

Regulatory Parameters

The drinking water quality standards are set out in statute in the Water Supply (Water Quality) Regulations 2016. The standards reflect those set out in the European Drinking Water Directive which in turn are derived mainly from recommendations made by the World Health Organisation (WHO). There are also some UK national standards for some parameters.

Each regulated substance or organism is known as a parameter. As well as setting standards for each parameter, the regulations state how often each one should be tested for and where the samples for testing should be taken.

All Icosa Waters regulatory samples are currently taken from consumers' taps.

The parameters and standards are described below. Anyone wishing to find out more about how each standard is derived can do so by accessing the published WHO expert opinion at www.who.int

Parameter	Standard	Comments
Acrylamide	0.1 µg/l	monomer is not normally found in drinking water. It is produced in the manufacture of polyacrylamides which are occasionally used in water treatment. Its presence in drinking water is limited by control of the product specification.
Antimony	5 µg Sb/l	rarely found in drinking water. Trace amounts can be derived from brass tap fittings and solders.
Arsenic	10 µg As/l	In the UK it occurs naturally in a few groundwater sources. Specific water treatment is required to remove it.
Benzene	1 µg/l	present in petrol. It is not found in drinking water, but it can migrate through underground plastic water pipes if petrol is spilt in the vicinity. Some bottled waters and soft drinks which include sodium benzoate as an ingredient have been reported as containing benzene.
Benzo(a)pyrene	0.01 µg/l	one of several compounds known as polycyclic aromatic hydrocarbons (PAHs). Their source in drinking water is as a result of deterioration of coal tar which was used to line water pipes up until the early 1970s. Due to extensive water mains refurbishment and renewal, it is now rare to detect this substance in drinking water supplies in the UK.
Boron	1 mg B/l	in surface water sources comes from industrial discharges or from detergents in treated sewage effluents. It can be present in partially desalinated seawater when this is used to supplement drinking water supplies. Concentrations found in drinking waters are generally very low.
Bromate	10 µg BrO ₃ /l	This compound can be formed during disinfection of drinking water as a result of a reaction between naturally occurring bromide and strong oxidants (usually ozone). It may be generated in the manufacture of sodium hypochlorite disinfectant. Occasionally groundwater beneath an industrial site can become contaminated with bromate.

Cadmium	5 µg Cd/l	rarely detected in drinking water and trace amounts are usually due to dissolution of impurities from plumbing fittings.
Chromium	50 µg Cr/l	comes from the coatings on some taps and plumbing fittings.
Copper	2 mg Cu/l	comes mostly from domestic copper pipes and fittings. In general, water sources are not aggressive towards copper, but problems very occasionally occur on new housing estates or in new installations. These 'blue water' events can be avoided by good plumbing practices.
Cyanide	50 µg CN/l	could be present in surface water as a result of a specific industrial contamination incident.
1,2-Dichloroethane	3 µg/l	Is a solvent that may be found in groundwater in the vicinity of industrial sites. Where necessary it can be removed by special water treatment.
Epichlorohydrin	0.1 µg/l	found in trace amounts in polyamine water treatment chemicals. Its presence in drinking water is limited by control of the product specification.
Fluoride	1.5 mg F/l	naturally occurs in many water sources, especially groundwater. It cannot be removed by conventional water treatment, so high levels must be reduced by blending with another low fluoride water source. In addition, some water companies are required by the local health authority to fluoridate water supplies as a protection against tooth decay. No adverse health effects are anticipated at levels of fluoride at, or below, the drinking water standard. Fluoridation of water is a Department of Health policy.
Lead	10 µg Pb/l	occasionally occurs naturally in raw waters, but the usual reason for its presence in drinking water is lead plumbing in older properties. If the water supply has a tendency to dissolve lead, then water companies treat the water to reduce consumer exposure. The permanent remedy is for householders to remove lead pipes and fittings.
Mercury	1 µg Hg/l	not normally found in sources of drinking water in the UK.
Nickel	20 µg Ni/l	naturally occurs in some groundwater and, where necessary, special treatment can be installed to remove it. Another source of nickel in drinking water is the coatings on modern taps and other plumbing fittings.
Nitrate	50 mg NO ₃ /l	naturally occurs in all source waters although higher concentrations tend to occur where fertilisers are used on the land. Nitrate can be removed by ion exchange water treatment or through blending with other low nitrate sources.
Nitrite	mg NO ₂ /l (at Treatment Works) 0.5 mg NO ₂ /l (at customers taps)	is sometimes produced as a by-product when chloramine (a mixture of chlorine and ammonia) is used as the essential residual disinfectant in a public water supply. Chloramine is the residual disinfectant of choice in large distribution systems because it is more stable and long-lasting. Careful operation of the disinfection process ensures that levels of nitrite are below the standards.

organochlorine Pesticide compounds (aldrin, dieldrin, heptachlor, heptachlor epoxide)	0.03 µg/l	are banned substances and no longer used in the UK. They are persistent in the environment and bioaccumulate in food chains. They are very unlikely to be found in drinking water.
All other Pesticides compounds	0.10 µg/l for each individual substance 0.5 µg/l for the total of all pesticides	are a diverse and large group of organic compounds used as weed-killers, insecticides and fungicides. Many water sources contain traces of one or more pesticides as a result of both agricultural uses mainly on crops and non-agricultural uses, mainly for weed control on highways and in gardens. Where needed, water companies have installed water treatment (activated carbon and ozone) so that pesticides are not found in drinking water. Water companies must test for those pesticides used widely in their area of supply. Pesticide monitoring thus varies according to the probability and anticipated nature of contamination.
Polycyclic aromatic hydrocarbons	0.1 µg/l	is a group name for several substances present in petroleum-based products such as coal tar. The standard is for the sum of four PAH compounds.
Selenium	10 µg Se/l	is an essential element and a necessary dietary component. Amounts in drinking water are usually well below the standard.
Tetrachloroethane and Trichloroethene	10 µg/l (sum of both substances)	are solvents that may occur in groundwater in the vicinity of industrial sites. Where necessary they are removed by specialist treatment.
Trihalomethanes	100 µg/l	are formed during disinfection of water by a reaction between chlorine and naturally occurring organic substances. Their production is minimised by good operational practice.
Vinyl chloride	0.5 µg/l	may be present in plastic pipes as a residual of the manufacturing process of polyvinyl chloride (PVC) water pipes. Its presence in drinking water is controlled by product specification.
Aluminium	200 µg Al/l	occurs naturally in most source waters. It is removed from drinking water by conventional water treatment (coagulation and filtration). Aluminium sulphate and poly-aluminium chloride may be used as water treatment chemicals at some surface water treatment works.
Colour	20 mg/l on the Pt/Co scale	occurs naturally in upland water sources and is caused by natural organics which are characteristic of these catchments. It is removed by conventional water treatment processes.
Iron	200 µg Fe/l	is present naturally in many water sources. It is removed by water treatment. Some iron compounds are used as water treatment chemicals. However, the most common source of iron in drinking water is corrosion of iron water mains.

Taste and Odour	acceptable to consumers and no abnormal change	can arise as a consequence of natural substances in surface waters, particularly between late spring through to early autumn. Water treatment with activated carbon or ozone will remove these natural substances.
Sodium	200 mg Na/l	is a component of common salt. It is present in seawater and brackish groundwater. Some water treatment chemicals contain sodium. Concentrations in drinking water are extremely low, but some water softeners can add significant amounts where they are installed in homes or factories.
Tetrachloromethane	3 µg/l	is a solvent that may occur in groundwater in the vicinity of industrial sites. Where necessary it is removed by specialist water treatment.
Turbidity	NTU (at Treatment Works) 4 NTU (at customers taps)	is a measure of the cloudiness of water. Turbidity is an important non-specific water quality control parameter at water treatment works because it can be monitored continuously online and alarms set to alert operators to deterioration in raw water quality or the need to optimise water treatment. It can arise from disturbance of sediment within water mains.
Ammonium	0.5 mg NH ₄ /l	naturally present in trace amounts in most waters. Their presence might indicate contamination of sanitary significance and they interfere with the operation of the disinfection process.
Chloride	250 mg Cl/l	a component of common salt. It may occur in water naturally, but it may also be present due to local use of de-icing salt or saline intrusion.
Conductivity	2,500 µS/cm	a non-specific measure of the amount of natural dissolved inorganic substances in source waters.
pH or Hydrogen Ion	Acceptable Range between 6.5 and 9.5.	gives an indication of the degree of acidity of the water. A pH of 7 is neutral; values below 7 are acidic and values above 7 are alkaline. A low pH water may result in pipe corrosion. This is corrected by adding an alkali during water treatment.
Sulphate	250 mg SO ₄ /l	occurs naturally in all waters and cannot be removed by treatment.
Total Indicative Dose	0.10 mSv/year	is a measure of the effective dose of radiation the body will receive from consumption of the water. It is calculated only when screening values for gross alpha or gross beta (radiation) are exceeded.
Total Organic Carbon	'no abnormal change'	represents the total amount of organic matter present in water.
Tritium	100 Bq/l	is a radioactive isotope of hydrogen. Discharges to the environment are strictly controlled and there is a national programme of monitoring surface waters.