DIRTY WATER - INDUSTRIAL POLLUTION

There is a saying in engineering: the solution to pollution is dilution. The idea is that things can be put into the water and just disappear, causing no problems.

Waterways and oceans are therefore used as big dumping grounds for chemicals produced by factories and sewage farms, waste oil and heat. Recently it is becoming accepted by ecologists and individuals, community groups, governments and by industry that water cannot cope with the poisons we place in it – that dilution is not the solution.

Industrial processes use water (about 20% of all water used by humans) and often return it to the waterway full of chemicals. Products which you may not think of as needing water are often the worst culprits. Paper, iron and steel, the chemical industry, and plastic manufacture are among the worst.

Water used by industry

Steel	**155m³/tonne**
Paper	**300m³/tonne**
Bread	**2-5m³/tonne**

In 2014 75% of industrial water use was for energy production. UNESCO 2014. **We need to improve on this**.

Some of the chemical by-products of industrial processes, including heavy metals, like lead and mercury, are known to be damaging to life. Other chemicals have only recently been developed by human technology, and we have no idea of their effects on us. Indeed, the effects are often hotly debated by scientists and ecologists.

Chemicals dumped into rivers end up in people's fields, crops and drinking water, and in the bodies of animals living in the river. Some create cancers and others kill. Some are genuinely harmless.

A chemical is a pollutant when it has bad effects in the environment. For example, fertilisers added to the soil and running off into rivers can cause algae (river plants) to bloom. This is called eutrophication. When the algae die and rot, they take all the oxygen out of the water, so nothing can grow. Heat is another form of pollution from industries that require large quantities of water for cooling. Water may be returned to the river too hot to support life.

Because rivers flow, sometimes the people most affected by pollution are not those causing it. One way or another, we all live downstream.

Industrial processes are being developed to reduce pollution and use less water. Waste water is even treated, reused and recycled - a way to make money, protect people and the environment.