AIR POLLUTION AND NOISE CONTROL

What you need to know about air pollution

06

Straightforward advice to help vehicle repairers get ahead in today's business environment

Some of your workshop activities can generate dust, odours, vapours and smoke from things you do or products and equipment you use. These can affect the health of your staff and neighbours, create nuisance odours and contribute to the bigger problem of urban air pollution.

Generally in New Zealand, permits are required for discharges of pollutants to air if their effects are noxious, dangerous, offensive, or objectionable to such an extent that it has or is likely to have an adverse effect on the environment, or you use over a specified quantity of paint or solvent per day. Check with your regional council to determine if your operations need a permit.

Even if you don't need a permit, remember that controlling air emissions is important for the health and safety of your staff. And while some air pollutants like dust may remain on your property, if they settle on your forecourt or roof the rain can wash them into stormwater drains, adding to the pollution load in streams, lakes and harbours.

KEY POINTS

This fact sheet gives practical tips on responsible

- use of chemicals
- surface preparation
- spray painting and surface coating
- use of gases
- burning

USING CHEMICALS

- think about the amount and type of chemicals you are using and consider the alternatives. Organic solvents such as toluene and xylene produce strong odours. There may be another more environmentally-friendly and cost-competitive solvent or paint available on the market that you could use instead. Ask your supplier and see fact sheet 5 for more information
- stay up to date through your industry association of new developments in painting technology: these often reduce both operating costs and environmental impacts
- find out if paints with higher solids content are available for your applications: a lower solvent to solids ratio will reduce the total amount of paint needed for an application and also reduce the amount of solvent emitted
- consider using water-based paints and fillers that are low in isocyanate. These are less toxic to both people and the environment and are carried by several major manufacturers and suppliers. Ask your existing supplier about them
- look for the Approved code of practice for the safe use of isocyanates from the Department of Labour's website at **www.dol.govt.nz**

SURFACE CLEANING AND PREPARATION

Dust from your premises may contain heavy metals or other toxic substances that can cause serious health problems for staff, customers and the local neighbourhood.

To prevent or reduce dust emissions during surface cleaning and preparation:

- carry out all surface preparation within a covered, bunded and sealed area
- use a wet sponge and a bucket to wet-sand prepared surfaces, then use a wet/dry vacuum cleaner with a bag filter to collect the sludge and dust, instead of sweeping and hosing down with water. This will reduce dust movement, prevent stormwater pollution, improve cleaning efficiency and reduce water use. Bag the dust or dried sludge before putting it in your skip for disposal to landfill
- connect tools to an efficient dust extraction system when dry sanding and grinding
- always do abrasive blasting, particularly dry blasting, in an enclosed booth or chamber. Ask your local council how to dispose of sweepings, filters and spent abrasive blasting material. Don't let sanding dust be a nuisance to neighbours
- put floor-sweeping dust in a bag or cardboard box before putting it into the skip to stop the dust from becoming airborne when the bin is emptied

Ministry for the Environment
Manatū Mō Te Taiao
IAG NEW ZEALAND

SPRAY PAINTING AND SURFACE COATING

Many of the solvents in common use are a health hazard and have the potential to contribute to atmospheric pollution.

The air emissions from surface coating operations are organic solvents, mainly volatile organic compounds (VOCs) evaporated from the coatings. VOC emissions come from several stages in the process, including during atomising and applying the coating, initial air drying of the parts after they leave the spray booth, and in the bake oven. For simple vehicle repairs where neither spray booths nor bake ovens are used, VOCs are mainly emitted during coating application and drying.

Fugitive emissions occur when coatings are mixed and loaded into the application device, during transport of coated parts from the spray booth to the oven, and during post-curing.

Sources of air pollution from solvent and powder-based systems are:

- solvent emissions from storage areas, spills, evaporation from painted surfaces and dust from pre-painting steps (sanding and abrasive blasting)
- paint components (solvents, hardeners and plasticisers) volatilised during application or curing
- toxic smoke from any fires or dust explosions from solvent, paint and powder
- inadequate ventilation, treatment and dispersion of fumes, vapours and paint overspray
- drift of overspray from the premises causing damage to cars

To prevent or reduce emissions during spray painting and surface coating activities:

- minimise solvent exposures during paint mixing and batch preparation by doing these in a well-ventilated room or spray booth. Position the vapour extraction inlet where it will draw vapours away from the operator, and connect it to a filtration extractor such as a standard spray booth ventilation system
- use efficient spray painting equipment such as high-volume low-pressure (HVLP) spray guns and airless electrostatic spray guns. These have a transfer efficiency of over 65% and substantially reduce solvent VOCs emissions as well as paint use and operating costs
- do all small paint jobs inside in a well-ventilated area, to prevent the build-up of explosive solvent fumes: don't spray outside
- always work in a fully enclosed spray booth when using spray paints containing isocyanates (such as some two-packs) and/or lead
- do all spray painting in a spray booth that has an exhaust fan and a clean and effective filter
- spray must not leave the booth
- make sure the booth complies with the ventilation rates and exhaust duct design specified in the relevant guidelines (see below for more information)
- depending on the type and volume of spraying, the spray booth filter can be a dry (fibre) filter, a water scrubber or an activated carbon filter. Large, continuous spray painting operations may need activated carbon filters
- maintain filters regularly and make sure they are suitable for the application rates by referring to the general guidance in the table below:

Application rate	Suitable filter
more than 4 L/hour	wet
from 2 to 4 L/hour	wet, fibre
less than 2 L/hour	wet, fibre, baffle

Water scrubber:

- sprays must work correctly
- the float level in the make-up water must be correct
- fit a manometer to show the negative pressure between the entrainment and distribution plates
- follow the supplier's recommendations when adding water, alkali and oil

Dry (fibre) filter:

- the filter must fully cover the support frame spaces
- fit a dial gauge or manometer to show the static pressure drop and to prompt replacement of filters
- always keep spare filters on the premises

Baffle filter:

- the baffle filter must cover the filter area
- always keep spare filters on the premises if a replaceable type is used

- replace filters frequently to increase the lifespan of the exhaust fans, reduce fire hazard and prevent the deposit of paint particles outside the building. Always make sure that the filters are installed properly and that they cover all openings
- seal all containers of coatings and solvents tightly and prevent evaporation by closing container lids between uses
- collect accumulated sludge from water-washed booths, waste paints, thinners and solvents for recycling or disposal by a reputable waste contractor (make sure you see their disposal permit or consent)

FIND OUT MORE FROM

- the Spray Coating Regulations 1962 (available from the Department of Labour)
- Joint Standards AS/NZS 4114.1 and 4114.2:1995 (available from Standards New Zealand)
- your local, district or regional council for design requirements for spray booths and exhaust stacks

SPRAY EQUIPMENT CLEANING

- clean your spray painting equipment by immersing the parts in solvent or pouring the solvent through them – don't spray solvent into the air or into the filters. Set up a proper gun wash station
- scrape the paint cups free of residual paint with a plastic spatula before rinsing with solvent. This uses less solvent and reduces operating costs
- store all contaminated and spent solvents in sealed drums for on-site recycling and re-use, recycling via a reputable solvent recycler or disposal by a reputable waste contractor

OXY-ACETYLENE GASES

- fumes from oxy-acetylene torches can cause metal fume fever and severe headaches, particularly if the galvanising zinc has not been removed first
- minimise the use of oxy-acetylene torches for cutting panels by using cut-off saws wherever possible
- do any necessary welding in well-ventilated areas

REFRIGERANT GASES

The refrigerant gases used in vehicle air conditioners harm the world's atmosphere if allowed to escape. Some refrigerants such as CFCs (refrigerant R12) destroy the ozone layer. Others, such as HFCs and perfluorocarbons, contribute to global warming. Some refrigerants do both. The Ozone Layer Protection Act 1996 makes it an offence to knowingly release ozone depleting refrigerants when working on air conditioning equipment.

To be safe:

- avoid working on any air conditioning unit if you suspect it still has refrigerant in it
- always use a qualified auto air conditioning specialist as they have the right tools to recover refrigerants for reuse and/or safe disposal
- contact the Vehicle Air Conditioning Specialists of Australasia (VASA) (**www.vasa.org.au**) or the Motor Trade Association (MTA) at **com.tech@motor-trade.co.nz** for information on appropriately qualified auto electricians in your area
- ask VASA to collect damaged air conditioning units when they deliver your customers' replacement units

BURNING

- burning wastes such as greasy rags, oil-soaked paper or sawdust, plastics or rubber produces harmful pollutants and can also be a nuisance to neighbours.The Ministry for the Environment's new air quality standard prohibits open burning of harmful wastes. There is more information on the Ministry's website **www.mfe.govt.nz/laws/standards/air-quality-standards.html**
- put these wastes in your skip for safe disposal to landfill or investigate reusing or recycling them

CASE STUDY

Vehicle repairer saves money on wasted paint and cleaning rags

A small panelbeating workshop is saving about $500 a month in reduced paint costs, $40 a month on thinners, and up to $200 a month on cleaning materials after making some changes to the way it operates:

- spray guns were inefficient with a lot of paint getting into the air. The fumes caused complaints and were not good for workers. The firm replaced four spray guns with more efficient high-volume low-pressure spray guns. This increased the amount of paint getting on to the cars from 30% to 65%
- thinners are used for washing guns. Instead of new thinners being bought, used thinners are now being recycled
- the exhaust system from the spray booth has four layers of filters to prevent solvents and excess paint from getting into the air. A water trap catches any dust that passes through the filters, reducing the fire risk and improving working conditions. The powder from the filter cannot be reused so is sent for disposal
- new cheesecloth was used to wipe down cars at about $200 a month. Now washed terry towelling rags are used for most jobs. Washed rags cost $55 for a 40-kg bag that lasts about 3 months. Rags are kept in two boxes, so that slightly soiled rags can be reused where possible. Some rags can be washed and reused. Cheesecloth is still used for the final wipe-down

ACTION POINTS

Check your premises and your paperwork to make sure that you:

- ☐ do all spray painting inside an appropriately designed and constructed spray booth
- ☐ change filters in the booth regularly and/or ensure the water level is maintained
- ☐ adequately and appropriately control and disperse solvent vapours from spray booths and paint mixing areas
- ☐ control and contain dust within the workshop
- ☐ keep solvent and paint tins closed as much as possible
- ☐ reduce vapour loss from solvent recovery systems
- ☐ maintain the combustion system of any burner (such as those used to heat spray booths)
- ☐ have the approval (if required) of your city or district council for air discharges

FIND OUT MORE FROM

- your local, district or regional council
- the Department of Labour, **www.dol.govt.nz**
- Standards New Zealand, **www.standards.co.nz**
- the Yellow Pages – look under ‘Air conditioning – motor vehicle’ and ‘Filters & filtration’

WHAT YOU NEED TO KNOW ABOUT NOISE CONTROL

A lot of the work in vehicle repair premises is noisy. Activities such as hammering, cutting, sanding and grinding can damage the hearing of your staff and annoy your neighbours. You have a legal duty to avoid unreasonable or excessive noise that can annoy your neighbours.

To control noise levels:

- reduce machinery noise by shielding, enclosing, muffling and regularly maintaining equipment
- house machines on rubber, and surround them with solid brick walls
- reduce the offensive noise of compressors by:
  - enclosing them with a material that will muffle sound
  - putting them in a back room and keeping the door shut (as long as there is adequate ventilation)
  - fitting silencers on the inlet and exhaust
  - maintaining them regularly
- avoiding after-hours work. If you have to work after-hours, make every effort to reduce noise – for example, by keeping the doors shut and keeping panelbeating to an absolute minimum. Legislation limits the amount and time of noise that can be generated
- avoid the after-hours use of extension telephone bells and public address systems

FIND OUT MORE FROM

- your local, district or regional council
- the Yellow Pages – look under ‘Noise control – industrial’, ‘Acoustic consultants’ and ‘Acoustic materials and service’

Acknowledgements

IAG NZ gratefully acknowledges the support of the Ministry for the Environment and the use of information from the New South Wales Environmental Protection Agency, the Department of Environment and Conservation (NSW), the Taranaki Regional Council and Auckland Panel and Paint in tailoring this fact sheet for use in New Zealand.