

# Storing and Using Solvents

Factsheet 3

March 2004

## Key Points

- \* Organic solvents are toxic
- \* Repeated long-term exposure can have serious effects
- \* Vapours from solvents contribute to urban smog
- \* Dispose of waste solvents appropriately



It's our world  
and we all need  
to breathe

Some of the activities in the auto service industry can affect the air quality at the business and can also contribute to bigger problems in the local environment.

Air pollution can be caused by fumes, gases, vapours and dust coming from activities on site or products and equipment that are used.

Possible sources of pollution from automotive and similar businesses are:

- Solvents
- Spray painting
- Air conditioning services
- Parts & vehicle washing
- Surface preparation
- Cutting and grinding

If pollution is caused as a result of activities in the auto service industry, it is a breach of the

Protection of the Environment Operations Act 1997 and penalties can be imposed.

It is important that any plant or equipment is operated and maintained satisfactorily.

Also under the Protection of the Environment Operations Act 1997 the plant must be operated and maintained in a proper and efficient manner, penalties can apply if this is not the case. This includes the operation of ventilation and air conditioning in buildings.



## The Issue – Storing and Using Solvents

### WHAT ARE SOLVENTS?

Solvents are liquids that can dissolve other substances. Solvents are among the most commonly used chemicals in workshops. Workers in different jobs regularly use solvents for degreasing, metal cleaning, adhesion and as well as paint thinners or lubricants.

These solvents belong to a group of chemicals called Volatile Organic Compounds (VOCs). Fumes from VOCs contribute to urban smog: - they combine with nitrogen oxides and react in sunlight, to produce the smog which is visible in the air of most major cities in the world.

## Best Practices – Ventilation

Rooms for the mixing of paints, solvents and reducers should be built to AS 4114.1:2003 with air ventilation being directed to the atmosphere via a filtration system.

Mix paint, solvents and reducers in a well-ventilated room

Without proper ventilation, paint mixing and clean-up rooms can be unhealthy. Paints, solvents and reducers all generate hazardous vapours that can build up and remain in a room.

Ventilation systems are needed to remove these vapours and provide a healthy working environment. There are two basic types of ventilation:

**General exhaust ventilation** systems typically consist of an exhaust fan, that pulls air out of the workroom and discharges it outdoors. Replacement air is brought inside by either windows and vents, or by more mechanical means, that includes a separate make-up air fan, duct work and air registers.

Since they do not immediately remove the vapours from the work space, general exhaust systems are not recommended as the sole source of ventilation when hazardous vapours are present.

**Local exhaust ventilation** systems remove chemicals and other contaminants at their source. These systems are recommended for controlling hazardous vapours because they remove the vapours before workers are exposed. Local exhaust systems consist of three basic components:

- A hood (exhaust vent or special duct end) installed as close as possible to where work is being performed, to capture the vapours;
- Duct work to take the vapours to the outside of the building;

- A fan located downstream of the hood to draw away from the work area, through the hood and duct work, and discharge it from the building – in a location that will not cause a nuisance to others.
- Exhaust gases shall be discharged via a ventilation system installed in accordance with AS 1668.2 - 1991 – *The Use of Mechanical Ventilation and Air-conditioning in Buildings*

Tips to consider:

Local exhaust systems can be more expensive to install initially, but they offer greater worker protection. In addition, operating costs are generally reduced by allowing for a reduced general exhaust flow rate. The following considerations should be taken into account when installing a local exhaust system:

- The fan must be sized correctly to move the required amount of air.
- The exhaust hood or vent should be located close to the activity to effectively capture vapours.
- Air velocity at the exhaust hood or vent must be strong enough to overcome potential cross drafts.
- A series of slot exhausts located at the rear of the work table at about the level that work occurs will most effectively capture vapours generated during operations.
- The use of side baffles or other types of enclosures at the side of the mixing table will help reduce cross drafts and improve the system's ability to capture vapours.

## Best Practices

### STORAGE

Keep solvents in labelled containers in a secure location. Never transfer solvents into drinking cups, cans or bottles. Always store solvents in a container with a tight lid to prevent them evaporating – the vapours cause air pollution.

*Keep solvents in labelled containers in a secure location.*

### WASTE SOLVENT

Dirty or used solvent is hazardous waste - label it and store it carefully. Don't pour it down the drain or on the ground; that's illegal, and it's dangerous to you and the environment. Most automotive oils, solvents and coolants are classified as group A waste and need to be transported by an appropriately licensed vehicle if transported more than 200 kg at a time. Smaller quantities of solvents and coolants need to be treated the same way – send all used chemicals to licensed contractor for recycling or disposal.

### TRAINING

Appropriate training of all staff who are working on the premises, and accurate and up to date record keeping is important to ensure that equipment is serviced regularly by suitably qualified technicians, and that the people using the equipment are current with their knowledge.

## Health Effects of Solvents

Different solvents have different health effects, which will depend on how exposure happens (breathing, through the skin or ingestion), how much and for how long. Short-term exposure can cause:

- Dermatitis or skin problems (drying, cracking, reddening or blistering of the affected area)
- Headaches & drowsiness
- Poor co-ordination
- Nausea (feeling sick)

These effects usually take place very quickly. In cases of exposure to very

high concentrations of solvent vapor, unconsciousness and even death can occur.

Repeated (long-term) exposure to solvents may effect:

- The brain & the nervous system
- The skin, causing dermatitis
- The liver, causing liver damage
- The blood-forming system
- The kidneys
- The fertility of both men and women

Some solvents, for example, benzene, can cause cancer.

*PERSONAL PROTECTION  
Personal protection of staff is an important consideration for all staff to comply with WorkCover requirements.*

## Parts Washers

Parts washers can be a primary source of environmental pollution from automotive workshops – depending on the type of chemicals used, and the disposal of liquid wastes.

### DO

- ✓ Use non-solvent based parts washers, in preference to using solvent based washers.
- ✓ If using a solvent to clean parts, use a recycling system that filters and reuses the solvent until it needs to be replaced.
- ✓ Engage a contractor licensed with the Department of Environment and Conservation to remove liquid wastes from the premises.
- ✓ Make sure all members of staff are aware of the Material Safety Data Sheets, where to find them and

refer to them for the correct handling, storage and disposal procedures.

### DON'T

- ✗ Don't dispose of liquid wastes from any parts washers which may contain chemicals into oil separators, sewerage systems or stormwater drains.
- ✗ Don't use solvent-based washers if non-solvent based systems are available. Solvent-based systems can be a health and safety issue to those in the workshop and a potential hazard to the environment.

For more information contact:

- The City of Ryde (9952 2222)
- Department of Environment and Conservation (131 555)
- Motor Vehicle Industry Council (9712 2200)
- Auto Parts Recycling Association of Australia (03 9587 2194)  
[www.apraa.com.au](http://www.apraa.com.au)

