



14. Stormwater solutions

Concepts

- ◆ A definition of stormwater pollution and reasons to reduce it.
- ◆ Tips for reducing stormwater pollution at school and home.

Introduction

Stormwater is created by rainwater that flows across outside surfaces into stormwater drains and gutters in the street. The water that enters the stormwater drains is not treated and flows directly into our creeks, rivers, and coastal waterways.

As stormwater travels over the land, it picks up all kinds of chemicals and materials that are not naturally found in our waterways. Some of these are toxic and dangerous - even in small amounts. Others, such as nutrients, are not poisonous, but may be produced in such great quantities that natural systems simply can't cope. After a dry season, the first flush of stormwater can have the same pollutant load as raw sewage. This results in the pollution of our waterways. To help our environment, the stormwater that leaves our home or school should contain clean rainwater with very few pollutants such as litter, lawn clippings, cigarette butts, car washing detergent, sediment or chemicals.

For a more comprehensive discussion of the causes of stormwater pollution refer to chapter 7 of folder 3.

General tips for reducing stormwater pollution at school and home

Garden beds and lawned areas

Whilst your garden beds and lawn may appear attractive, the potential for pollution may still exist. Wind and rain can transport soil, sediment, fruits, berries and leaves into the street gutters and hence straight into the stormwater system. Consider the following ideas to help you reduce the risk of stormwater pollution in your garden at home and school.

- ◆ Prevent soil and leaf litter from washing into the drains by planting ground cover vegetation and building barriers around garden beds, compost heaps and rubbish bin areas.
- ◆ Rake up leaves, fruit, flowers and lawn clippings; compost them or use them as mulch around the base of your plants.

- ◆ Minimise the use of chemical fertilisers as they can harm soil organisms. Don't overuse natural fertilisers such as animal manure and blood and bone because they may wash away after rainfall. Compost is a very good fertiliser and it helps to reduce the erosion of your garden beds during rain.
- ◆ Consider planting native species of grass such as Weeping rice grass *Microlaena stipoides var. stipoides* which require less fertiliser.

Driveways and gutters

There is great potential for stormwater pollution to originate from these areas because pollutants left on driveways or in gutters are quickly washed into the stormwater system after rain.

Gutters fill up with leaves and bird droppings, which add unwanted nutrients to stormwater. Driveways may contain leaves and dirt from garden beds and grease and oil from the car which can enter stormwater and then pollute our waterways.

Stormwater prevention tips for gutters and driveways:

- ◆ Sweep your driveways and gutters as hosing them down is not allowed in South Australia (due to *permanent water conservation measures* - see fact sheet 4.12.1). This will save water and prevent contaminated run-off from flowing onto the street.
- ◆ Use the waste collected from gutters and driveways as mulch for your garden beds. This waste acts like a garden fertiliser as it is often high in nutrients.
- ◆ Prevent litter from building up in your gutters by installing gutter guards which are available from most hardware stores.
- ◆ Install barriers between paved or concreted areas and the garden to prevent the spreading of garden bed material such as soils, flowers, leaves, fruits and berries.
- ◆ If you have a gravel driveway, ensure that the fine gravel sediment is contained and not likely to wash onto the pavement and into the gutter.

Pest and weed control

Some pesticides and herbicides contain chemicals which can remain in soils for up to 100 weeks and can severely hinder the survival of soil organisms such as worms and bacteria. If these chemicals enter our waterways after rain they can be toxic to aquatic life. Another problem is that the nitrogen and phosphorus contained in these chemicals has the potential to cause algal blooms.



Consider the following points regarding the use of these chemicals :

- ◆ Don't overuse herbicide and pesticides, as they may tend to accumulate in the soil and can then be transported via run-off water into the stormwater system when you water your lawn (refer to topic 17 for tips on appropriate herbicide use)
- ◆ Don't use spray applicators on windy days or if rain is forecast
- ◆ Try not to use pesticides on hard surfaces such as paved, concreted, tiled and bitumised areas. Rain will wash any chemicals on these areas directly into the stormwater system.
- ◆ Consider alternatives to the use of chemicals for pest and weed control. Some plants have natural pest control properties. These essential oils in a spray water bottle will eliminate the following pests.

Pest	Essential oil
Ants	Citronella, peppermint, garlic
Mosquitos	Citronella, lavender, mint, rosemary, sage
Slugs	Garlic, chives
Snails	Garlic

Table 1: Natural pest control alternatives

(Adapted from **Stormwater** by the city of Port Adelaide and Enfield).

Tips specifically for schools

Schools are generally much larger than residential property, and may contain a number of on site stormwater drain entrances. There is a risk that these drain entrances are used to dispose of art room paint clean-up water or wastewater from cleaner activities. Litter can easily enter these drain entrances. This means that schools have the potential to be large polluters of stormwater.

- ◆ Ensure that your school has a strong litter control program in place. Students should be made aware of the environmental problems caused when litter enters the stormwater system.
- ◆ Ensure that stormwater drain entrances are not used to dispose of wastewater, such as paint brush rinse water.
- ◆ Ensure that staff and students are well aware of the location of on site stormwater drains so that pollution problems are quickly recognised and remedied. All school staff including grounds people, cleaners and other contractors must be made aware that wastewater must not be disposed of in a drain.

The most important thing to remember is that **only rain should go down the drain.**

Lesson Ideas

- ◆ Book a *Stormwater Solutions Session* and have a Waterwatch education officer visit your class.
- ◆ Participate in the gutter guardians program. This program is conducted in autumn to reduce the amount of leaves and litter that are washed into stormwater drains.
- ◆ Involve students in stenciling the drains around the school. You can order stencils and obtain instructions by contacting Woorabinda Environment Centre on 8370 1298. Drain stencil messages such as "the drain is just for rain" are an effective way to remind staff, students and school visitors about stormwater drain environmental issues.
- ◆ Assist students to develop playground rules to reduce stormwater pollution. Post these rules up around the school.
- ◆ Order the stormwater picture series from folder 3 from (Woorabinda Environment Centre 8370 1298). Students can work in groups to develop solutions to these stormwater problems. Students can also visit their local creek to see if they can observe any other stormwater problems. An action plan can be developed and implemented by students to solve these stormwater problems.
- ◆ Conduct a litter survey at the school and present the findings at a school assembly. Alternatively your class could survey the attitudes of students to the local environment. Identify areas of concern or misunderstanding and launch an education program around the school designed by your class.
- ◆ Develop advertising posters to put up around the school warning other students of the problems caused by stormwater pollution.

Recommended resources

<http://www.catchments.net>

Contains an excellent section on stormwater pollution prevention.

<http://www.onkaparinga.net>

For general information on stormwater.

http://www.onkaparinga.net/education/downloads/folders3/7i_stormwater.pdf

Catchment Connections online:

refer to *Catchment Connections folder 3 - stormwater* for information and activities relating to stormwater.

