

Chemical Storage

UPC03

October 2004

If your day-to-day activities involve the collection, processing or storage of materials such as oils, solvents, acids, paints, foodstuffs and other chemicals, then before you begin you must consider the potential your activity has to pollute the environment.

What sort of things cause pollution?

Poor storage and handling of these materials at your site may be causing some of these common problems.

- Discoloration of, or an oily sheen on, stormwater run-off.
- A messy storage area where lids have been left off drums and chemicals have overflowed leading to stains on the yard, ground contamination and contamination of stormwater run-off.
- A constant flow of oily or discoloured water from a drainage valve on a bunded area.
- Old drums rusting, leaking or rupturing on the yard.
- Bunded areas overflowing with accumulated stormwater.
- Wastewater flowing out factory doors onto the yard and into a stormwater cesspit.

You can prevent spills and leaks from causing water pollution

1. Store material in appropriate labelled containers making sure they are sturdy, not corroded and not liable to leak.
2. Store containers inside in locations where leaks and spills will not cause stormwater pollution.
3. Where two or more liquids are stored on-site, they should be stored such that:
 - Separate bunded areas are provided where possible for each liquid to allow for the collection and re-use of uncontaminated spilled liquid; and
 - Minimum separation distances for storage vessels containing chemicals classified as dangerous goods are maintained in accordance with the Dangerous Goods Act 1974.
4. If inside storage is not possible, storage tanks and drums should be located in a covered and **bunded** area which will contain spills and leaks.

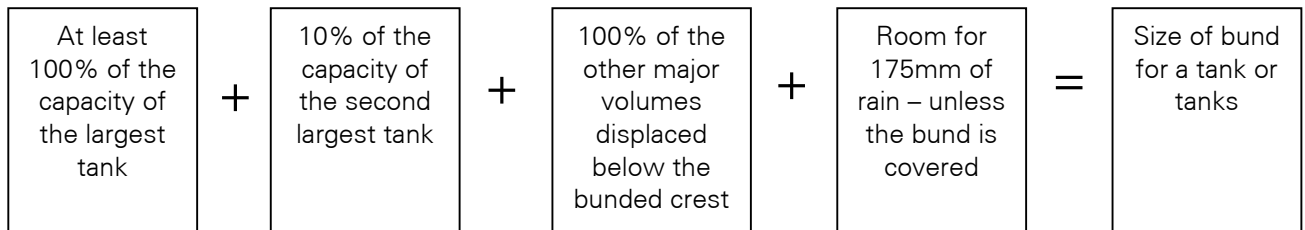
Bunding means containing your containers. Bunds can range from major facilities able to contain all the liquids stored in the containers inside them, to low nib walls which stop spills from indoor workspaces escaping into yards.

A bund lets you detect and control any small or slow leaks and will contain spills from sudden ruptures of tanks or drums.

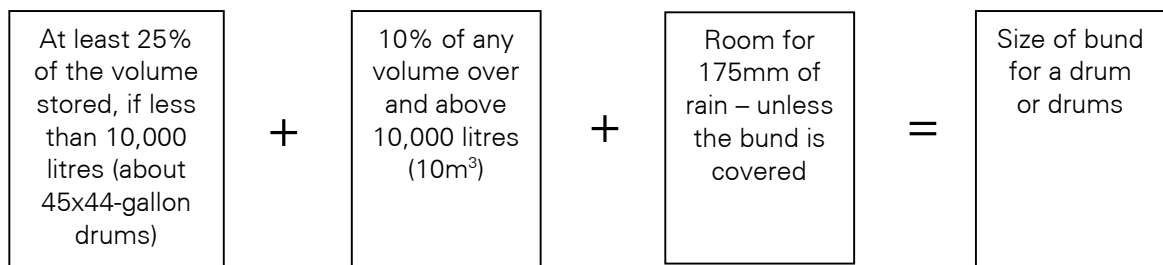
How big should a bund be?

The size of a bund depends on how much is stored in it.

Tanks – a bund around a tank or tanks must be big enough to contain:



Drums – a bund around a drum or drums must be big enough to contain:



Don't forget...

- Remember the pumps, pipes and decanting vessels associated with your bunded containers – the bund should be able to cope with a spill from them.
- Locate loading points within the bund.
- Make sure bund floors and walls and joints on pipework are impervious to and compatible with the material stored.
- Maintain the required minimum separation distances for dangerous goods.
- Store incompatible substances in separate bunds.
- Tanks and drums should be separated from the inner edge of the bund by a distance of half the height of the tank or stack of drums.
- If empty drums are stored, the bund should be sized as if all drums are full – this will benefit you if your operations change, and the future leasers or purchasers of your site.
- Consider having separate or compartmentalised bunds for different materials – this will help you collect spilled material for re-use.

Stormwater Control

If you can't roof your bund, then grade the floor towards a collection sump and drain so you get rid of rainwater. Fit a drainage valve to the sump and keep it closed and locked until you need to drain away accumulated water. Before unlocking and opening the valve, you must first make sure the water is not contaminated and will not pollute the ground or the stormwater system.

If the water is contaminated, call your waste disposal contractor to remove it or ask your city or district council if you can pump it into the sanitary sewer.

Roofing – a simple solution

Avoid human error: roof your bunds and dispense with the need for stormwater valves altogether. Benefits include:

- Stopping rainfall coming into contact with contaminants and washing them into the stormwater system.
- Preventing accidents from valves being left open after stormwater has been drained.
- Avoids the need for intensive staff supervision.
- Providing a safer and more pleasant work environment in all weather conditions.
- Reducing weather damage to valuable supplies and equipment.

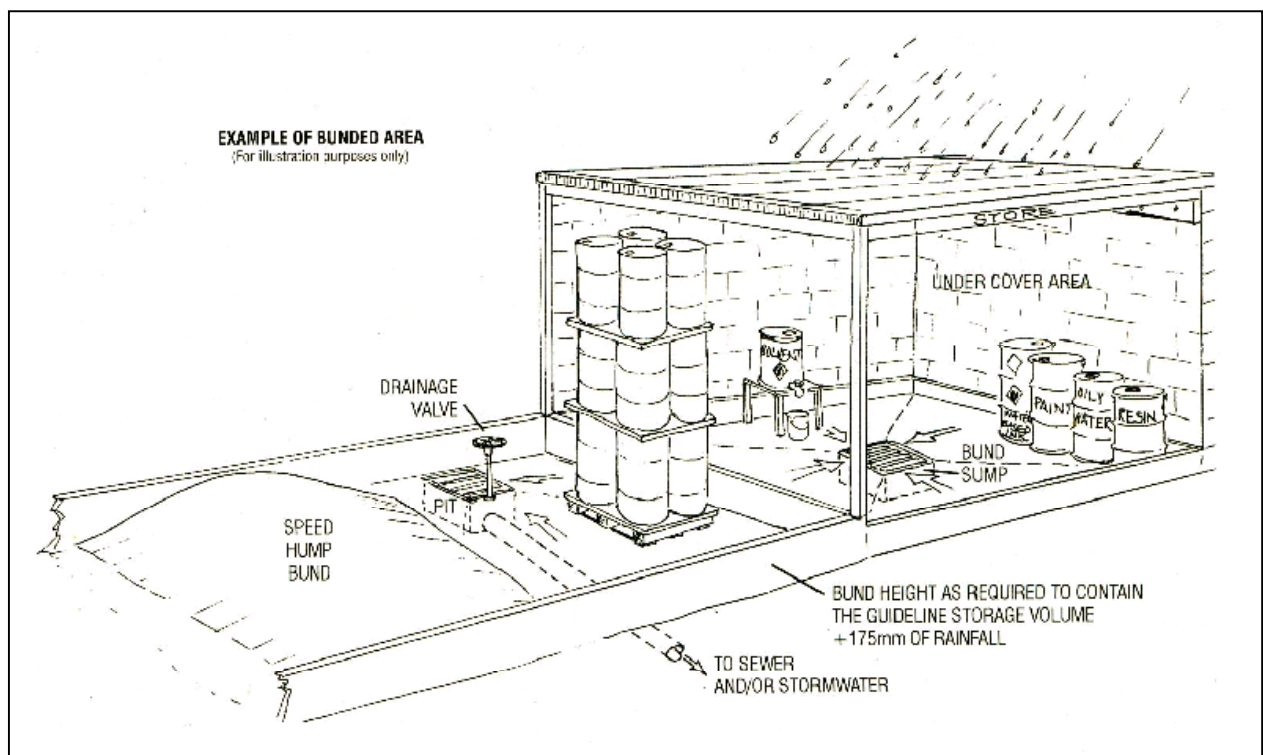
Bund Maintenance

Develop formal procedures for the inspection and maintenance of bunded areas and the draining of stormwater. Bunds, tanks and pipework should be inspected regularly for signs of leaks, spills or damage. Any debris or accumulated stormwater that is contaminated should be removed, clean stormwater can be drained. Any defects to bund walls or lining should be repaired promptly and damage to tanks, containers or pipework should be dealt with immediately.

5. Consider secondary containment of common contamination sources.

Pumps, valves, flanges, connections and loading hoses associated with bulk tank storage facilities commonly drip or leak thereby contaminating any stormwater in these areas. To contain this contaminated stormwater situate all pumps, valves, flanges, connections and loading hoses in a secondary bund within the main bunded area. Drain this secondary bund to the sanitary sewer with the approval of your local council. This will reduce the volume of contaminated stormwater you need to dispose of.

Your storage area should look like this:



Don't Forget...

- Many liquids may also be classified as dangerous goods. Storage of those that are should follow the requirements of the Dangerous Goods Act 1974. Contact a Dangerous Goods Officer at your local Council regarding dangerous goods enquiries.
- Always store chemicals, wastes and empty containers in secure storage areas to guard against vandalism and theft.
- Always have a good Spill Contingency Plan with equipment handy and your staff well trained.

How can different materials pollute the environment?

Any material or substance that is split onto the ground outside or left uncovered can flow or be washed by rainwater into the ground or a nearby stormwater drain where it will result in the pollution of the local stream, harbour or groundwater supply.

Some examples of everyday substances and ways in which they can harm the plants and animals that live in our environment are:

Fuels	Poison animals, burn plants and damage fish gills so that they are unable to breathe. Fuels contain compounds that can accumulate in living tissues and cause cancer. When discharged into underground pipes or streams they also present a significant fire and explosive hazard.
Oil	Most of us are aware of the dramatic effects large quantities of oil can have on birds and other sea life. However, even in small quantities, oil can cause serious environmental damage. One litre of oil can create a very thin film covering 100m ² of water surface. This can create a barrier preventing essential oxygen getting to plant and animal life. Also, other toxic substances in waste oils, such as heavy metals (including lead and zinc), sulphur and acids can dissolve in water and cause damage.
Paint	Poisons creatures that come into contact with it and prevents light from entering the water making it difficult for plants to get the energy they need to live and for animals to find food.
Foodstuffs	Cause all of the oxygen in the water to be used up as the substance rots and is broken down by bacteria. This can cause the suffocation of animals that live in the stream.
Detergents	Even those claiming to be "bio-degradable" or "environmentally friendly" can be toxic to fish or remove oxygen from a water body as the substance is broken down.

It is important to realise that even a very small quantity of a pollutant, or just one accidental discharge, can drastically alter the quality of a stream. Fish, insects and plant life can be killed, habitats destroyed and the affected stream can take many years to recover.

Auckland's streams and creeks are an important part of our environment

You may think that your little bit of waste can't harm the environment but remember, there are many other people in the region carrying out activities similar to yours. Your waste, when combined with that of a million others can result in a significant amount of pollution occurring every day of the year. It is the cumulative effects of this combined discharge that causes serious damage to our environment and must be prevented.

It is illegal to cause pollution

In New Zealand, the Resource Management Act (1991) is the law that protects our environment. It clearly states that every person is responsible for ensuring that their activities and those of their employees do not contribute to pollution of our environment.

Specifically, it is illegal to allow any substance to enter water either directly, through the stormwater system or via the contamination of land without prior authorisation from the Auckland Regional Council.

The Auckland Regional Council is committed to caring for our environment and is responsible for both helping the residents of our region to prevent pollution and enforcing the Resource Management act where necessary.

By making a few simple changes to your site and daily practices you will be contributing to a pollution-free environment for us all to enjoy both now and in the future.

Take a closer look – do you have any of these problems on your site?

Further information

If you would like advice on a specific waste disposal issue then call the Regional Council on 09 366 2000 and ask to speak to one of our Pollution Control Officers. For all other information, please call Enviroline on 09 366 2000 and they will send you some of our "Pollutionfacts". These cover a variety of issues and new topics are continually being produced.

Current titles include:

- UPC01 – Water Pollution and the Auckland Regional Council
- UPC02 – Industrial Pollution prevention Programme
- UPC04 – Being Prepared for a Spill
- UPC05 – Painting and Plastering Wastes
- UPC06 – Used and Oily Wastes
- UPC07 – Flushing, Draining and Repainting Radiators
- UPC08 – Old Parts and Used Batteries
- UPC09 – All Works Involving Concrete, Cement, Lime and Ashpalt
- UPC10 – Vehicle and Equipmet Washing
- UPC12 – Washing Earthmoving Equipment
- UPC14 – Automotive Painting and Panelbeating
- UPC15 – Pressure Water-blasting
- UPC16 – Cesspit/Catchpit Waste and Roadsweeping
- UPC17 – Service Stations
- Cement Spills Cement Kills
- FAQ – Concrete Cutting Wastewater
- Preparing and Environmental Management Plan (EMP)\
- Poster – In Case of a Spill or Leak