you are compliant with particular HSNO rules.

Test certificates are issued by test certifiers. A test certifier is an independent person approved by the EPA. You can find a list of test certifiers on the EPA website, www.epa.govt.nz. Across the top of the EPA homepage is a tab called *Search our Databases*. Place your cursor on the tab and click on *HSNO Test Certifiers*.

Approved handler

If you have very toxic substances at your workshop or certain amounts of flammable or oxidising substances, one or more of your staff may need to be certified as an approved handler.

An approved handler is someone who has specific knowledge and experience about handling very hazardous substances and has received a test certificate from a test certifier.

Talk to your supplier and ask them whether you need to be an approved handler to handle any of the products purchased from them.

You will also need to have an approved handler available if you have more than 250 L of flammable liquids in containers that hold 5 L or more of product, or 500 L of flammable liquids in containers that hold less than 5 L of product.*

You will also need an approved handler to handle very toxic products or if you store 100 L or more of petrol in your workshop (this does not include petrol in the tanks of vehicles).

Location test certificate

If you have flammable or oxidising substances at your workplace, you may need a location test certificate. This certifies that you are managing your flammable or oxidising substances in accordance with the rules.

You will need a location test certificate if you have more than:

- 100 kg of LPG
- 50 L of petrol (excludes petrol in tanks of vehicles).

Depending on how flammable the paints you store are, the size of containers they are stored in, whether any containers are open or not and the amount of other flammable substances you have, you may need a location test certificate.

Prepare a detailed inventory of all your hazardous substances, get a safety data sheet for each one and then talk to a test certifier to find out if you need a location test certificate.

* This amount is only for flammable liquids with the HSNO classification 3.1B, check section 2 of your safety data sheet. If no HSNO classes are listed check section 14 for the UN class – if the UN class is class 3 and the packing group is II, it is a 3.1B substance.

Prep for the check!

Before issuing a location test certificate, the test certifier will check that you have:

- ☐ a list (inventory or manifest) of the type and amount of all of the hazardous substances at your workplace
- ☐ a site plan of your workplace showing:
  - all hazardous substance locations
  - hazardous atmosphere zones, and
  - controlled zones
- ☐ fire extinguishers available, if needed, and:
  - you have the correct number
  - you have the correct type, and
  - they are located not more than 30 m away from where your oxidising or flammable substances are stored
- ☐ stored your hazardous substances safely and any substances that are incompatible are stored separately
- ☐ established and managed controlled zones
- ☐ established and managed hazardous atmosphere zones
- ☐ an approved handler available, if needed
- ☐ procedures in place to prevent a fire from starting if you store flammable or oxidising substances
- ☐ signs in place, if needed
- ☐ prepared an emergency response plan, if needed
- ☐ secondary containment in place, if needed, and
- ☐ told your local WorkSafe office where your workplace is and what hazardous substances, and the amounts of those substances are used and stored there.

A location test certificate lasts for one year but you can apply for an extension of up to three years in total. Talk to your test certifier about this extension.

Stationary container system test certificate

A stationary container system is a fixed tank or process container and its associated equipment, pipe work and fittings. If you have a stationary tank containing a gas or a liquid hazardous substance you may need a stationary container system test certificate. This certifies that your tank is safe and complies with the rules.

A test certificate will be required where diesel fuel is used to heat your spray booth. The test certificate verifies that the system has been designed, installed and operates in accordance with accepted engineering principles.

Site plan

If you need a location test certificate, you must have a site plan (or plans) that shows:

- the site boundary
- the location of all hazardous substances present in relation to the site boundary
- any controlled zones associated with those hazardous substances
- any hazardous atmosphere zones associated with those hazardous substances, and
- the scale of the site plan.

It's also good practice to show:

- buildings located within the site boundary
- openings into buildings
- the date the plan was drawn
- the location of emergency response equipment, and
- the site identification, including the address of the site.

Emergency response plan

Because of the flammable nature of many of the products used in collision repair workshops, we recommend having a well-rehearsed emergency response plan in place.

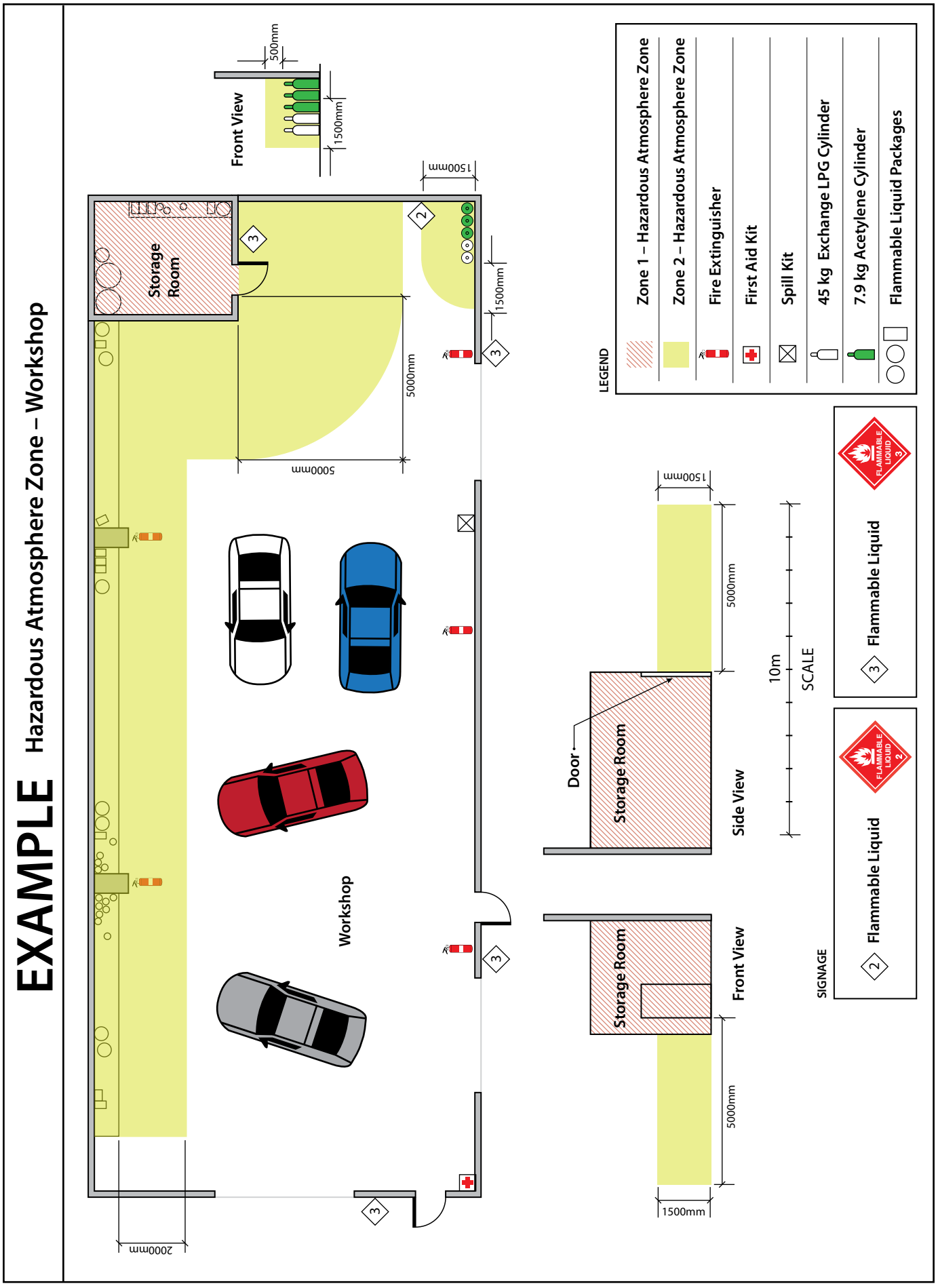
Your response plan must cover all the emergencies that might arise for the hazardous substances you have and be practised with your staff. This is more than just having a fire drill. It should look at each aspect of the plan and consider emergencies such as:

- flammable liquid spills (small and large)
- flammable liquid and gas fires (small and large), for example:
  - a fire in the mixing room, or
  - a fire in a building, including a building adjacent to your site
- emergency first aid, for example:
  - a person being splashed with paint, or
  - a person sustaining burns.

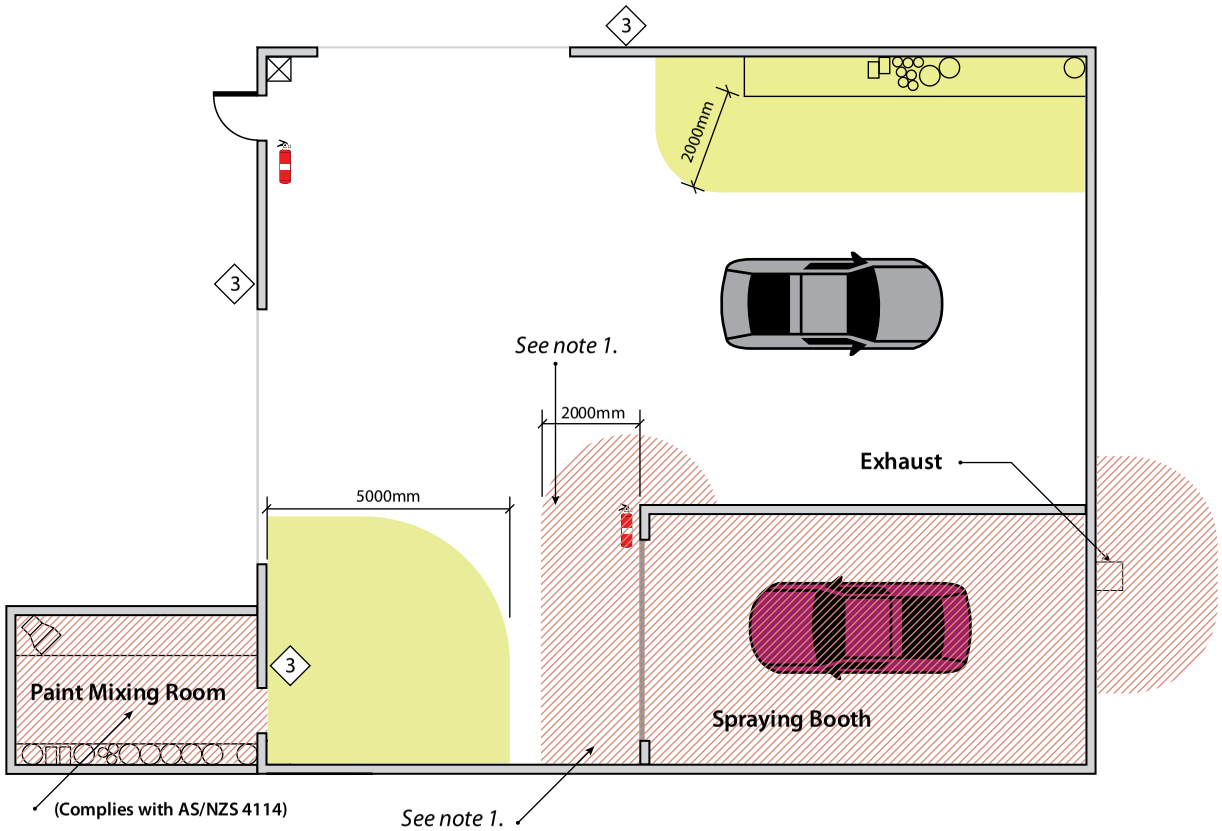
You must have an emergency response plan when you have 300 kg of LPG, 1,000 L of diesel or 100 L of petrol (excludes petrol and diesel in vehicle fuel tanks).

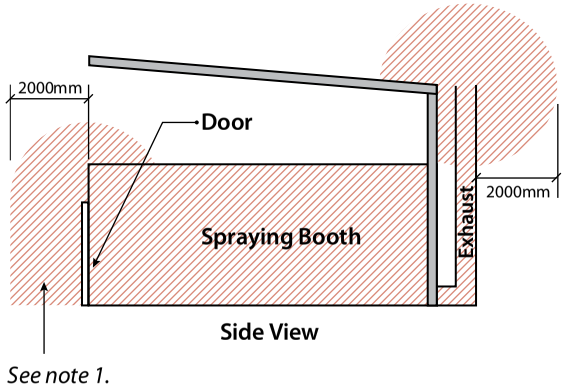
Your emergency response plan needs to be tested at least once a year to check that it works and is effective.

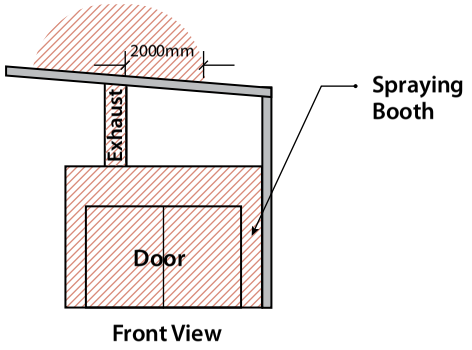
The EPA produces a template emergency response plan (flipchart format). If you would like a copy, please contact us on 0800 376 234.


EXAMPLE
Hazardous Atmosphere Zone – Workshop
Storage Room
Workshop
Front View
500mm
1500mm
5000mm
5000mm
1500mm
1500mm
2000mm
LEGEND
Zone 1 – Hazardous Atmosphere Zone
Zone 2 – Hazardous Atmosphere Zone
Fire Extinguisher
First Aid Kit
Spill Kit
45 kg Exchange LPG Cylinder
7.9 kg Acetylene Cylinder
Flammable Liquid Packages
SIGNAGE
Flammable Liquid
Flammable Liquid
SCALE
10m
Door
Storage Room
Side View
Storage Room
Front View
1500mm
5000mm
1500mm
5000mm

EXAMPLE Hazardous Atmosphere Zone – Painting Activity







Note 1. A paint booth or paint mixing room which is negative pressure and which is interlocked within the door may not require a hazardous atmosphere zone outside the booth or room.

10m
SCALE

SIGNAGE

3 Flammable Liquid

LEGEND

- Zone 1 – Hazardous Atmosphere Zone
- Zone 2 – Hazardous Atmosphere Zone
- Fire Extinguisher
- First Aid Kit
- Spill Kit
- Flammable Liquid Packages

Disclaimer

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If you find any information in this document that you believe may be inaccurate, or you would like to provide any feedback, please email hsinfo@epa.govt.nz.

Contacts for further information

- **Your supplier**
  If you have questions about one of your products, check the safety data sheet and talk to your supplier.
- **WorkSafe New Zealand**
  Phone 0800 030 040, or email info@worksafe.govt.nz.
- **Environmental Protection Authority**
  For information on complying with HSNO call during business hours on 0800 376 234, or email hsinfo@epa.govt.nz.