



*Water quality –
taking care of our
rivers and streams*



*Pollution from industries,
mines and agriculture are
threatening our water
supplies.*

South Africa is a water scarce country. Since we don't have a lot of water to go around we have to take care of the little water we have. Unfortunately, human activities have polluted many of our rivers and streams.

Rivers are often seen as the mirrors of the environment. They reflect whatever is going on in the catchment that they drain. Everything that happens in a catchment area is reflected in the quality of the water that flows through it, because the results of human activity and lifestyle ultimately end up in rivers, through runoff.

Healthy streams, wetlands and rivers support a great variety of water life. All life in the water is dependent on the interaction within the river itself and in the surrounding catchment. These processes can either maintain a healthy ecosystem or disrupt ecological processes and degrade the water supply.

Changes in water quality occur naturally along the length of a river; however, these changes may be significantly influenced by human activities. Industries, agriculture and urban settlements produce nutrient concentrates (sewage effluent and fertilisers) and toxic substances (poisonous pollutants) which can affect water quality.

What is polluted water?

Water quality is defined as water which is safe, drinkable and appealing to all life on earth. It should contain no chemical or radioactive substance that is harmful to the health of any life. It should be free of disease-causing organisms and stable in terms of corrosion or scaling. Polluted water is water that is not safe and not healthy for people and animals to drink or to wash in.

Polluted water is particularly dangerous to water plants and animals. Polluted water is also particularly dangerous to people



Plastic and other trash is a visible pollutant in our rivers.

who get their water directly from a river or dam. In South Africa the scarce freshwater is decreasing in quality because of an increase in pollution and the destruction of river catchments, caused by urbanisation, deforestation, damming of rivers, destruction of wetlands, industry, mining, agriculture, energy use, and accidental water pollution. As the human population increases, there is an increase in pollution and catchment destruction.

There are two different ways in which pollution can occur. If pollution comes from a single location, such as a discharge pipe attached to a factory, it is known as **point-source pollution**. Other examples of point source pollution include an oil spill from a tanker, a discharge from a smoke stack (factory chimney), or someone pouring oil from their car down a drain. A great deal of water pollution happens not from one single source but from many different scattered sources. This is called **nonpoint-source pollution**.

When point-source pollution enters the environment, the place most affected is usually the area immediately around the source. For example, when an accident occurs at a chemical plant, the chemicals are concentrated around the plant itself. This is less likely to happen with nonpoint source pollution which, by definition, enters the environment from many different places at once.

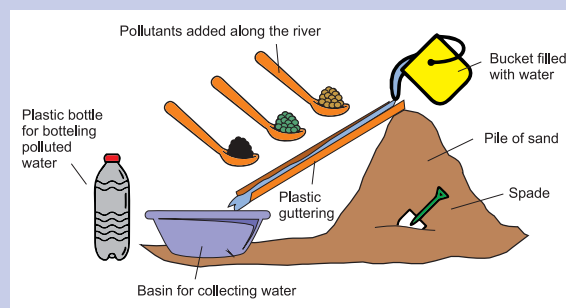
How do we know a river is polluted? Some water pollution is hard to detect. There are two main ways of measuring the quality of water. One is to take samples of the water and measure the concentrations of different chemicals that it contains. If the chemicals are dangerous or the concentrations are too great, we can regard the water as polluted.

Measurements like this are known as chemical indicators of water quality. Another way to measure water quality involves examining the fish, insects, and other invertebrates that the water will support. If many different types of creatures can live in a river, the quality is likely to be very good; if the river supports no fish life at all, the quality is obviously much poorer. Measurements like this are called biological indicators of water quality.

What can we do to control water pollution?

- Correctly dispose of hazardous household products. Avoid letting contaminated water such as chemicals, soaps, grass clippings etc. run into storm drains.
- Recycle and dispose of all rubbish properly. Ensure that litter is thrown in the rubbish bin and does not get blown away.
- Use natural fertilizers in the garden.
- Never throw chemicals, oils, paints and medicines down the sink drain, or the toilet. Check with your municipality about the correct disposal of these pollutants.
- Volunteer for a beach/river clean-up, tree planting or water quality monitoring.
- Report polluters! If you see someone dumping pollutants into a river or stream alert your local authority.

Make a model of a polluted river



What do you need?

1. A hose or bucket to provide a source of water
2. A small spade
3. Guttering or halved swimming pool hose
4. Basin or 2L plastic bottle for the dam
5. Sand, food colourants, lentils, coffee, and other harmless substances that can be used as pollutants
6. Bottles, jars
7. Plastic bottle for bottling polluted water
8. Spoons
9. Paper, pens and coloured pencils

What do you do?

Choose harmless substances to represent real pollutants in rivers, and decide on the amount of each pollutant to add to your river. Give reasons for your choice.

Design and build a short river in the school ground (or in your garden). You will need a source of water and a dam at the end.

Pour the water into the model. As the water flows down the river the pollutants can be added.

Collect the water in a bottle. Write a label for the bottle of polluted water. The label must show what is in the water. Keep this bottle in your classroom to remind you that we need to take care of our rivers.

Source: www.waterwise.co.za