



Interpreting your Water Quality Results

Phosphate

Standards for Phosphorus in UK Rivers were introduced under the Water Framework Directive (WFD) and associated Regs/Directions. The standards are site-specific and depend upon the altitude and alkalinity of the site. The standards for good ecological status (close to natural) in Rivers are broadly in the range 0.077 – 0.306 ppm of Orthophosphate (PO_4^{3-}), as annual means. As measured by volunteer's Phosphate Colorimeter. The Phosphate Colorimeter upper limit is 2.5 ppm, the lower test limit is 0.00 ppm with an accuracy of ± 0.04 ppm. So, a 0.00 ppm reading does not mean there is no phosphate present, it will be between 0.00 and 0.04 ppm. A 2.5 ppm reading does not mean that is the total phosphate, it means that it is in excess of 2.5 ppm.

Nitrate

There are no ecological status standards for Nitrogen in Rivers. The Environment Agency's approach is to focus on Phosphate as the main cause of river eutrophication and the nutrient they are most able to reduce to levels that will improve the ecology. There is a standard for Lakes and Reservoirs, which is 0.75 – 1.5 mg/l (ppm). Natural levels of Nitrate in freshwater are typically low, generally well below 5 ppm.

Turbidity

<10 Low 10-40JTU Average >40/50JTU High

A higher turbidity reading represents cloudier and 'thicker' water with more particles throughout. When water is clear, it has low turbidity levels.

High Turbidity results in increased sedimentation and siltation, which can result in harm to habitat areas for fish and other aquatic life. Particles also provide attachment places for other pollutants, notably metals and bacteria. It's safe to assume that the higher the turbidity, the poorer the water quality, and more extreme effects on surrounding ecosystems. High Turbidity = More sediment (and pollutants) are being washed into the watercourse.

Total Dissolved Solids

Significantly elevated Total Dissolved Solids (TDS) can indicate that pollution has entered the river. A measure of TDS cannot tell you what the pollutant is, but it can help identify that there is a problem that may harm invertebrates and/or fish. TDS may be high in a river without any visible effects on the clarity of the river water. Any human activity that adds inorganic, charged chemicals to a river will alter the Total Dissolved Solids. For example, TDS may be higher in a river downstream of a sewage treatment works due to chemicals such as chloride and phosphate from household products. Winter road runoff, containing salt, can be very high in Total Dissolved Solids. If this runoff reaches rivers, then it may, depending on the quantity of water, temporarily elevate the TDS in the river.

Water Type	Total Dissolved Solids (TDS) in Parts per million (ppm)
Distilled Water	0.3-2 ppm
Snow Melted	1.28-27 ppm
Tap Water	32-510 ppm
Freshwater Streams	32-950 ppm
Chalk Streams	64-1300 ppm

Interpreting your results



Phosphate^{*1} - Orthophosphate (PO₄³⁻) as measured by Hanna Colorimeter

High	Good Ecological Status	Moderate / Poor
< 0.077 ppm	0.077 – 0.306 ppm	> 0.306 ppm

Nitrate^{*2} - as measured by Hach Nitrate Test Strips

Natural	Elevated	Excessive
< 1 ppm	1 – 4.9 ppm	≥ 5 ppm

Ammonia^{*1} - as nitrogen as measured by Hanna Colorimeter

High	Good Ecological Status	Moderate / Poor
< 0.3 ppm	0.3 – 0.6 ppm	> 0.75 ppm

^{*1} Water Framework Directive (WFD) standards set as annual means.

Standards are site specific, hence there is a range for good ecological status.

^{*2} There is no WFD standard set for Nitrate in rivers.