



Interpreting your results

Electrical Conductivity -

Significantly elevated electrical conductivity (EC) can indicate that pollution has entered the river. A measure of EC cannot tell you what the pollutant is, but it can help identify that there is a problem that may harm invertebrates and/or fish. EC 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 EC. For example, EC 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 electrical conductivity. If this runoff reaches rivers, then it may, depending on the quantity of water, temporarily elevate the EC in the river.

Different forms of water have different typical EC conductivity ranges.

Water Type	Typical Conductance Range
Distilled Water	0.5 – 3 ($\mu\text{S/cm}$)
Snow Melted	2 – 42 ($\mu\text{S/cm}$)
Tap Water	50 – 800 ($\mu\text{S/cm}$)
Freshwater Streams	50 – 1,500 ($\mu\text{S/cm}$)
Chalk Streams	100 - 2,000 ($\mu\text{S/cm}$)

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.

Ammonia - Standards for Ammonia in UK Rivers are also set out in the Water Framework Directive (WFD). As with Phosphate, 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 and lakes are broadly in the range 0.3 – 0.6 ppm for Ammonia, as annual means, as measured by the Ammonia Colorimeter. The Ammonia Colorimeter upper limit is 9.99 ppm, the lower test limit is 0.00 ppm with an accuracy of ± 0.05 ppm $\pm 5\%$. So, a 0.00 ppm reading does not mean there is no ammonia present, it will be between 0.00 and 0.05 ppm $\pm 5\%$. A 9.99 ppm reading does not mean that is the total phosphate, it means that it is in excess of 9.99 ppm.

Your local EA Fisheries Team should be able to tell you what your local standards are for Phosphate and Ammonia.



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Phosphate^{*1} - Orthophosphate (PO_4^{3-}) 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.