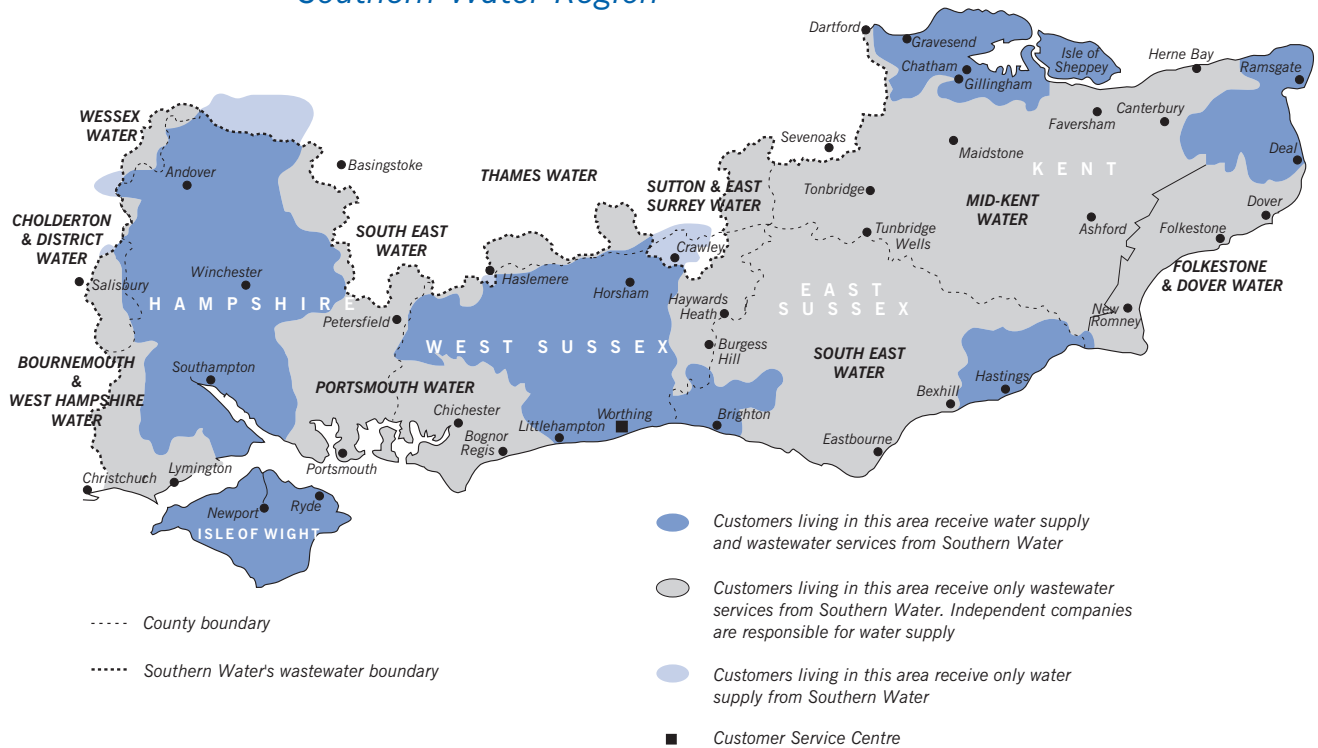


# Drinking Water Quality Report 2001



## Southern Water Region



Maps that give details of water supply zones can be inspected at the address given at the back of this report.

## Southern Water in 2001

Microbiological Compliance*	<b>99.96%</b>
Overall Compliance	<b>99.89%</b>
Capital investment in water supply schemes 2001/2002	<b>£39.4million</b>
Volume of water supplied	<b>578 MI/d**</b>
Population supplied	<b>2.22 million</b>
Length of water main	<b>13,327 km</b>
Number of water supply works	<b>97</b>
Number of service reservoirs	<b>211</b>
Number of water supply zones	<b>116</b>
Number of tests taken for compliance reasons	<b>77,552</b>
Number of tests taken for all reasons (monitoring and compliance)	<b>386,117</b>

\* Combined Total Coliform and *E Coli* parameter

\*\* Millions of litres per day

## Foreword

I am pleased to present our Annual Drinking Water Quality Report for 2001.

The water industry has come a long way in the last 12 years. During this time, compliance with the drinking water quality standards has greatly improved. Our challenge for the future is to maintain these high standards and year on year Southern Water has continued to achieve this aim. In 2001 our overall compliance with the standards was 99.89%.



An ongoing programme of investment, together with the professional dedication to quality shown by our staff, has been instrumental in achieving this excellent record of water quality. Investment will continue to ensure our supplies meet the required standards and remain of the highest quality.

We remain watchful of any changes that may affect water quality to ensure there is no deterioration and conduct a comprehensive programme of testing from the raw water to the customers' taps. Last year over 380,000 tests were analysed.

In recent years, the Drinking Water Inspectorate (DWI) has developed two comparative indexes, an Overall Quality Index and an Operational Performance Index, to allow comparison between companies. I am pleased to report that in both Indexes for 2000 we were placed in the 'Statistically Significantly Above Average' category. A position we would hope to maintain. Data for 2001 will be available in the DWI Chief Inspector's Report when it is published in July.

Water quality standards in the Water Quality Regulations are very stringent and they provide a wide margin for safety. A water quality standard failure does not mean there is any risk to public health and all samples that fail the standards are investigated in full.

More and more people are aware that drinking water is good for them. Drinking 7 or 8 glasses of water a day is recommended for good health. Southern Water continue to work hard to ensure that customers can be confident that each time they turn on their kitchen tap their drinking water is safe and of a quality to match the best in the country.



**Martin Baggs**

Operations Director

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# Southern Water

WATER SUPPLY (WATER QUALITY)  
REGULATIONS 1989

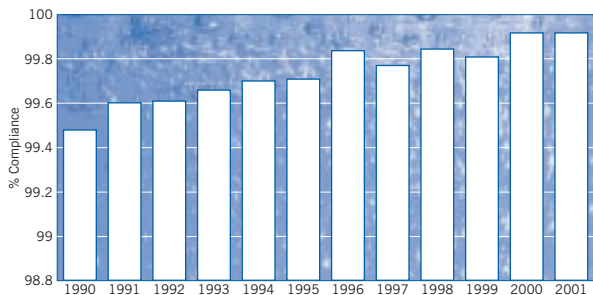
REGULATION 31 REPORT ON  
WATER QUALITY FOR 2001

## 1. Introduction

The water supplied by Southern Water in 2001 was of a high quality, as is demonstrated in the summary tables supplied with this report. To measure compliance with the Regulations, 77,552 determinations were carried out on parameters having a prescribed concentration or value (PCV), and 99.89% of these tests complied with the standard.

The continued programme of investment at water supply works, and in the distribution systems, will result in further improvement in water quality in the coming years. Routine inspection and cleaning of service reservoirs was carried out during the year, and the programme of improvement works to these reservoirs continued. The company also has an ongoing programme of detailed inspections at all treatment works to ensure disinfection systems are robust. To maintain the high quality of water supplied, and where possible bring improvements, there are ongoing reviews of the treatment process used at each water supply works. In 2001, a scheme was completed to install 'state of the art technology' to all our surface water works to continuously monitor and optimise the performance of the plant.

Overall Compliance 1990 – 2001



Each year, the Drinking Water Inspectorate (DWI) carries out technical audits of the steps taken by Southern Water to comply with the Regulations. Last year the inspections covered:

- detailed audit trails of sample results and follow up actions;
- progress with mains renovation schemes;
- procedures for the identification and notification of water quality incidents;
- inspection of work being carried out on the distribution system;
- review of policies and procedures on contaminated land;
- inspection of water supply works and service reservoir;
- procedures for compliance with regulation 25 and
- audit of plumbosolvency treatment and control programmes of work.

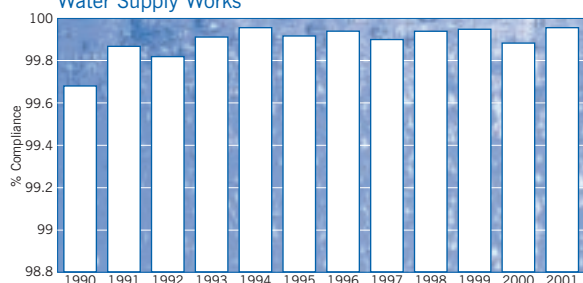
A report of the audit and on the quality of water supplied by Southern Water during the past year will be contained in the DWI Chief Inspector's Report 2001. This report contains details of all companies and is due to be published during July 2002.

## 2. Microbiological Quality

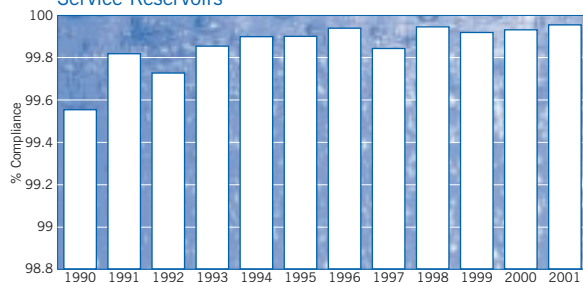
Water leaving treatment works is disinfected to eliminate any potentially harmful micro-organisms which may be present in the raw water. Within Southern Water's area all water is disinfected by the addition of a small amount of chlorine. The effectiveness of this treatment process and the integrity of the distribution system is measured by analysing the water samples for coliform bacteria. Coliforms are a group of bacteria, not normally pathogenic, which occur extensively in nature. A sub-group, faecal coliforms, may be an indicator of possible pollution of water supplies.

The method of testing is extremely sensitive and coliforms also indicate the hygienic condition of the sampling location. Each occasion coliforms are detected re-sampling and investigations are initiated.

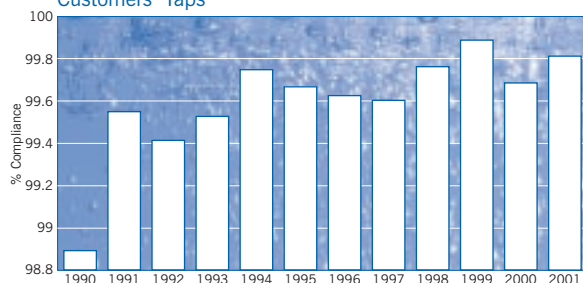
Southern Water - Microbiological Quality 1990-2001  
Water Supply Works



Southern Water - Microbiological Quality 1990-2001  
Service Reservoirs



Southern Water - Microbiological Quality 1990-2001  
Customers' Taps



The Regulations recognise that coliforms may be detected on occasions due to their widespread occurrence. Therefore, the standard at service reservoirs and customers' taps allows coliforms to be detected in up to 5% of samples before contravening the Regulations.

In 2001 high microbiological quality has been maintained. The reported results are for the initial compliance samples only, and indicate very good quality with all service reservoirs and customers' taps exceeding the Regulations total coliform standard of 95%.

**% Samples free from coliform bacteria**

Customers' Taps	99.81 %
Service Reservoirs	99.96 %
Treated Waters	99.97 %



### 3. Physico – Chemical Quality

Samples taken from customers' taps for the compliance monitoring programme, required by the Regulations, are routinely tested for over 100 determinands. In 2001, 27,522 determinations were carried out on samples from customers' taps for physico – chemical determinands. Of these, 99.77% complied with the relevant water quality standard. The actual number of physico – chemical PCV exceedences has reduced from 251 in 1995 to 64 in 2001. The majority of the exceedences, 46 out of 64, were due to one parameter, polycyclic aromatic hydrocarbons (PAH) from coal tar lined mains.

Details of the determinands for which samples exceeded the PCV are given in Table 4. These exceedences were confined to six determinands. Compliance with all the standards was achieved in 77 of the 116 water quality zones in 2001. This equates to 66% of zones achieving all standards compared with 33% in 1991.

The standards set by the Water Regulations are very stringent and set with a wide margin for safety. Failing a standard does not mean there is any risk to public health but all samples which breach the standards are followed up and investigated in full. Explanatory notes of the breaches reported in Table 4 are provided below:

#### Iron

Iron above the Regulations standard of 200 µg/l does not pose any risk to health. However, it may give rise to discolouration and occasionally particles in the water. In 2001 of the 930 tests carried out for iron, 99.46% complied with the standard. Five tests contravened the PCV in 2001 compared to 34 in 1991.

Southern Water had an undertaking for the renovation of old iron pipes that finished on 31 December 2001. During 2001, five zones had work carried out in accordance with this undertaking and 60.5 km of main was replaced. Since 1995 a total of 648 km of iron mains have been renovated.

#### Nitrate

In 2001 of the 1031 tests carried out for nitrate 99.52% complied with the standard. In two water supply zones there were exceedences of the nitrate standard. These contraventions were a direct result of rising nitrate levels in groundwater sources caused by heavy rainfall. Full liaison with local and health authorities was maintained in areas where nitrate concentrations have been higher than normal.

Where possible reconfiguration of the water distribution systems and blending with low nitrate sources were used to reduce the nitrate levels. At our Goldstone water supply works treatment to remove nitrate from the water is currently being planned. This will produce low nitrate water that can be blended with other water sources to ensure compliance with the Regulations in the future. At Mile Oak work is planned to introduce further blending to meet the nitrate standard at times of peaks caused by heavy rainfall. At our Gore water supply works investigations are ongoing to determine whether the high nitrate levels, experienced following heavy rainfall, are likely to recur and therefore require treatment to be installed.

#### Trihalomethanes

Trihalomethanes (THMs) are formed by the reaction of chlorine with naturally occurring organic compounds in the water. In 2001 of the 575 tests carried out for THMs 99.65% complied with the PCV. In one zone there were two exceedences of the PCV for THM, although the three-month average limit was not contravened. An Undertaking has now been accepted for THMs at the works supplying this zone. Work to improve the operation of the site has already started and further investigations into performance improvements are ongoing.

## Pesticides

Southern Water carries out a comprehensive programme of monitoring for some 56 different pesticide compounds in raw water sources and from customers' taps. In 2001, 5974 determinations for individual pesticides were carried out on samples from customers' taps, with 100% complying with the PCV. This is the third consecutive year that we have achieved 100% compliance with the stringent European Union (EU) and UK Government standard of 0.1 µg/l. This is as a result of the major investment made in new treatment plant in recent years.

Protection of raw water supplies from contamination by pesticides is paramount in maintaining the highest drinking water quality. These residues arise from the widespread use of pesticides by many sections of society such as agriculture, local authorities, railways and domestic gardeners. Southern Water continue to encourage the 'safer' use of pesticides that minimise residues of these compounds entering water sources.

## Lead

Water from Southern Water's treatment works is 'lead free', but lead can be absorbed when water comes into contact with lead pipes. Lead was used in the past in service pipes (between the main and the property) and in the internal plumbing.

In 2001, 594 samples were taken for lead analysis of which 99.66% complied with the 50 µg/l standard set by the Regulations. This relates to two exceedences in 2001 compared with 26 in 1994.

The current UK standard of 50 µg/l is more stringent than that set by the original EU Directive, because it relates to an unflushed sample (i.e. water that has been standing in the pipe) rather than a flushed sample. The new EU Directive, which has been incorporated into the Water Supply (Water Quality) Regulations 2000, has reduced the standard limit to 10 µg/l to be met by 2013, with provision for an interim



standard of 25 µg/l to be met by 2003. The method of sampling and assessment against these new standards has not yet been agreed, however using the current methods, 98.82 % and 96.30 % of samples taken in 2001 had lead concentrations below the 25 µg/l and 10 µg/l standard limits respectively.

Southern Water has already installed treatment at a number of sites to meet the 50 µg/l standard. This investment has continued. Installation and optimisation of treatment is currently planned, or under way, at numerous additional sites so that the 25 µg/l standard will be met by 2003. Where optimisation of the treatment process will not meet the 10 µg/l limit, replacement of the company's part of the service pipes will be carried out.

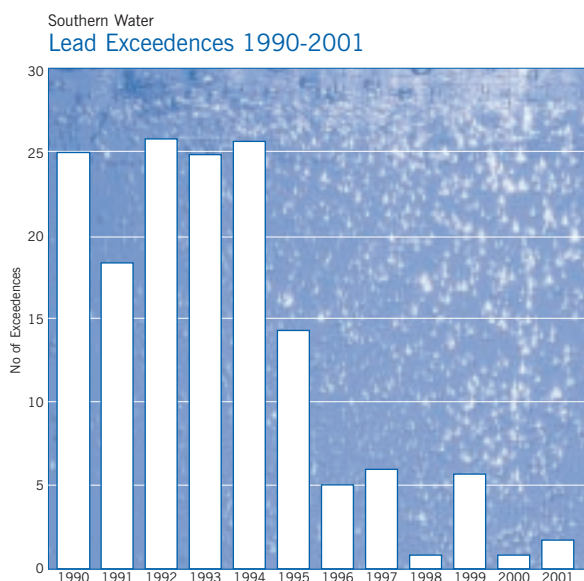
To ensure levels of lead are minimised at the tap, customers will need to change any of their lead pipework and Southern Water encourages customers to do this. Advice on this subject is available in a lead leaflet that is available on request from the Customer Service Centre at Worthing. If a sample is found to exceed the limit for lead in drinking water both the customer and local Environmental Health Officer (EHO) are notified. The Company replaces, free of charge, any lead pipework between the main and the property boundary, i.e. the company's pipe. In addition, if there is a leak on a lead underground supply pipe on the customers' property, Southern Water will replace any such pipe free of charge, up to a length of ten metres.

## Polycyclic Aromatic Hydrocarbons (PAH)

PAH is a class of organic compounds that occur in soot, tar, vehicle exhausts and combustion products of fuels such as oil. They also occur in coal tar linings, used in the past to protect iron water mains from corrosion. Leaching of PAH from coal tar linings in distribution systems means that some water samples show residues of PAH above the current PCV of 0.2 µg/l for Total PAH. Of the average daily intake of PAH for an individual person, only a small proportion comes from drinking water. In 2001, 669 samples were taken for PAH analysis of which 93.12 % complied with the standard for Total PAH.

The limit of 0.2 µg/l for Total PAH in the Regulations is based on the previous EU Directive and specifies six individual PAH compounds to be monitored in the Total PAH group. The new Directive removes two of these individual compounds from the PAH group but tightens the standard for Total PAH to 0.1 µg/l. One of the individual PAH to be removed from the quality standard is the compound fluoranthene. Within Southern Water's area, breaches of the current PAH standard have been largely due to the incidence of fluoranthene. Comparing 2001 results with this new standard would have resulted in no exceedences of the Regulations.

Benzo-3,4-pyrene is the second of the individual PAH to be removed from the Total PAH parameter. Instead, this compound is given its own standard of 0.01 µg/l. Benzo-3,4-pyrene has always been recognised as being of more significance to health than other individual PAH and in the current Regulations it is necessary to achieve an average of less than 0.01 µg/l over a year. Whilst benzo-3,4-pyrene is





occasionally found in samples, its incidence is generally related to mains disturbance and re-samples are always satisfactory. It is not expected to result in a significant increase in exceedences.

Of the 669 samples collected in 2001 for benzo-3,4-pyrene 99.4% complied with the PCV set for this determinand. There were no instances, however, where the quality of water supplied has given cause for concern on grounds of public health due to the presence of PAH. The WHO guideline value for benzo-3,4-pyrene is 0.7 µg/l, and no sample exceeded this value.

#### 4. Other Quality Issues

##### Cryptosporidium

The Cryptosporidium Regulations came into force from June 1999. They specified new sampling and analytical procedures to be adopted from April 2000. The new sampling protocol requires continuous 24-hour sampling and the samples themselves to be treated in the same way as forensic evidence. The new analysis method is much more sensitive and significantly improves the ability to detect the organism in water. A treatment standard of an average of less than one cryptosporidium oocyst in ten litres was also introduced.

Southern Water identified eleven water supply works affected by this legislation. At each of these works continuous sampling for cryptosporidium was put in place ready for commencement of the new Regulations in April 2000. During 2001 some 4129 samples were taken and analysed with 92 samples having low levels of cryptosporidium detected, often only one cryptosporidium oocyst in a 1000 litre sample volume. All results were well below the treatment standard and there were no associated outbreaks of Cryptosporidiosis.

##### Water Supply (Water Fittings) Regulations 1999

These Regulations replace the Bylaws previously issued by water companies. Their prime function is to protect the quality of water supply. All non-domestic premises must be categorised according to risk. A programme of inspections is being carried out by Southern Water to ensure that there is no risk of contamination by back siphonage due to illegal or incorrect installations.

##### Water Supply (Water Quality) Regulations 2000

These Regulations were introduced at the end of 2000 as a replacement for the existing Water Supply (Water Quality) Regulations 1989, and subsequent Amendments, and reflect the changes made within the EU Directive for water quality monitoring. The requirements of the Regulations are to be introduced over a phased period. From January 2001 water companies started monitoring for new parameters given in the Regulations. This enables the Drinking Water Inspectorate to assess compliance in advance of the standards. Within Southern Water work is already underway to reduce lead levels in water and this is detailed in the lead section of this report. The next deadlines are as follows:

June 2003: Water companies to define sampling programmes and water quality zones.

December 2003: New standards come into force.

January 2004: Monitoring against new standards starts.

#### 5. Relaxations and Undertakings

No authorisations apply for relaxation of standards during 2001 in the Southern Water region.

Work to improve water quality in the distribution system was completed during 2001. A total of 873.8 km of main has been renovated since the start of the Undertaking of which 60.5 km were completed during 2001.

Plumbosolvency treatment was installed at Steyning WSW in line with the current Undertaking. Optimisation of this treatment process will happen during 2002 to maximise the benefits from the treatment process.

Details of the Undertakings in force in 2001 may be found in Appendix 1.

#### 6. Inspection of Records

A record of all compliance samples taken since 1 January 1990 is available for inspection by any member of the public during normal business hours.

Requests for information on water quality should be directed, preferably by telephone, to the Customer Service Centre (address at the back of this report). This information will be made available, free of charge, for the zone in which the customer resides. The water quality Public Register is available for inspection free of charge at our offices in Southern House, Yeoman Road, Worthing, during our normal business hours of 8am to 7pm Monday to Friday. For more information call 0845 278 0845.

If anyone wishes to inspect the Public Register, it will greatly assist the staff of Southern Water, and save time for the visitor, if a prior appointment is made through the Customer Service Centre at Worthing.

It is possible to view the register at other locations but only with a prior appointment.

TABLE 1

**Microbiological quality***Water leaving water supply works 01/01/01 - 31/12/01*

Volume of water distributed from works (m <sup>3</sup> /d)	No. of Samples	Percentage of samples exceeding PCV	
		Total Coliforms	Faecal Coliforms
less than 3,000	2092	0.05	0
3,000 - 12,000	3400	0.00	0
more than 12,000	2248	0.04	0
<b>TOTAL</b>	<b>7740</b>	<b>0.03</b>	<b>0</b>

Prescribed concentration or value (PCV): Total Coliforms = 0/100ml  
 Faecal Coliforms = 0/100ml

TABLE 2

**Microbiological quality***Water in service reservoirs 01/01/01 - 31/12/01*

Capacity of reservoir (m <sup>3</sup> )	No. of Samples	Percentage of samples exceeding PCV	
		Total Coliforms	Faecal Coliforms
less than 3,000	5859	0.05	0
3,000 - 12,000	4192	0.02	0
more than 12,000	871	0	0
<b>TOTAL</b>	<b>10922</b>	<b>0.04</b>	<b>0</b>

Prescribed concentration or value (PCV): Total Coliforms = 0/100ml for 95% of samples taken from any service reservoir  
 Faecal Coliforms = 0/100ml

TABLE 3

**Microbiological quality***Water at customers' taps 01/01/01 - 31/12/01*

Size of zone (population)		Less than 5,000	5,000 - 20,000	20,001 - 50,000	TOTAL
Type of sample					
Random	No. of samples	347	1478	4523	6348
	% exceeding PCV for Total Coliforms	0	0.20	0.20	0.19
	% exceeding PCV for Faecal Coliforms	0	0	0.02	0.02
Fixed	No. of samples	0	0	0	0
	% exceeding PCV for Total Coliforms	0	0	0	0
	% exceeding PCV for Faecal Coliforms	0	0	0	0
Totals	No. of samples	347	1478	4523	6348
	% exceeding PCV for Total Coliforms	0	0.20	0.20	0.19
	% exceeding PCV for Faecal Coliforms	0	0	0.02	0.02

Prescribed concentration or value (PCV): Total Coliforms = 0/100ml  
 Faecal Coliforms = 0/100ml

If 50 or more samples have been taken in the preceding 12 months in a zone, 95% of samples must not contain total coliforms.

If less than 50 samples have been taken in the preceding 12 months in a zone, 48 of the last 50 samples taken must not contain total coliforms.

TABLE 4

**Physico-Chemical quality of water at customers' taps***Parameters which contravened the PCV 01/01/00 - 31/12/00*

Parameters	Size of zone (population)	No. of zones in size group	No. of samples	Percentage exceeding PCV	No. of samples in preceding column which satisfy the terms of a Relaxation	No. of zones in which PCV contravened	No. of zones in preceding column in which action taken has remedied the contravention (*)
<b>NITRATE as NO3</b>	<5000	28	141	0	N/A	0	0
	5000 - 20000	38	231	1.3	N/A	1	0
	20001 - 50000	50	659	0.3	N/A	1	0
	<b>TOTAL</b>	<b>116</b>	<b>1031</b>	<b>0.48</b>	<b>N/A</b>	<b>2</b>	<b>0</b>
<b>IRON</b>	<5000	28	159	1.3	N/A	2	0
	5000 - 20000	38	220	0	N/A	0	0
	20001 - 50000	50	551	0.5	N/A	3	0
	<b>TOTAL</b>	<b>116</b>	<b>930</b>	<b>0.54</b>	<b>N/A</b>	<b>5</b>	<b>0</b>
<b>TOTAL TRIHALOMETHANES</b>	<5000	28	134	0	N/A	0	0
	5000 - 20000	38	194	1	N/A	1	0
	20001 - 50000	50	247	0	N/A	0	0
	<b>TOTAL</b>	<b>116</b>	<b>575</b>	<b>0.35</b>	<b>N/A</b>	<b>1</b>	<b>0</b>
<b>TOTAL TRIHALOMETHANES AVERAGE</b>	<5000	28	134	0	N/A	0	0
	5000 - 20000	38	194	0	N/A	0	0
	20001 - 50000	50	247	0	N/A	0	0
	<b>TOTAL</b>	<b>116</b>	<b>575</b>	<b>0</b>	<b>N/A</b>	<b>0</b>	<b>0</b>
<b>LEAD</b>	<5000	28	128	0	N/A	0	0
	5000 - 20000	38	191	0.5	N/A	1	0
	20001 - 50000	50	275	0.4	N/A	1	0
	<b>TOTAL</b>	<b>116</b>	<b>594</b>	<b>0.34</b>	<b>N/A</b>	<b>2</b>	<b>0</b>
<b>BENZO-3,4-PYRENE</b>	<5000	28	179	0.6	N/A	1	0
	5000 - 20000	38	226	0.4	N/A	1	0
	20001 - 50000	50	264	0.8	N/A	2	0
	<b>TOTAL</b>	<b>116</b>	<b>669</b>	<b>0.6</b>	<b>N/A</b>	<b>4</b>	<b>0</b>
<b>BENZO-3,4-PYRENE AVERAGE</b>	<5000	28	179	0.56	N/A	1	0
	5000 - 20000	38	226	0	N/A	0	0
	20001 - 50000	50	264	0	N/A	0	0
	<b>TOTAL</b>	<b>116</b>	<b>669</b>	<b>0.15</b>	<b>N/A</b>	<b>1</b>	<b>0</b>
<b>TOTAL PAH</b>	<5000	28	179	7.8	N/A	9	0
	5000 - 20000	38	226	10.6	N/A	13	0
	20001 - 50000	50	264	3	N/A	8	0
	<b>TOTAL</b>	<b>116</b>	<b>669</b>	<b>6.88</b>	<b>N/A</b>	<b>30</b>	<b>0</b>
<b>TOTAL</b>	<5000	28	---	---	---	11	0
	5000 - 20000	38	---	---	---	16	0
	20001 - 50000	50	---	---	---	12	0
	<b>TOTAL</b>	<b>116</b>	<b>---</b>	<b>---</b>	<b>---</b>	<b>39**</b>	<b>0</b>

NOTE (\*) - Zones have been included in this column only where a specific programme of remedial works has been completed. In many cases, the immediate action taken following the exceedence of the PCV, or other interim improvements, has reduced the risk of a further contravention. In some cases, the investigation following a contravention did not reveal an underlying cause, or the circumstances leading to the contravention are thought to be unlikely to recur.

\*\* Zones with more than one failing parameter are only counted once in the last section in the above table.

**This report is published in accordance with Regulation 31 of the Water Supply (Water Quality) Regulations 1989 as amended. It contains information prescribed in the Regulations and sets out the achievements of the Company against the standards.**

## APPENDIX 1

### Southern Water

#### Relaxations and Undertakings

During 2001 the Company had no current authorisations for relaxations.

During 2001 Southern Water had Section 19 undertakings for four water quality parameters. This Appendix lists those undertakings which applied during 2001. For convenience the Appendix refers to, but does not list, the parameters and water supply zones included in the annex to the distribution system undertaking that was in place during 2001. The parameters this undertaking relates to are polycyclic aromatic hydrocarbons (PAHs), benzo 3,4 pyrene and iron.

#### Undertakings Applicable During 2001

Parameter	Location	Action Taken	Completion Date
Various distribution related parameters	92 WSZs	Renovated 873 km of the distribution system	December 2001
Lead	Steining WSW	Installed and commissioned plumbosolvency control at Steining WSW. Optimisation of the dosing system is ongoing.	December 2002

WSZ = water supply zone

WSW = water supply works



# Water Supply (Water Quality) Regulations 1989 Standards



Substance	Description	Standard
Conductivity	Electrical conductivity is a measure of the amount of natural dissolved inorganic substances in source water. It is used to assist treatment control.	1500 $\mu$ S/cm
Quantitative Taste and Odour	A measure of odour and taste in water. They are sampled and tested for individually and are removed during the treatment process.	Dilution No of 3 at 25 deg C
Turbidity	All source waters are naturally cloudy occasionally. Turbidity is a quantitative measure of cloudiness and levels are controlled by the treatment processes.	4 FTU
Temperature	The temperature of surface waters varies according to the season. Groundwater has a much smaller variation in temperature range.	25 deg C
Hydrogen ion (pH)	A low pH value may result in pipe corrosion. An alkali which is not harmful to health may be added before supply so that corrosion is minimised.	5.5 pH value
Nitrate	Present naturally in all source waters, although higher concentrations can be caused by use of fertilisers. Where necessary, nitrate levels are reduced during water treatment by ion exchange or blending with low nitrate water.	50 mg/l as NO <sub>3</sub>
Nitrite	Traces of nitrite are produced when chlorine and ammonia are used in the disinfection process. Levels are minimised through careful operation of the disinfection process.	0.1 mg/l as NO <sub>2</sub>
Ammonium	Ammonium salts are naturally present in trace amounts in most water sources. They are decomposed during disinfection.	0.5 mg/l as NH <sub>4</sub>
Dry residues	Water samples are dried so that water companies can weigh any residual substances such as minerals.	1500 mg/l
Dissolved or emulsified hydrocarbons	This parameter is not routinely monitored but is analysed for during investigations, for example following a solvent or petrol spillage near plastic pipes.	10 $\mu$ g/l
Iron	Present naturally in many water sources. Iron compounds are used as water treatment to remove cloudiness. Iron is removed during water treatment. Iron in water supplies may also be derived from corrosion of iron mains. The concentrations present in water do not present any risk to health.	200 $\mu$ g/l
Aluminium	Occurs naturally in some source waters. Aluminium sulphate is used as a water treatment chemical to remove cloudiness. It is removed during the water treatment processes (coagulation and filtration).	200 $\mu$ g/l
Manganese	Present naturally in many water sources and is removed during water treatment.	50 $\mu$ g/l
Colour	Colour occurs naturally in water from upland sources. Colour is removed during the water treatment processes (coagulation and filtration).	20 mg/l Pt/Co scale
Trihalomethanes (THMs)	THMs are formed during the disinfection process by reaction between chlorine and mainly naturally-occurring organic substances. Treatment processes are controlled to minimise their production.	100 $\mu$ g/l
Tetrachloromethane Trichloroethene Tetrachloroethene	These solvents can be present at low concentrations in groundwater under industrial areas. Where necessary, specialist treatment is used to protect public health by removing solvents from drinking water.	3 $\mu$ g/l 30 $\mu$ g/l 10 $\mu$ g/l
Copper	Traces of copper which are not significant to health occur naturally in many water sources and significant concentrations may occur at consumers' taps as a consequence of copper pipes. The concentrations present in water do not present any risk to health.	3000 $\mu$ g/l
Lead	Not normally present in water sources but may be present at consumers' taps if lead pipes are present. If the water supply tends to dissolve lead, water companies must protect the health of consumers and treat the water to reduce exposure.	50 $\mu$ g/l
Zinc	Significant concentrations of zinc in water are only found in premises served by galvanised iron service pipes. Traces of zinc which are not of significance to health may be derived from solders.	5000 $\mu$ g/l
Individual pesticides	Many water sources contain traces of toxic pesticide residues as a result of agricultural and non-agricultural uses of pesticides on crops, and weed control. Where necessary special treatment processes have been installed to protect public health by removing pesticides (activated carbon and ozone processes).	0.1 $\mu$ g/l
Total pesticides	This is the sum of all the individual pesticides detected in any one sampling occasion.	0.5 $\mu$ g/l
Benzo 3,4 pyrene	Benzo 3,4 pyrene is a PAH, but because it is recognised as being of a greater health significance, it has an additional standard which applies as an average of 12 months.	0.01 $\mu$ g/l
Total PAHs	Polycyclic aromatic hydrocarbons are present in coal tar linings, which were used to protect water mains before 1970. Traces of PAH, at concentrations that are not of significance to health, are present in tap water if the original coal tar lining is still present.	0.2 $\mu$ g/l
Chloride	In association with sodium it occurs naturally as a very dilute salt in all water sources and is not removed during water treatment. The concentrations present in water do not present any risk to health.	400 mg/l
Sulphate	Occurs naturally in all source waters and is not removed during water treatment. The concentrations present in unsoftened water do not present any risk to health.	250 mg/l

## Water Supply (Water Quality) Regulations 1989 Standards

Substance	Description	Standard
Calcium	Occurs naturally in all water sources and along with magnesium is responsible for the hardness of water, which causes scale in kettles and hot water systems. The concentrations present in water do not present any risk to health.	250 mg/l
Magnesium	Occurs naturally in all water sources and along with calcium is responsible for the hardness of water, which causes scale in kettles and hot water systems. The concentrations present in water do not present any risk to health.	50 mg/l
Sodium	In association with chloride, sodium occurs naturally as a very dilute salt in all water sources and is not removed during water treatment. The concentrations present in water do not present any risk to health.	150 mg/l
Potassium	Occurs naturally in all water sources and is not removed during water treatment. The concentrations present in water do not present any risk to health.	12 mg/l
Oxidisability	The oxidisability of the water provides a measure of its organic content. This is an alternative measure of TOC.	5 mg/l
Total Organic Carbon	TOC represents the total amount of organic matter present in the water. The concentrations present in water do not present any risk to health.	No significant increase
Boron	Boron in water sources comes from the residues of detergent formulations that are present in treated sewage effluents. The concentrations present in water do not present any risk to health.	2000 µg/l
Surfactants	Surfactants in water sources come from the residues of detergent formulations that are present in treated sewage effluents. They are removed during treatment.	200 µg/l
Phosphorus	Traces of phosphorus salts occur naturally in many water sources and high concentrations are associated with treated sewage effluents and agricultural fertilisers. Phosphates are also used in water treatment as a health protection measure to reduce lead content that may come from consumers' pipes. The concentrations present in water do not present any risk to health.	2200 µg/l
Fluoride	Traces of fluoride occur naturally in many water sources, particularly ground water. It is not removed by conventional water treatment and some water companies, at the request of local health authorities, artificially fluoridate water supplies as a protection against tooth decay. No water supplies are fluoridated within Southern Water's area of supply.	1500 µg/l
Barium	Occurs naturally in trace concentrations in some water sources. The concentrations present in water do not present any risk to health.	1000 µg/l
Silver	Not present in source waters and is not found in drinking water unless silver is being used as a treatment chemical; this is not the case in England and Wales.	10 µg/l
Arsenic	Naturally present at trace levels in a very few groundwater sources. Arsenic is toxic and when present it is removed by specialist water treatment processes.	50 µg/l
Cadmium	Cadmium is toxic and present at trace levels in a very few groundwater sources. When present it is removed by specialist water treatment processes.	5 µg/l
Cyanide	Cyanide is toxic and is not present in water sources. It is not found in drinking water.	50 µg/l
Chromium	Not present in water sources and is not found in drinking water.	50 µg/l
Mercury	Mercury is toxic and is not present in water sources or drinking water.	1 µg/l
Nickel	Not found in water sources; traces in drinking water, which do not present a risk to health, are derived from protective coatings on taps and fittings.	50 µg/l
Antimony	Antimony is toxic and is not present in water sources. Trace concentrations in drinking water, which are not of any significance to health, can be derived from brass fittings and from solders.	10 µg/l
Selenium	Selenium is toxic and is not present in water sources and is not found in drinking water.	10 µg/l
Total Hardness	This represents the concentration of both naturally-occurring calcium and magnesium in the source water. Hard water can cause scale formation in kettles and hot water systems. The concentrations present in water do not present any risk to health.	minimum of 60 mg/l (only applies to softened water supplies)
Alkalinity	The concentration of this parameter is an indication of the natural hardness and pH of the water.	minimum of 30 mg/l (only applies to softened water supplies)
Total Coliforms	The coliform group of organisms is widely distributed in the environment, for example through human and animal activity and through vegetable matter. Their presence in water supplies indicates a need to investigate the source of contamination. Coliform numbers are controlled through the disinfection of water.	0 no/100ml
Faecal Coliforms Faecal Streptococci Sulphite-Reducing Clostridia	Faecal coliforms, faecal streptococci and Clostridium perfringens are present in the gut of all warm-blooded animals. Their presence in water supplies indicates a need to take immediate action to remove the source of faecal pollution. Each is sampled and tested for individually. These organisms are controlled through the disinfection of water.	0 no/100ml 0 no/100ml < or = 1 no/20ml
Colony count 1d @ 37°C Colony count 3d @ 22°C	These give a general indication of microbiological quality.	No significant increase

If you would like any further information please contact:

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