



## **Pollution**

Pollution is a word that we are all aware of these days. What does it mean exactly? If you look up "pollution" in the dictionary you will find something like - "to destroy purity of; to contaminate, especially with man-made waste". Yes the environment, i.e. our surroundings, the place we live, is being made unclean by our own activities. The pollutants we produce not only affect our own lives but also those of other living things, the plants and animals that we share our environment with. All living things depend upon the non-living parts of the environment to survive - the land, the air and the water, and it is these 3 parts which are affected by pollution...

### **Land**

A healthy soil is essential for life. Plants provide food for animals and human beings, and for growth and health plants need good conditions. A good soil should have plenty of humus - (decaying animal and plant remains), water, mineral salts, air and a population of living organisms, including bacteria, insects and worms. These good conditions may be ruined by...

### **Industrial Waste & Litter**

If we're not careful, Britain could become just one big tip! Every household produces about one tonne of rubbish per year and most of it is buried in enormous landfill sites. Waste materials, some poisonous or radioactive, from factories may be dumped or buried causing danger to wildlife and humans. All the buried rubbish decomposes and can form poisonous substances which seep into the soil. The careless throwing away of unwanted things - litter - onto the streets and in the countryside by thoughtless human beings is both unsightly and dangerous to other animals.

## **Fertilisers & Pesticides**

A growing human population over the years has meant a growing demand for food. To meet this demand, farmers have been using artificial fertilisers and chemical sprays to kill crop pests. Problems arise when these substances are over-used. Artificial fertilisers may lead to soil erosion i.e. manure used to be put on the land which contains humus and this holds the soil together; powdery artificial fertilisers do not contain humus and without it the action of the rain and wind washes or blows the valuable topsoil away. Soil erosion is a serious problem throughout the world and some areas have been turned into dustbowls and deserts.

## **Air**

Air is a mixture of gases and without it animals and plants cannot live. The air in some areas, mainly big cities, is so polluted that people are suffering from lung diseases and buildings are being eaten away. This is why...

## **Exhaust Fumes**

In Britain nearly 30 million vehicles are contributing to the pollution of the air. Petrol fumes contain carbon monoxide, carbon dioxide, nitrogen oxide, soot, oil vapour and lead - all potentially dangerous to human health. Fortunately, lead free petrol is now being used extensively and cars with catalytic converters - which remove the polluting gases (except carbon dioxide) - are beginning to be introduced. In some cities, such as Los Angeles, fog combines with the fumes to form "smog" which causes lung problems.

## **Industrial Smoke**

In our technological world we need masses of energy for lighting, heating, cooking, transport, industry...etc. To supply this energy, fuels are burnt. When power stations burn coal, oil and gas, these fuels are not totally used up and smoke is produced. This smoke contains sulphur dioxide, nitrogen oxides, carbon particles and

tar.

One of the worst types of pollution that we have been producing over the last 100 years is a direct result of the gases from power stations, especially sulphur dioxide and the nitrogen oxides. These gases combine with gases such as hydrogen and oxygen to produce the dangerous acids, sulphuric acid and nitric acid. These fall to the ground as acid rain and cause damage to buildings, plants, rivers and lakes. Whole habitats around the world have been totally destroyed by acid rain.

## **Water**

Every living thing depends on water for life. Over two thirds of the planet Earth is covered by sea water and there are also numerous freshwater habitats. Yet essential though all water is, humans continue to pollute it at an alarming rate. Here's how...

### **Freshwater - rivers, streams, lakes and ponds**

One of the biggest threats to water purity comes from chemicals. Fields are often sprayed with pesticides and herbicides. Rain washes them off the crops into nearby streams and rivers and the bacteria which normally break down the remains of dead animals and plants in the water cannot deal with the chemicals. Animals and plants are immediately poisoned and the balance of life is seriously affected.

Artificial fertilisers containing nitrates and phosphates, "slurry" (liquid animal manure), combined with phosphates from domestic effluent such as washing powders, can also be washed into water ways. These do not poison water life directly but cause the water plants, particularly algae, to grow rapidly. The algae uses up so much oxygen that there is none left for the plants and animals. The growth also blocks out sunlight, leading to the death of underwater life. Eventually the algae itself dies, leaving a stinking, decaying mass. This problem of excess fertilisers in water is called EUTROPHICATION.

Factories, often built beside rivers so that water can be used, may discharge poisonous chemical waste into the water so killing the river-life.

Sewage works clean waste water from our homes and then discharge it back into the rivers. Bacteria in the filter beds digest the organic waste matter but if the water contains chemicals, such as bleach, the bacteria die and polluted water is often returned to the rivers. The water is also so depleted of oxygen that the animals cannot live in it.

Power Stations use water and when returned to the river it is often so warm that animals may die and plants grow so quickly that they may die too. Acid Rain, as described under "air pollution" is often concentrated strongly enough in rivers to kill fish.

Finally, the dumping of rubbish causes enormous damage. Streams, ponds and rivers are regularly used for dumping anything from old cans to cars. Landfill sites are the burial grounds for dangerous chemicals and metals such as cadmium and mercury from batteries. They can seep through the soil and find their way into rivers.

## **Oceans**

The pollution described above can easily end up in sea water simply by being transported there by rivers. River estuaries and coastal waters are particularly affected. In addition, a lot of waste is deliberately dumped in the open sea. The most serious problem is radioactive waste which began to be disposed of after the second World War. Some of the containers have leaked and we are still not sure of the long-term impact on marine life.

Enormous quantities of sewage, often untreated, containing dangerous chemicals and bacteria, are discharged into the oceans. Spills from oil tankers are another major hazard to marine life.

PCBs (polychlorinated biphenyls) have numerous uses in industry and can be scattered in smoke or washed into waterways. They almost all end up in the sea and can become extremely concentrated as they travel along marine food chains. Back in 1969 in the Irish Sea, thousands of guillemots were killed as a result of PCB poisoning. Since then it has been discovered that other animals such as polar bears, seals and whales have accumulated high concentrations of PCBs in their bodies. It is believed that their reproduction could be affected, thus leading to their eventual extinction.

Oceans are connected to each other and because of this, the pollutants are carried in currents and tides and

spread around the world. The pollutants enter the food chains in the oceans working their way up from the phytoplankton to the higher animals. Some of the pollutants may end up on our dinner plates!

It is obvious from the information that you have just read that we are producing far Too Much Waste! The earth simply can't cope with all this pollution. We are at least now becoming aware of the problems of pollution - But is anything Being done to control it?

### **Do Something!**

We can't just sit back and hope somebody else does something about pollution. Think about and make a list of all the things that YOU can do to help... Here are some ideas to reduce waste:

Don't use any more packaging than you have to. Re-use carrier bags - don't just throw them away. Recycle what you can - bottles, cans, papers and clothes. Make a compost heap to get rid of organic waste like vegetable peelings.

### **Learn!**

Choose a major pollution disaster - such as the oil spill from the Prestige or perhaps something you know of affecting your local environment. See how much you can find out about it. What are its effects on wildlife? Are its effects over now or will there be problems for a long time to come?

### **Investigate!**

Investigate your own environment. Are there any signs of pollution where you live? Is anyone doing anything about it? If they are not perhaps you can! If you find, for example a litter problem or a lifeless pond then complain (politely of course!) to your local council. Remember to back up your complaint with good accurate

information and photographs if you can.

## **Find Out!**

Are the governments of the world introducing laws to control pollution levels? Are industries attempting to recycle their waste? Look at each type of pollution in turn and try and find out what is being done to try and reduce it.

## **Decomposition?**

Nature efficiently recycles its own waste - dead plant and animal material. This involves a process known as "decomposition". How does decomposition work? What does "biodegradable" mean?

For further information contact:

### Waste Reduction

Waste Watch, 96 Tooley Street, London, SE1 2TH

[www.wastewatch.org.uk](http://www.wastewatch.org.uk) tel:020 7089 2100

### Air Pollution

Atmospheric Research & Information Centre, Department of Environmental & Geographical Sciences,  
Manchester Metropolitan University, Chester Street, Manchester M1 5GD [www.doc.mmu.ac.uk](http://www.doc.mmu.ac.uk) tel:0161 247  
1592

### Freshwater Pollution

Environment Agency, Rio House, Waterside Drive, Aztec West, Almondsbury, Bristol BS12 4UD

[www.environment-agency.gov.uk](http://www.environment-agency.gov.uk) tel: 0845 933 3111

UK Rivers Network - [www.ukrivers.net](http://www.ukrivers.net)

Water Pollution Forum - [www.water-pollution.org.uk](http://www.water-pollution.org.uk)

General

Royal Society for Nature Conservation (RSNC), The kiln, Waterside, Mather Road, Newark, Nottinghamshire, NG24 1WT [www.rsnc.org](http://www.rsnc.org) tel: 0870 036 1000

Waste Online - [www.wasteonline.org.uk](http://www.wasteonline.org.uk)

All content copyright of YPTE.

