

River water quality – FAQs

Why is river water quality important to monitor?

We depend on surface and groundwater sources for drinking water, to generate energy, to grow our crops, to harvest fish, to run machinery, to carry wastes and to enhance the Isle of Man's scenic landscape. We use water for washing and cleaning, industrial abstraction, recreation, cooking, gardening and angling. Freshwater is also vital as a habitat for fish, invertebrates such as mayflies, shrimps and snails and also many water plants. The Department of Local Government and the Environment has a regulatory function to control discharges into rivers, including licensing by the Department's Environmental Protection Unit. The effectiveness of the regulatory work can only be determined by monitoring. In addition, the monitoring process can identify developing problems to enable them to be addressed as swiftly and effectively as possible.

What causes river water pollution?

Many human activities can pollute rivers. Industry, housing, agriculture, horticulture, transport and discharges from the many disused mines on the Island can all affect water quality. Pollution may arise as point sources, such as discharges through pipes which may be easily identifiable, or may be more dispersed over a wider area, known as diffuse pollution.

Where does river pollution come from?

Most people think of factories and farms causing pollution but don't think that their own houses can have an impact on their local rivers. Incorrect plumbing in the home could mean that waste water from washing machines, sinks, baths and toilets is flushed directly into your local river. Misconnected pipes are a common cause of pollution to rivers and streams.

In most areas there are two forms of drainage – surface water and foul water. The surface water drain carries rainwater from roads and rooftops into local rivers. Any discharge into this drain flows into the river untreated, but these should be relatively clean and have no effect on the river. The foul water drain carries waste water from toilets, sinks, baths and household appliances to the local sewage treatment works. This water is treated prior to being discharged, and again should not have a detrimental effect on the river.

Diffuse water pollution – what is it?

Diffuse water pollution can arise from many sources and although individually the sources may be small, their collective impact can be damaging. Diffuse pollution can be derived from current and past land use in both agricultural and urban environments. It also includes atmospheric deposition. Diffuse water pollution is mainly related to the way we use and manage land and soil. Groundwaters are vulnerable from, and affected by, leaching of pollutants from the land surface and from areas of contaminated land, while surface waters are affected by rainfall that washes over and off the land (run-off). Diffuse pollution results from release of a variety of substances in many different situations. It includes nutrients such as

nitrogen and phosphorus from fertilisers and silage; pesticides and weedkillers from agriculture and horticulture; oil from car maintenance and road and industrial run-off; metals, acidifying pollutants and chemicals from the atmosphere, abandoned mines and industrial processes.

Diffuse water pollution can have significant effects on wildlife and our use of water. These include groundwater and surface water contamination and the need for treatment, of drinking water resources; smothering of fish spawning gravels; nutrient enrichment and oxygen depletion; toxicity to plant and animal life.

Unlike point source pollution, diffuse pollution cannot easily be controlled by issuing licences. Regulatory approaches have to be more subtle and in many cases need to be well connected to the land use planning system. We can only continue to make water quality improvements by addressing diffuse pollution issues and adopting innovative ways of controlling the risks.

What is the cause of metals in the rivers?

The Island's natural geology means that in some areas the rocks are rich in metals such as lead, zinc and copper, and also aluminium and manganese. The richness of some of these led to a thriving mining industry over several centuries, particularly for lead and zinc. Water passing over rock rich in metals, and through former mine-workings, and through residual spoil-heaps, can dissolve soluble metals to result in a low concentration in the streams and rivers flowing through those areas.

Are the metals in our rivers hazardous?

Lead in particular is very toxic to humans, and indeed to many other animals. However, the levels that have been detected in our rivers would not be a risk to human health unless the water were to be consumed in place of drinking water – even the very worst section of the Island's rivers contained less than six times the current maximum amount permissible in drinking water (0.025mg/l).

What are other effects caused by metals?

Various metals can inhibit growth of organisms living in the water, for example a high level of aluminium in relatively acidic waters can limit the growth and development of fish, so that more contaminated rivers may have only sparse fish populations. It is relevant to note, however, that those Manx rivers even with the highest levels of metals recorded still support a variety of invertebrate life, and brown trout are common across the Island.