south east water

Water Quality Explained

A guide to the limits

Introduction

Rigorous checks from the source to the tap makes sure that the drinking water provided to more than 2.1 million people each day by South East Water is among the highest quality in the world.

All UK water companies must comply with the requirements of the Water Supply (Water Quality) Regulations 2000 and amended Regulations which are among the most stringent of any country in the world in controlling the quality of drinking water.

Responsibility for enforcing these regulations lies with the Drinking Water Inspectorate (DWI) with the results for each company appearing in its annual report (www.dwi.gov.uk).

South East Water carries out more than 400,000 tests annually on samples from treatment works, storage reservoirs and customers' own taps to test for more than 60 parameters covering chemicals, micro-organisms plus the appearance and taste of the water.

The Regulations give each parameter a limit with the legal name of Prescribed Concentration or Values (PCVs). Most of these are 'absolute' and if the substance is present, it is usually in such small amounts that they are only just detectable using some of the most advanced analytical instruments.

Parameter limits must be met at each treatment works and treated water service reservoir or water tower. Tests are also undertaken at consumers' taps.

This leaflet has been put together to help explain the parameters in these Regulations.

There are two main types of standards.

1. Microbiological standards

These include tests for the presence of bacteria as well as other living organisms. The significance of individual test results for each microbiological parameter at each location varies and a single positive result does not necessarily mean that the water is unsafe to drink.

2. Health based chemical standards

These standards are set using a precautionary approach taking into consideration the amount of water consumed over a person's lifetime and also exposure to chemicals through other means, for example food. Just because a standard has been set it does not mean that the substance is present in drinking water.

Units of measure

The main chemical measurements:

1 mg/l (one milligram per litre) represents one part per million.

1 µg/l (one microgram per litre) represents one part per thousand million.

Other units are used for microbiological PCVs:

No/100 ml: Number of organisms per 100 millilitres.

No. cfu/100 ml: Number of colony forming Units per 100 millilitres.

Parameters

Chemical parameters

Chemical parameters include nutrients and minerals that are naturally occurring in water and possible contaminants such as metals.

Pesticides

Pesticides are a subcategory of chemical parameters and include insecticides, herbicides, fungicides and algicides. They are present in the environment mainly due to their use in agriculture, industry and by local highway authorities. The standard set for pesticides is effectively a zero standard and is well below the safety levels for the commonly used pesticides. It is also significantly below the level that may cause health problems. We work closely with the Environment Agency and all concerned to minimise the impact that these chemicals have on the water cycle. Advanced forms of water treatment processes are used where necessary to remove these pesticides. If you use pesticides in your home or garden please be careful to dispose of any remains safely.

Micro-organisms

Micro-organism parameters include bacterial and protozoan (parasite) contamination. Micro-organisms are generally measured in Colony forming Units (cfu). This is a measure of only the living bacteria in a sample. Methods for the isolation of bacteria and protozoans vary, depending on the specific organism being analysed for. These methods generally involve the incubation of the sample for anything from 18 hours to 10 days.

Non regulatory parameters

These are parameters that fall outside the drinking water quality regulations. South East Water test for these as information they provide is useful not only to our customers but in the day to day running of the business.

Index in alphabetical order

Name of parameter/comment | Limit

1,1,1-Trichloroethane — no limit set

This chemical is found in industrial solvents and may be found as a pollutant in underground water sources.

1,2-Dichloroethane — 3.0 µg/l

This chemical is found in industrial solvents and may be found as a pollutant in underground water sources.

2,4,5-T — 0.1 µg/l

Refer to explanation on pesticides (page 3).

2,4-D — 0.1 µg/l

Refer to explanation on pesticides (page 3).

Aldrin — 0.03 µg/l

Refer to explanation on pesticides (page 3).

Alkalinity — no limit set

Alkalinity is a measure of the temporary hardness, which is responsible for the scale formation when water is boiled. Alkalinity is normally due to bicarbonate salts of calcium and magnesium.

Aluminium — 200 µg Al/l

Aluminium occurs naturally in many rocks and minerals at the water's source and is removed. Water treatment processes may involve the use of aluminium sulphate.

Ammonium (ammonia and ammonium ions) — 0.5 mg NH_4/l

This is naturally present in some water sources. The presence of ammonia can indicate contamination of sanitary significance. It is sometimes used as part of the treatment process to form chloramine to maintain chlorine in the distribution system.

Antimony — 5 µg Sb/l

Antimony is very rarely detected in drinking water. Very small quantities may arise from brass tap fittings and lead free solders.

Name of parameter/comment	Limit

Arsenic — 10 µg As/l

Low levels of this substance may occur naturally in water after it has passed through various mineral deposits and rock strata. It can be associated with areas of heavy industry. These standards have a large safety factor built in.

Atrazine — 0.1 µg/l

Refer to explanation on pesticides (page 3).

Bentazone — 0.1 µg/l

Refer to explanation on pesticides (page 3).

Benzene — 1 µg/l

Present in the environment, largely because of its use in petrol/fuels and in water from industrial and atmospheric pollution. These can migrate through plastic pipework if petrol/fuel is spilt nearby.

Benzo (a) pyrene — 0.01 µg/l

Benzo (a) pyrene belongs to a group of compounds known as Polycyclic Aromatic Hydrocarbons (PAH) (page 12).

Benzo[1,12]perylene – refer to explanation on Polycyclic Aromatic Hydrocarbons (PAH) (page 12).

Benzo[11,12]fluoranthene – refer to explanation on Polycyclic Aromatic Hydrocarbons (PAH) (page 12).

Benzo[3,4]fluoranthene – refer to explanation on Polycyclic Aromatic Hydrocarbons (PAH) (page 12).

Boron — 1 mg B/l

Low levels of this substance may occur naturally in water after it has passed through various mineral deposits and rock strata. It can be associated with areas of heavy industry. The standards are health-related and have a large safety factor built in.

Bromate — 10 µg BrO_3/l

Bromate is not normally found in raw water. However, during disinfection of drinking water it may be formed due to a reaction between naturally occurring bromide and strong oxidants (usually ozone). Good control of water treatment processes reduces its formation.

Name of parameter/comment	Limit
Bromoxynil Refer to explanation on pesticides (page 3).	0.1 µg/l
Cadmium Low levels of this substance may occur naturally in water after it has passed through various mineral deposits and rock strata. It can be associated with areas of heavy industry. The standards are health-related and have a large safety factor built in.	5 µg Cd/l
Calcium Occurs naturally and comes from chalk and limestone rocks that form a large part of our area. Calcium is one of the main substances that contributes to the hardness of water.	no limit set
Carbendazim Refer to explanation on pesticides (page 3).	0.1 µg/l
Carbetamide Refer to explanation on pesticides (page 3).	0.1 µg/l
Chloride Chloride can occur naturally in source water and is a component of common salt. It can be found at low levels in all water supplies. The standard is not health-based but set to avoid taste and corrosion potential.	250 mg Cl/l
Chlortoluron Refer to explanation on pesticides (page 3).	0.1 µg/l
Chromium Low levels of this substance may occur naturally in water after it has passed through various mineral deposits and rock strata. The standards are health-related and have a large safety factor built in. Chromium is rarely found in drinking water.	50 µg Cr/l

Name of parameter/comment	Limit
Clostridium perfringens	0 cfu/100 ml

A type of bacterium which produces spores and can be present in the intestines of animals and humans. Spores are particularly resistant to disinfection using chlorine and their presence in drinking water could indicate historic or soil contamination. Clostridium perfringens can be observed in the vast majority of soil samples. Any detection of these bacteria is immediately investigated and nearly all instances of these bacteria in samples taken from customers' taps are due to contamination of the tap.

Colony Counts - 3 days at 22°C	no abnormal change
Colony Counts - 48 hrs at 37°C	no abnormal change

Colony counts are general techniques for detecting a wide range of bacteria. They do not have any direct impact on health and are used for trending purposes to assess the microbiological quality of drinking water.

Colour	20 mg/l Pt/Co

Water should be clear and bright, but natural organic matter may occasionally impart a slight yellowish tint to surface water (reservoir) supplies. It can be removed by water treatment. The standard is set for aesthetic reasons.

Conductivity	2500 µS/cm

This is a measure of the amount of natural mineral salts dissolved in the water.

Copper	2 mg Cu/l

Copper in drinking water comes mostly from copper pipes and fittings in the household plumbing. It may cause blue/green staining on sanitary ware. An excess of copper may cause a metallic taste.

Cryptosporidium	<1 oocyst in 10 litres

This is a parasitic organism which can cause severe gastroenteritis. This organism is particularly resistant to disinfection using chlorine. It is is found in a wide variety of terrestrial and aquatic environments. The most common routes of infection have been identified as swimming pools, contact with farm animals and person to person spread. Water companies are required by the Water Supply (Water Quality) Regulations 2000 (as amended) to undertake wider assessment to identify whether there is a risk to public health from the water being supplied from Cryptosporidium.

Name of parameter/comment	Limit
Cyanide	50 µg CN/l

Low levels of this substance may occur naturally in water after it has passed through various mineral deposits and rock strata. It can be associated with areas of heavy industry. The standards are health related and have a large safety factor built in. Cyanide is rarely found in drinking water.

Dibromochloromethane

Refer to explanation on Total Trihalomethanes (page 15).

Dicamba 0.1 µg/l

Refer to explanation on pesticides (page 3).

Dichlobenil 0.1 µg/l

Refer to explanation on pesticides (page 3).

Dichlorobromomethane

Refer to explanation on Total Trihalomethanes (page 15).

Dichlorprop 0.1 µg/l

Refer to explanation on pesticides (page 3).

Dieldrin 0.03 µg/l

Refer to explanation on pesticides (page 3).

Diuron 0.1 µg/l

Refer to explanation on pesticides (page 3).

E. coli (Escherichia coli) 0 cfu/100 ml

E. coli are generally considered to be from faecal sources only. E. coli inhabit the intestines of animals and humans, and as such their presence in water may constitute a risk to health. These bacteria provide a highly sensitive measure of the microbiological quality of the water supply. Any detection of these bacteria is immediately investigated and nearly all instances of these bacteria in samples taken from customers' taps are due to contamination of the tap.

Name of parameter/comment	Limit
Enterococci	0 cfu/100 ml

Enterococci are generally found in the intestines of animals and humans. These organisms form a secondary indicator of faecal contamination in water. Any detection of these bacteria is immediately investigated and nearly all instances of these bacteria in samples taken from customers' taps are due to contamination of the tap.

Epoxiconazole	0.1 µg/l

Refer to explanation on pesticides (page 3).

Fluoride	1.5 mg F/l

Occurs naturally in water at varying concentrations. Fluoride is added to the water in some parts of the country at the request of the local health authority to protect the teeth of young children. We do not artificially fluoridate any of the water that we supply.

Fluroxypyr	0.1 µg/l

Refer to explanation on pesticides (page 3).

Flutriafol	0.1 µg/l

Refer to explanation on pesticides (page 3).

Gamma-HCH (Lindane)	0.1 µg/l

Refer to explanation on pesticides (page 3).

Gross alpha radioactivity	0.1 Bq/l
Gross beta radioactivity	1 Bq/l

Radioactivity is naturally present in all water sources at very low levels. Gross alpha and beta radioactivity are measured to allow the monitoring of Total indicative dose per year.

Heptachlor	0.03 µg/l

Refer to explanation on pesticides (page 3).

Heptachlor Epoxide	0.03 µg/l

Refer to explanation on pesticides (page 3).

Name of parameter/comment	Limit

Hydrogen Ion (pH) — 6.5-10.0 pH units

This is a measure of the acidity or alkalinity of the water. We have to keep the pH of your tap water within this range. The water we supply is usually slightly alkaline to protect metallic fittings and pipework from corrosion.

Indeno(1,2,3-cd)Pyrene – refer to explanation on Polycyclic Aromatic Hydrocarbons (PAH) (page 12).

Iron — 200 µg Fe/l

The standard for iron has been set for aesthetic rather than health reasons to minimise occurrence of discoloured (orange/brown) water. Iron occurs naturally in water and its compounds are also used as a water treatment chemical. Inadequate iron removal treatment in the past has resulted in historic build up of iron in our mains. Also, corrosion of old water mains can be another source of iron in water.

Isoproturon — 0.1 µg/l

Refer to explanation on pesticides (page 3).

Lead — 25 µg Pb/l (reducing to 10 µg Pb/l by 2013)

This metal is not present in water sources. However, lead was quite commonly used as a plumbing material before the 1970's but has now been superseded by mainly copper, steel and plastic piping. Older properties may still have some lead plumbing which can affect the water quality. 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 households to remove lead pipes and fittings.

Linuron — 0.1 µg/l

Refer to explanation on pesticides (page 3).

Magnesium — no limit set

Occurs naturally in water after passage through mineral deposits and rock strata. Magnesium contributes to the total hardness of water.

Name of parameter/comment	Limit
Manganese	50 µg Mn/l

This occurs naturally in water but it is removed during treatment. Black deposits of manganese dioxide can cause discoloured water and the low standard has been set for aesthetic reasons.

MCPA	0.1 µg/l

Refer to explanation on pesticides (page 3).

MCPB	0.1 µg/l

Refer to explanation on pesticides (page 3).

Mecoprop (MCPP)	0.1 µg/l

Refer to explanation on pesticides (page 3).

Mercury	1 µg Hg/l

Low levels of this substance may occur naturally in water after it has passed through various mineral deposits and rock strata. It can be associated with areas of heavy industry. The standards are health-related and have a large safety factor built in. Mercury is rarely found in drinking water.

Metaldehyde	0.1 µg/l

Refer to explanation on pesticides (page 3).

Nickel	20 µg Ni/l

Occurs naturally in a few ground waters and, where necessary, water can be blended with sources containing low nickel. A more common source of nickel in drinking water is the coating on modern taps and other plumbing fittings.

Nitrate	50 mg NO3/l

Inorganic fertilisers from agricultural run off are the main source of nitrate in water supplies but it can occur from natural sources. A commonly used method of nitrate reduction is to blend with a low nitrate source, however it can be removed by treatment using an ion exchange process.

Nitrite	0.5 mg NO2/l

Nitrite occurs naturally at low levels in the environment. It is sometimes produced as a by-product when chloramine is used as a disinfectant. Careful control of the disinfection process reduces formation of nitrite.

Name of parameter/comment	Limit
Odour Qualitative	no limit set
Odour Quantitative	1 Dil No

Odour testing is a measure of the aesthetic quality of drinking water. The qualitative measure of odour is a description of the smell of the water, for example 'earthy'. The quantitative measure allows us to assign a numerical value to the level of odour to allow us to determine the strength of the odour. Any significant odour is investigated. Unusual odours may indicate a problem which needs investigating.

Oxadixyl 0.1 µg/l

Refer to explanation on pesticides (page 3).

Pendimethalin 0.1 µg/l

Refer to explanation on pesticides (page 3).

Pesticides Total 0.5 µg/l

This is the total sum of the detected concentrations of all the individual pesticides in this list.

Phosphorus no limit set

Occurs naturally in water but can be added during water treatment to minimise the pick up of lead from lead pipework. It is also a common ingredient in many detergents and agricultural fertilisers.

Polycyclic Aromatic Hydrocarbons (PAH) 0.1 µg/l

(sum of 4 Benzo[11,12]fluoranthene; benzo[3,4]fluoranthene; Benzo[1,12]perylene; and indeno[1,2,3-cd]pyrene)

Polycyclic aromatic hydrocarbons is a group name for several substances present in petroleum based products such as coal tar which was used to line iron mains many years ago. Due to extensive water mains refurbishment and renewal it is now unusual to detect these substances in drinking water. The standards are set well below the levels that could affect health.

Potassium no limit set

Occurs naturally in water after passing through mineral deposits and rock strata.

Name of parameter/comment	Limit
Prometryn	0.1 µg/l
Refer to explanation on pesticides (page 3).	
Propazine	0.1 µg/l
Refer to explanation on pesticides (page 3).	
Propyzamide	0.1 µg/l
Refer to explanation on pesticides (page 3).	
Pseudomonads	no limit set
These are bacteria which have a widespread environmental occurrence and are frequently associated with swimming pools and other recreational water facilities rather than water supplies.	
Residual Disinfectant – Free	no limit set
Residual Disinfectant – Total	no limit set
South East Water is legally obliged like all water companies to disinfect our water supplies. We use chlorine which is carefully controlled to ensure that water is adequately disinfected, while minimising any taste or odour issues for consumers. It is our policy to have a measurable quantity of chlorine present at customers' taps. This helps maintain good water quality and also keeps the distribution system in good condition.	
Selenium	10 µg Se/l
Low levels of this substance may occur naturally in water after it has passed through various mineral deposits and rock strata. Selenium is an essential element and is required as part of our diet.	
Simazine	0.1 µg/l
Refer to explanation on pesticides (page 3).	
Sodium	200 mg Na/l
Sodium is a component of common salt (sodium chloride). It occurs naturally in water after passing through various mineral deposits and rock strata and is present in seawater and brackish groundwater. Some treatment chemicals contain sodium. Concentrations in drinking water are low but some water softeners can add significant amounts if they are installed in homes or factories. If it is consumed, it can be associated with high blood pressure. We recommend you to keep a supply of un-softened water for drinking and cooking, as advised in The Water Supply (Water Fittings) Regulations 1999.	

Name of parameter/comment	Limit
Sulphate	250 mg SO_4/l

This is a natural mineral component of most waters and the concentrations normally found in drinking water do not represent a risk to health.

Taste Qualitative	no limit set
Taste Quantitative	0 Dil No

Taste testing is a measure of the aesthetic quality of drinking water. The qualitative measure of taste is a description of the taste of the water, for example 'sweet'. The quantitative measure allows us to assign a numerical value to the level of taste to help determine the strength of the taste. Any significant taste is investigated. Unusual tastes may indicate a problem which needs investigating.

Tecnazene	0.1 µg/l

Refer to explanation on pesticides (page 3).

Terbutryn	0.1 µg/l

Refer to explanation on pesticides (page 3).

Tetrachloroethene	10 µg/l

This solvent is commonly used in industry but rarely found in our water.
The presence of this organic solvent is an indication of industrial pollution.

Tetrachloroethene and Trichloroethene	Sum 10 µg/l

This is the sum of the detected concentrations of these two solvents.

Total Coliforms	0 cfu/100 ml

Coliforms are a large group of bacteria that are commonly found in the intestinal tract of animals and humans, although some Coliforms can also originate from aquatic environments. E. coli is a Coliform but not all Coliforms are E. coli. These bacteria are widely distributed in the environment and they can provide a sensitive measure of the microbiological quality of the water supply. Any detection of these bacteria is immediately investigated and nearly all instances of these bacteria in samples taken from customers' taps are due to contamination of the tap.

Total Hardness	no limit set

Hardness is due to calcium and magnesium salts (bicarbonates, chloride, sulphate and nitrate) dissolved in water. Almost all our water supplies are hard due to the natural geology of South East England. The average Total Hardness of the water in your supply area is listed on our website.

Name of parameter/comment	Limit
Total Organic Carbon	no abnormal change

Natural water often contains traces of many organic compounds which have been derived from plants and soils.

Total Trihalomethanes — 100 µg/l (sum of substances listed below)

Tribromomethane; Dichlorobromomethane; Trichloromethane; Dibromochoromethane

Small amounts of these substances are sometimes produced in surface waters when chlorine reacts with naturally occurring organic matter contained in the water.

Tri-allate — 0.1 µg/l

Refer to explanation on pesticides (page 3).

Tribromomethane

Refer to Total Trihalomethanes (page 15).

Trichloroethene — 10 µg/l

This solvent is commonly used in industry but rarely found in our water. The presence of this organic solvent is an indication of industrial pollution.

Trichloromethane

Refer to Total Trihalomethanes (page 15).

Triclopyr — 0.1 µg/l

Refer to explanation on pesticides (page 3).

Trietazine — 0.1 µg/l

Refer to explanation on pesticides (page 3).

Tritium — 100 Bq/l

This is a radioactive isotope of hydrogen which occurs naturally in the environment at very low levels. Regular monitoring of tritium in surface waters is carried out nationally.

Turbidity — 4 NTU

This is a measure of material suspended in the water. It can arise from disturbance of sediment like iron oxide within water mains.

How to contact us

Our Customer Service Centre is open:
Monday to Friday from 8am to 7pm
Saturday from 8am to 1pm
We are closed on Sundays and Bank Holidays

Email

www.southeastwater.co.uk/contact

Web

www.southeastwater.co.uk

Call

Account enquiries
0333 000 0001

Water supply and general enquiries
0333 000 0002

Payment helpline
0333 000 0005

Minicom / text phone
0333 000 0004

Out of hours emergencies
0333 00 00 365

24hr automated payment line
0333 00 00 247

24hr leak line
0333 000 3330

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