

Water quality standards explained



Scottish Water
Trusted to serve Scotland

At Scottish Water, we ensure there is a clear and fresh supply of high quality water for everyone to use.

All drinking water in Scotland comes from rain. When it rains, water flows into streams, rivers, lochs and reservoirs. The vast majority of water supplied in Scotland comes from these sources.

- Drinking water in Scotland is **among the most tightly regulated in the world**
- We test water regularly at treatment works, in the network and at customers' taps
- **Over 99%** of samples meet all quality standards
- If a test doesn't meet a standard, **action is taken quickly** to put things right

This factsheet is designed to be used as a reference guide to help understand the results contained in a water quality report.

Where water quality standards come from

In Scotland, drinking water quality is protected by law under the **Public Water Supplies (Scotland) Amendment Regulations 2022**. These regulations set safe, acceptable limits for different substances that may be found in drinking water.

Each limit is known as a **Prescribed Concentration or Value (PCV)**. These limits are set **well below levels that could affect health**.

How we sample

To make sure your water is safe and meets quality standards, we test it regularly at different points along its journey to your home:

- At our treatment works, where water is cleaned and made safe to drink
- At service reservoirs, where water is stored
- At customers' taps, to check water quality where it's used

Some tests are carried out continuously at larger treatment works, while others are done in laboratories across Scotland. In total, **thousands of tests are carried out every year** to closely monitor water quality.

In addition to routine testing, our teams also take samples for day-to-day operational reasons, such as:

- After a burst pipe
- When new water mains are installed
- If a customer reports a concern

What happens if a test fails

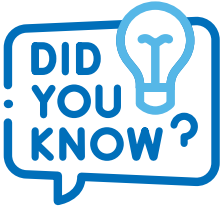
If a water sample test does not meet a quality standard, **this does not usually mean the water is unsafe to drink**.

Water quality limits are set **well below levels that could affect public health**. Any sample failures are treated seriously and acted upon quickly.

If this happens:

- The result is investigated immediately
- Steps are taken to restore water quality if needed
- The issue is reported to independent stakeholders including the **Drinking Water Quality Regulator (DWQR)**, local health boards and environmental health teams

In the **very unlikely event** that a test result indicates a possible risk to public health, Scottish Water will take urgent action and provide clear advice to customers.



Scotland's drinking water is among the most tightly regulated in the world

Sample results

If a Scottish Water employee has taken a range of samples they will then be delivered to our laboratories for further analysis.

Within 14 days of the samples being taken, a scientist in our Public Health team will send you a detailed response explaining the results.



Units of Measurement

The units of measurement used in this factsheet are as follows:

- 1 milligram per litre (mg/l) is one part per million
- 1 microgram per litre (ug/l) is 1 part per billion or thousand million
- 1 nanogram per litre (ng/l) is 1 part per million million
- NTU – Nephelometric turbidity units (for turbidity measurement)
- Pt/Co – Platinum-cobalt units Standard (for colour measurement)
- uS/cm – micro siemens/centimetre (for conductivity measurement)
- CFU – Colony Forming Units (for microbiology)

Individual parameters/substances

A variety of parameters and substances are included in reports following water sample testing. These may include:

Aluminium (Al)

Aluminium can occur naturally in water within certain areas. However, aluminium compounds are used in the treatment process to help remove impurities.

Any aluminium compounds added during the treatment process are removed before the final treated water leaves the treatment works.

- PCV = 200 ug Al/l

Chloride (Cl)

Chloride in water originates from natural sources such as mineral deposits. It can contribute to taste which may be unacceptable to customers if the standard is exceeded.

- PCV = 250 mg Cl/l

Chlorine (Cl)

No PCV is prescribed for chlorine in the regulations. Chlorine is added to water to ensure water is free from bacteria.

When chlorine is added not all of it is used up in the process. Some remains as 'free chlorine' to make sure water remains safe as it travels through the pipes to your tap. Levels are set at the water treatment works and reduce as water travels through the pipes to ensure that a residual concentration remains when it reaches customers' taps.

For more information, please see Scottish Water Factsheet: Chlorine explained and Chloramination explained.

Clostridia, E-coli and enterococci

These bacteria should not be present in drinking water. Their presence may indicate a problem with the water supply system.

The disinfection process kills these bacteria before the water reaches your home.

- PCV = 0 CFU in 100ml (CFU/100ml)

Coliforms

These are naturally present in the environment. Their presence may indicate a possible water supply issue or contamination from the kitchen sink or taps.

- PCV = 0 CFU in 100ml (CFU/100ml)

Colour

The colour of drinking water is usually dependent on the presence of naturally occurring dissolved organic matter. For example, the higher the peat content in the area, the higher the colour. However, colour may also be due to the presence of iron contributed by old cast iron mains.

- PCV = colour is 20 mg/l Pt/Co.

Sometimes the water coming out of the tap has a milky or cloudy appearance, which is usually caused by air bubbles. This is harmless and if the water is left to stand for a few minutes it will clear from the bottom upwards.

For more information, please see Scottish Water Factsheet: Colour, taste and odour explained.

Conductivity

Conductivity is proportional to the dissolved solids content of the water and is often used as an indication of the presence of dissolved minerals, such as calcium, magnesium and sodium.

- PCV is 2500 uS/cm at 20°C

For more information, please see Scottish Water Factsheet: Hardness in drinking water.

Copper (Cu)

Copper can occur naturally in some water sources, and is normally found in low concentrations in drinking water. Copper, if detected in significant concentrations, may be present at customers' taps if copper pipes have been used in the plumbing system.

- PCV = 2 mg Cu/l

Fluoride (F)

Scottish Water does not add fluoride to any water supply in Scotland. Fluoride can be found naturally in some raw water supplies at low levels.

- PCV = 1.5 mg F/l

Water hardness

Water hardness is a measure of the concentration of dissolved calcium and magnesium minerals in water. As water passes through rocks and soils (particularly limestone, chalk, or other mineral-rich geology) it dissolves these minerals and becomes "harder".

Hardness means you may have to use more soap or detergent when washing as it lathers less with hard water than with soft. It has no adverse effects on health and is safe to drink.

There is no standard specified in the regulations.

For more information, please see Scottish Water Factsheet: Hardness in drinking water.

Iron (Fe)

This is one of the most abundant metals found naturally in surface and ground waters. After treatment it is normally reduced to very small amounts in drinking water. Increased levels can occur due to the corrosion of old cast iron water mains.

- PCV = 200 ug Fe/l

Lead (Pb)

Lead is not normally present in water sources, but significant concentrations may be present at customers' taps if lead or copper pipes with lead solder have been used in the plumbing system.

For more information, please see Scottish Water Factsheet: Lead explained.

- PCV = 10 ugPb/l

Manganese (Mn)

Manganese occurs naturally in water. High concentrations of manganese in tap water may cause discolouration.

- PCV = 50 ug Mn/l

Nitrite and nitrate (NO₂ and NO₃)

Normally only very small amounts of these compounds are found in water.

- PCV for nitrite = 0.5 mg NO₂/l
- PCV for nitrate = 50 mg NO₃/l

Odour and taste

Customer concerns quite often relate to taste and odour. Samples are tasted and smelled by a specialist testing panel of scientists to confirm the presence of any taste or odour.

For more information, please see Scottish Water Factsheet: Colour, taste and odour.

pH

This is a scientific term used to describe the acidity or alkalinity of a fluid. We need to control the pH of water because:

- If water is too acidic then it may corrode metal pipes in the distribution system
- If water is too alkaline it may cause deposits to form in the pipes

The standard is to keep water pH levels in the 6.5-9.5 range.

Sodium (Na)

Sodium occurs naturally in very small amounts in water. High concentrations may result in a taste that is unacceptable to customers.

- PCV = 200 mg Na/l

Sulphate (SO₄)

Sulphate occurs naturally in water and originates from mineral deposits. High concentrations may cause taste problems and in the long term, damage pipe work.

- PCV = 250 mg SO₄/l

Trihalomethanes (THMs)

THMs form in drinking water when chlorine reacts with naturally occurring dissolved organic matter. Of the THMs found in drinking water, only four are considered significant for health, and chloroform is the most common.

The PCV is based on the combined concentration of all four compounds.

- PCV = 100 ug/l

Turbidity

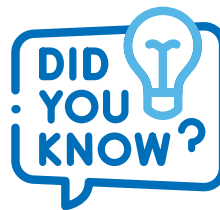
Turbidity is caused by very fine insoluble particles that may be present in water. Levels are closely monitored during the treatment process.

- PCV at the customer's tap is 4.0 NTU

Other substances

In addition to those listed and explained above, we also test for substances such as hydrocarbons, pesticides, PFAS (Poly and Perfluorinated Alkyl Substances), chlorate, chlorite and herbicides, phenols and organic carbon.

We also carry out extensive monitoring of our supplies for cryptosporidium through sampling of raw and final treated water.



Thousands of water quality tests are carried out every year across Scotland

Keeping up to date and getting in touch

Find out more about Scottish Water, our services, and keep up to date with what we are doing in your area:



**Customer.scottishwater.co.uk/
ReportAProblem**



0800 0778 778 (free 24/7)*



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www.scottishwater.co.uk/Priority

* We record all calls for quality and training purposes.