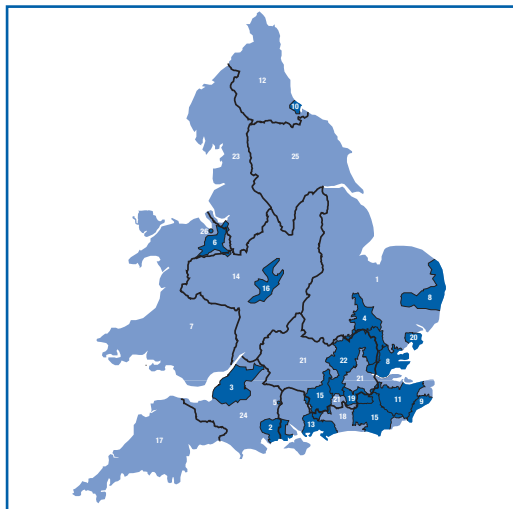


Part 1

Overview of Water Quality in England and Wales

- For 2002, a further improvement in overall compliance with 99.87% of 2,973,561 tests carried out complying with the Regulations.
- Coliforms absent from all samples at 1,230 (91.52%) of the 1,344 water treatment works.
- Coliforms absent from at least 95% of samples (the regulatory requirement) at 4,678 (99.72%) of the 4,691 service reservoirs.
- Continued improvement in compliance in water supply zones with 99.85% of the 2,112,368 tests carried out in zones complying fully with the numerical standards.
- Notable improvement in compliance compared with 2001 with standards for iron, turbidity, nitrate and lead.

Summary Information



Number of water companies*:	26
Number of consumers supplied:	52.7 million
Amount of water supplied:	15,804 MI/d
Proportion from surface water sources:	68%
Proportion from groundwater sources:	32%
Number of treatment works:	1,344
Number of service reservoirs:	4,691
Number of water supply zones:	2,284
Total length of mains:	326,471 km

*Including one inset appointment

Introduction

Overview Format

This part of the report provides a summary of the overall quality of drinking water supplied during 2002 to over 52 million consumers in England and Wales.

The Overview Chapter is split into five general sections as follows:

- **Overall Water Quality in 2002** – gives summary statistics on water supply information in England and Wales, levels of overall compliance with regulatory standards, and a brief comparison with previous years.
- **Microbiological Quality of Water Leaving Treatment Works** – expands on the information in the Overall Water Quality section and provides further data and analysis on the compliance with standards for water leaving water treatment works in 2002, compared with previous years.

- **Microbiological Quality of Water in Service Reservoirs** – expands on the information in the Overall Water Quality section and provides additional data and analysis on the compliance with standards that apply to water in service reservoirs, compared with previous years.
- **Water Quality in Water Supply Zones** – provides greater detail on compliance with the standards for microbiological parameters and for the 55 parameters with numerical standards that relate to the quality of the water supplied at consumers' taps.
- **Comparisons of Drinking Water Quality between Companies** – gives a statistical comparison, using the Overall Quality Index and the Operational Performance Index, of compliance data between different water companies.

Statistical Significance

Throughout this report, and particularly in this Section, the term 'statistically significant' is commonly used where comparisons are made between data from different years. Often, apparent differences in the proportion of samples breaching the standards are affected by factors other than water quality, such as differences in the overall number of tests carried out, or changes to the total number of treatment works, service reservoirs or zones. Also, as the number of tests carried out is often very large, and the number of breaches of the standards comparatively small, in many cases the differences are sufficiently small to be attributable to random variations.

Therefore, in each case 'significance' has been tested using accepted statistical techniques (normal approximation to the binomial distribution; 95% confidence interval) to determine those cases where statistically significant differences can be said to have occurred.

Where changes have been found to be 'not statistically significantly different' it indicates that, whilst the numbers may be different, no strong conclusions can be drawn concerning trends.

Presentation of Data

For each of the sections dealing with treatment works, service reservoirs and water supply zones, data for 2002 is presented in table form. Comparative data from 2001 and 2000 have also been included.

Where information concerning overall compliance or numbers of non-compliant samples is shown, histograms have been used to represent the data for each year. In cases of individual parameters, line charts have been used as they are considered to be the most effective form to show the trends in compliance with standards over the last ten years. The contributions of individual parameters to the overall level of non-compliance, in water supply zones, in 2002 is shown in the form of a pie chart.

Overall Water Quality in 2002

At water treatment works, in service reservoirs and in water supply zones, the 26 companies carried out a total of 2,973,561 tests in 2002. Of these, 99.87% demonstrated compliance with the relevant water quality standards. This compares with 99.86% for 2001, with the number of samples breaching the standard reducing from 4,054 in 2001 to 3,741 in 2002.

The overall number of tests failing the standards has decreased from 36,806 in 1993 to 3,741 in 2002. This represents a reduction of 93% over the last ten years.

Coliforms were absent from samples taken from 1,230 (91.52%) of the 1,344 sampling points at water treatment works.

Total coliforms were absent from at least 95% of samples (the regulatory standard) taken from 4,678 (99.72%) of the 4,693 sampling points at service reservoirs.

Figure 1 below shows the overall compliance with the standards, specified in the Water Quality (Water Supply) Regulations 1989, over the last ten years. The improvement is best seen in Figure 2, which shows the decreasing number of breaches of the standards.

The improvement since 1993 is mainly due to significant reductions in the number of breaches of the total coliform and faecal coliform standards at water treatment works and in service reservoirs, and, in 2002, of the iron, turbidity, nitrate and lead standards in zones.

Figure 1 – Overall Compliance with Regulatory Standards

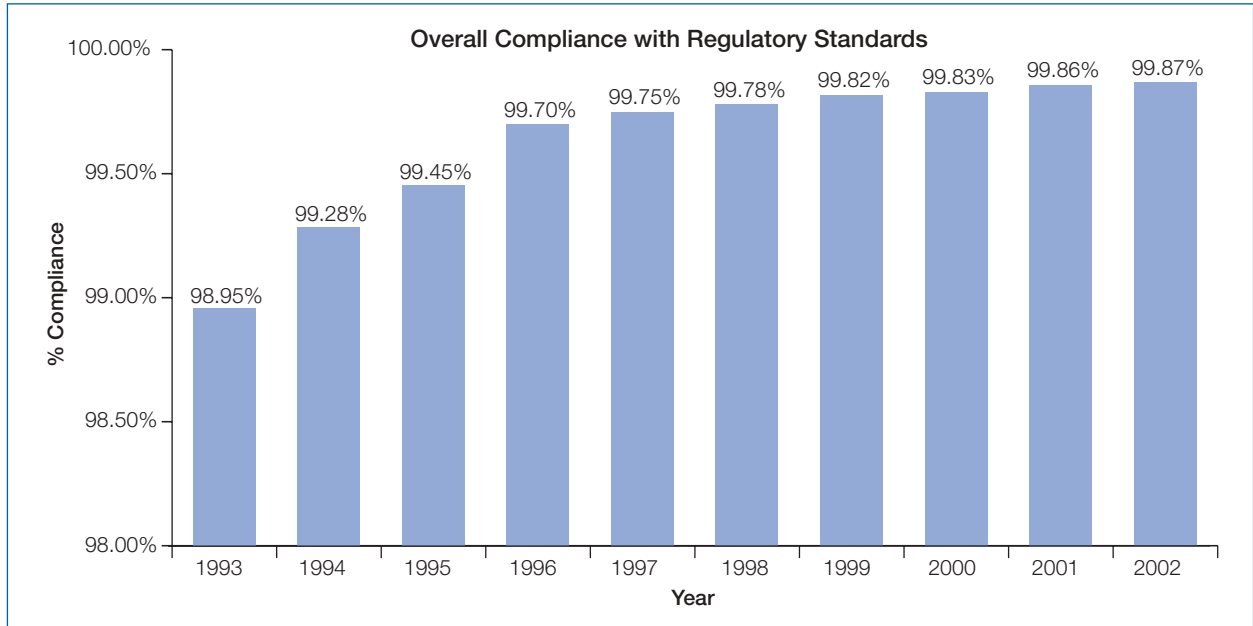
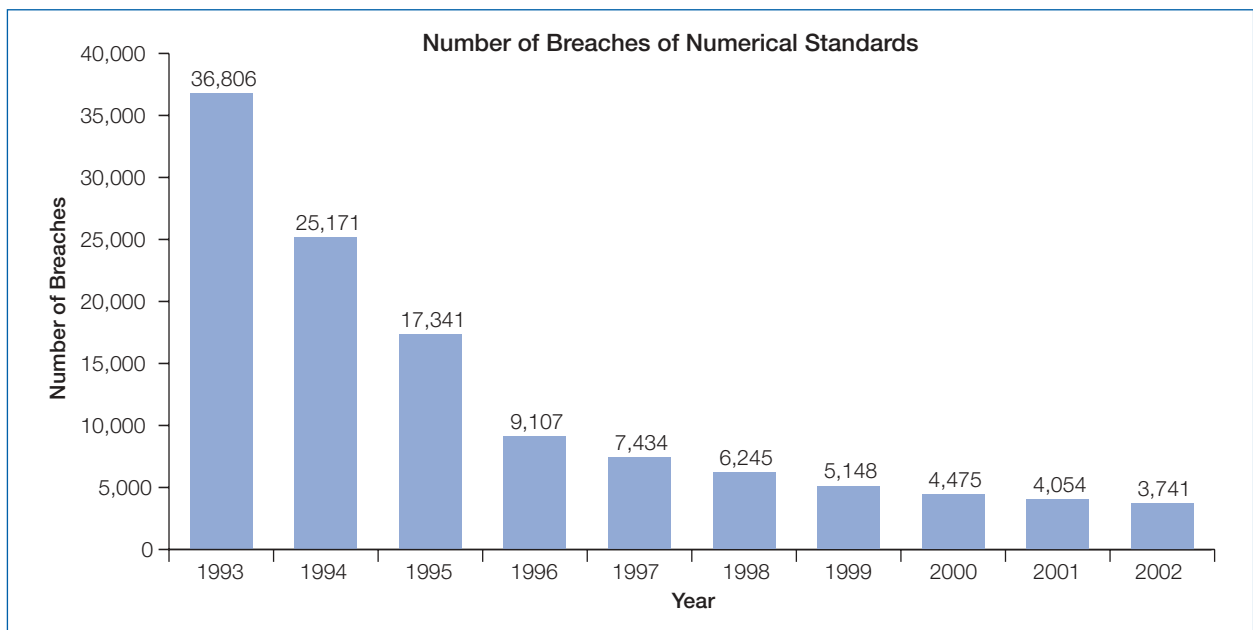


Figure 2 – Total Number of Breaches of Numerical Standards



Microbiological Quality of Water Leaving Treatment Works

Table 1 below shows the companies' performance in 2002, with data for 2001 and 2000 for comparison.

Table 1 Microbiological Quality of Water Leaving Treatment Works

	2002	2001	2000
Number of water treatment works	1,344	1,386	1,388
COLIFORMS			
Total number of tests	163,756	164,429	173,544
– number containing coliforms	145	169	247
– % containing coliforms	0.09	0.10	0.14
Treatment works with coliforms detected	114	133	182
– % of all works	8.48	9.60	13.11
FAECAL COLIFORMS			
Total number of tests	163,779	164,462	173,533
– number containing faecal coliforms	20	30	43
– % containing faecal coliforms	0.01	0.02	0.02
Treatment works with faecal coliforms detected	19	28	41
– % of all works with faecal coliforms detected	1.41	2.02	2.95

Figures 3 and 4 below show the companies' performance in meeting the regulatory requirements at water treatment works over the last ten years.

In Figure 3, overall compliance with the regulatory requirements since 1993 is shown. Figure 4 shows the trend in the proportion of treatment works at which coliforms or faecal coliforms have been detected over the last ten years.

Figure 3 – Microbiological Parameters at Water Treatment Works

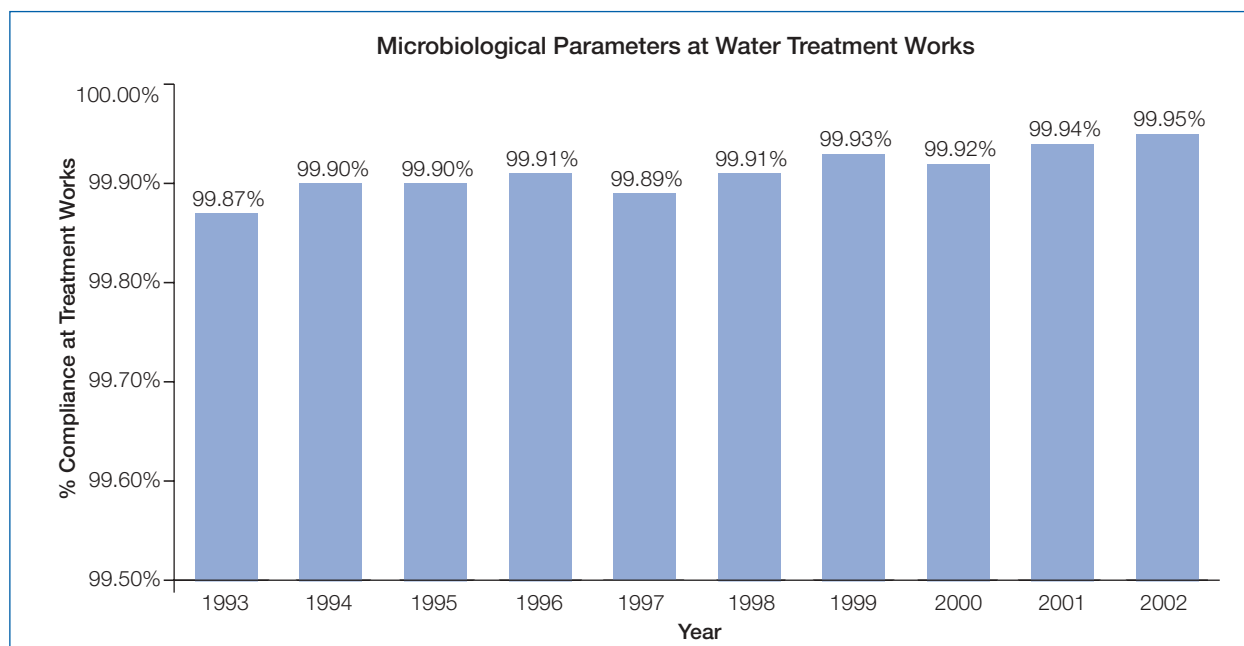
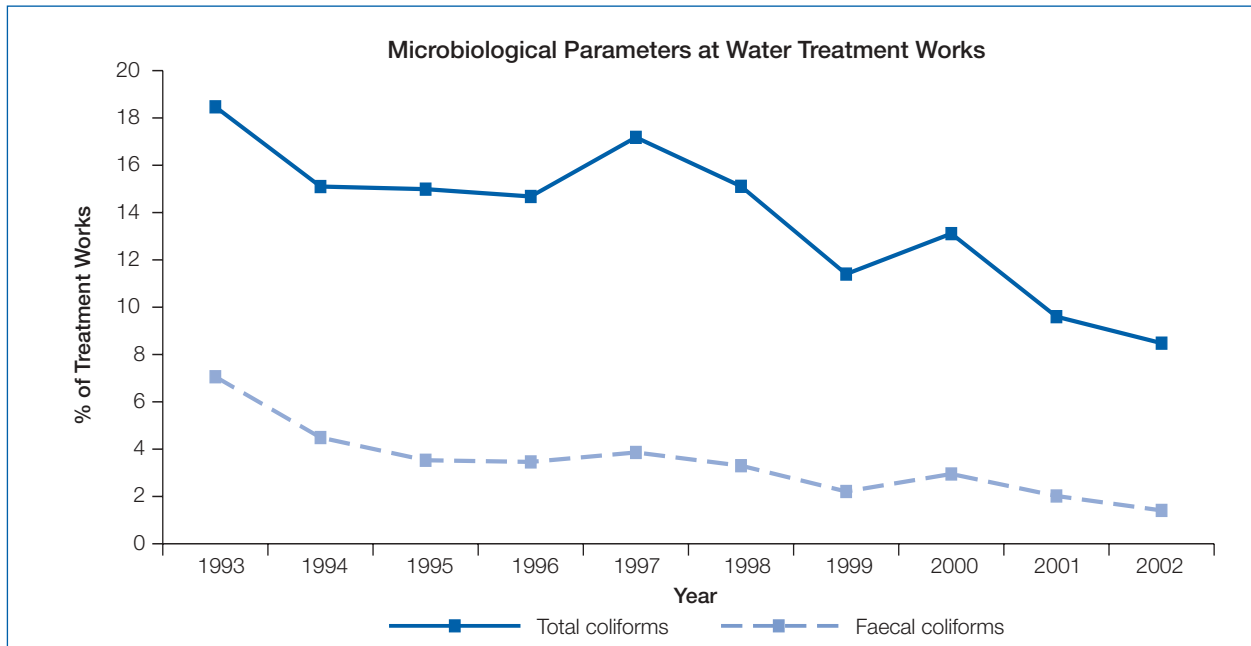


Figure 4 – Microbiological Parameters at Water Treatment Works

There has been a further decrease, since 2001, in the number of treatment works, and samples from treatment works, where both total and faecal coliforms were detected.

A total of 145 samples taken from 114 treatment works (8.48% of all works) were found to contain total coliforms, compared with 169 samples from 133 treatment works (9.60%) in 2001. Faecal coliforms were detected in 20 samples taken from 19 treatment works (1.41% of all works), compared with 30 samples from 28 treatment works (2.02%) in 2001.

The decrease generally follows the overall ten-year trend, which has seen continued improvement in water quality leaving treatment works. At 99.95%, the overall compliance at treatment works is higher than in any other year.

Total and faecal coliforms are not usually considered harmful to health but they may indicate that more dangerous organisms may be present. Coliform bacteria are easy to detect and their presence in water leaving a treatment works can indicate that the effectiveness of the treatment or disinfection processes has been compromised.

During 2002, on every occasion total coliforms and faecal coliforms were found, the water companies concerned carried out investigations to determine the nature of the problem. In the vast majority of cases, the Inspectorate considered the breaches of the standards to be either trivial, or unlikely to recur as a result of prompt remedial actions taken by the companies. However, the Inspectorate has considered, or has taken, enforcement action against two companies in respect of breaches of the total coliform standard at seven treatment works. This action will require the companies concerned to take necessary measures to prevent further breaches.

Microbiological Quality of Water in Service Reservoirs

Table 2 below shows the companies' performance in 2002, with data for 2001 and 2000 for comparison.

Table 2 – Microbiological Quality of Water in Service Reservoirs

	2002	2001	2000
Number of service reservoirs	4,691	4,746	4,782
COLIFORMS			
Total number of tests	243,286	245,126	246,133
– number containing coliforms	367	445	507
– % containing coliforms	0.15	0.18	0.21
Service reservoirs with coliforms detected	288	400	427
Service reservoirs with coliforms detected in more than 5% of samples	13	6	18
– % of all reservoirs with coliforms detected	0.28	0.13	0.40
FAECAL COLIFORMS			
Total number of tests	243,315	245,158	246,174
– number containing faecal coliforms	57	62	81
– % containing faecal coliforms	0.02	0.03	0.03
Service reservoirs with faecal coliforms detected	56	58	72
– % of all service reservoirs with faecal coliforms detected	1.19	1.22	1.51

Figures 5 and 6 below show the companies' performance in meeting the regulatory requirements at service reservoirs over the last ten years.

In Figure 5, overall compliance with the numerical standards for coliforms and faecal coliforms since 1993 is shown. Figure 6 shows the trend in the proportion of service reservoirs breaching the standards for coliforms or faecal coliforms over the last ten years.

It should be noted that, whilst Figure 6 shows the proportion of service reservoirs where coliforms were absent from at least 95% of samples taken over the year (the regulatory standard), all incidences of detections of coliforms have been used in generating Figure 5.

Figure 5 – Overall Compliance with Standards for Microbiological Parameters at Service Reservoirs

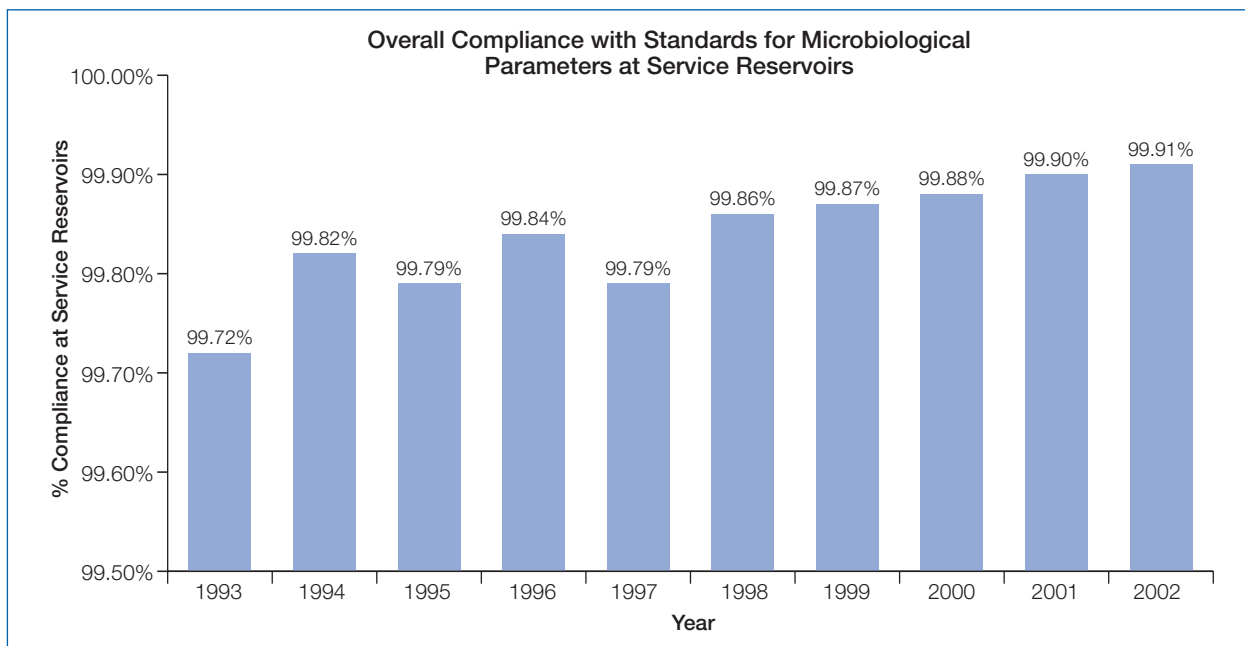
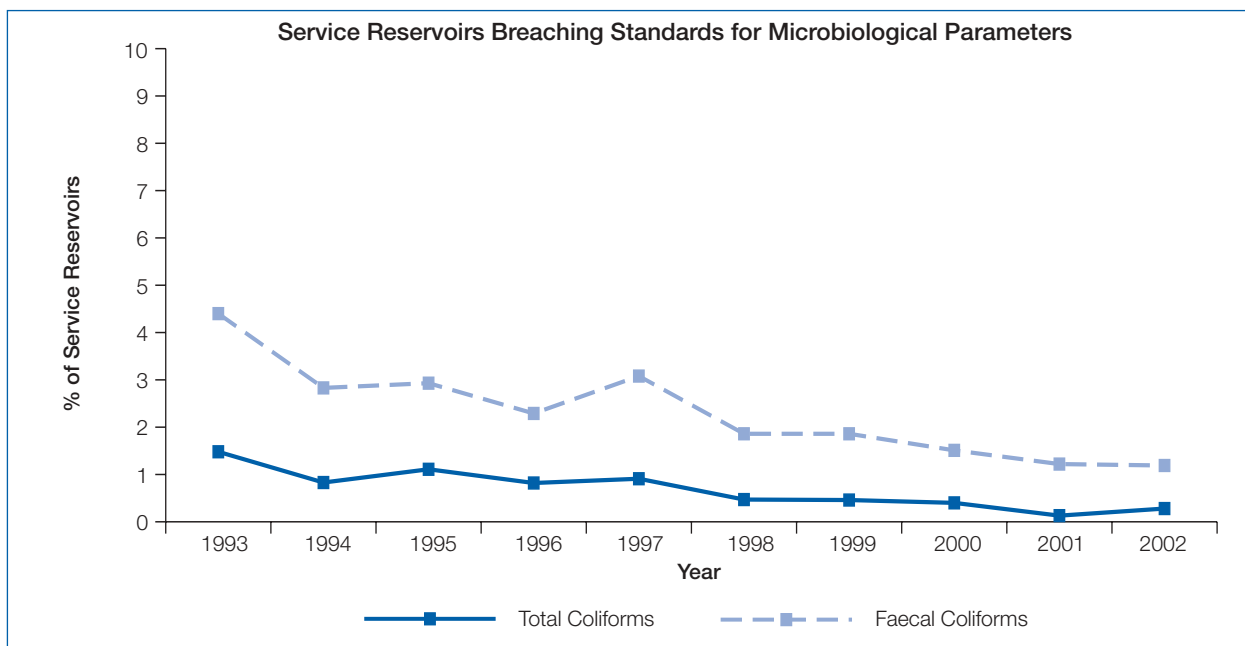


Figure 6 – Service Reservoirs Breaching Standards for Microbiological Parameters



In 2002 there was a decrease in the number of service reservoirs, and samples from service reservoirs, containing total coliforms and faecal coliforms. However, the number of service reservoirs breaching the regulatory standard for total coliforms increased. In 2002, 13 (0.28%) of the 4,691 service reservoirs relating to seven water companies failed to comply fully with the standard compared with six (0.13%) service reservoirs relating to four companies failing the standard in 2001. This increase is not statistically significant.

The number of service reservoirs failing to comply with the standard for faecal coliforms decreased slightly from 58 (1.20%) in 2001 to 56 (1.19%) in 2002.

During 2002, a total of 486,601 microbiological tests were carried out on samples taken from service reservoirs. Total coliforms or faecal coliforms were detected on 424 occasions, giving an overall compliance figure of 99.91%, an improvement on the figure of 99.90% for 2001.

On each occasion that the standards for total coliforms or faecal coliforms were breached, the companies carried out an investigation into the cause and, where necessary, took appropriate remedial action. In the majority of cases, the Inspectorate considered the breaches to be either trivial, or unlikely to recur because of the actions taken. However, enforcement action has been taken, or is under consideration, for breaches of the faecal coliform standard at one service reservoir.

Water Quality in Water Supply Zones

Table 3 below shows the companies' performance in 2002, with data for 2001 and 2000 for comparison.

Table 3 – Water Quality in Water Supply Zones

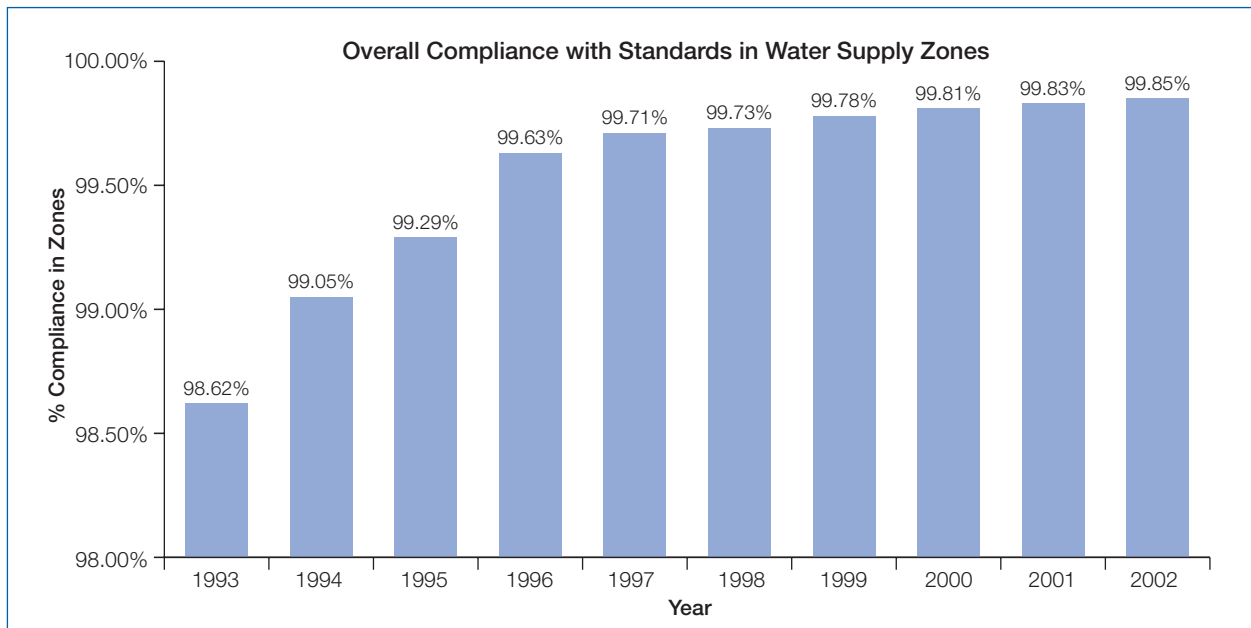
Parameter	Total number of tests taken in 2002	Tests not meeting the prescribed concentration or value		Number of zones not complying with the standards		
		Number	%	2002	2001	2000
Coliforms	149,385	784	0.53	12	5	8
Faecal coliforms	149,393	59	0.04	59	60	60
Colour	41,813	2	<0.01	2	2	8
Turbidity	58,709	25	0.04	23	42	33
Odour	14,964	6	0.04	6	5	6
Taste	14,916	3	0.02	3	2	5
Hydrogen ion	57,437	11	0.02	10	8	27
Nitrate	34,954	38	0.11	15	26	10
Nitrite	32,255	1,022	3.17	131	149	184
Aluminium	37,187	26	0.07	23	27	35
Iron	53,239	442	0.83	307	345	375
Manganese	40,621	102	0.25	84	94	97
Lead	20,682	87	0.42	80	105	135
PAH	11,258	337	2.99	185	168	174
Trihalomethanes	11,710	93	0.79	15	35	45
Total pesticides	47,414	6	0.01	6	4	1
Individual pesticides	856,513	66	0.01	59	70	44
All others	479,918	43	0.01	29	49	28
TOTAL	2,112,368	3,152	0.15%	-	-	-

2,284 zones in 2002; 2,306 zones in 2001; 2,316 zones in 2000

Figure 7 below shows the overall compliance with water quality standards in companies' water supply zones over the last ten years.

The 'compliance figures' in this chart have been derived by taking the total number of tests in zones and the number of occasions on which one or more sample has breached the relevant numerical standard ('point breaches'). This does not take into account parameters such as total coliforms where compliance is based on 95% of samples, or certain other parameters where compliance with the standard is based on an average of results. The data is, however, considered a useful indicator of the trend in water quality in supply zones over the last ten years.

Figure 7 – Overall Compliance with Standards in Water Supply Zones



Since 1993, there has been a reduction in the number of test results from zones which failed to comply with the relevant standards. In 2002, only 3,152 (0.15%) of the 2,112,368 tests carried out in zones failed to comply fully with the standards, compared with 34,784 (1.38%) of 2,529,485 samples failing in 1993.

Trends over the last ten years in compliance with the standards for the 55 individual parameters which have a numerical standard, and which companies must test for in all of their water quality zones, are represented in the following six charts (Figures 8 to 13). In this case the percentage figures are calculated from data for zonal compliance and therefore do take account of cases where compliance is based on a percentage, or on average results.

For clarity, the parameters have been arranged in groups of broadly similar character, and the charts below generated according to these groups, but it should be stressed that these groupings do not have any scientific or regulatory significance. The groups are categorised as follows.

- **Microbiological Parameters:** namely total and faecal coliforms;
- **'Physical' Parameters:** parameters which, in general terms, affect the appearance, taste or odour of the water;
- **'Metals' Parameters:** trace metals, such as iron or lead, which may be detected in drinking water;
- **'Organic' Parameters:** parameters such as pesticides, and disinfection by-products which companies regularly monitor for;
- **'Ionic' Parameters:** pH, nitrate and nitrite;

- **All Other Parameters:** a combined figure for the remaining 38 parameters, regularly tested for but rarely found at non-compliant levels.

For further information on a specific parameter, please refer to the Quality Standards Table in the introduction to Part 2 of this report.

Figure 8 – Microbiological Parameters

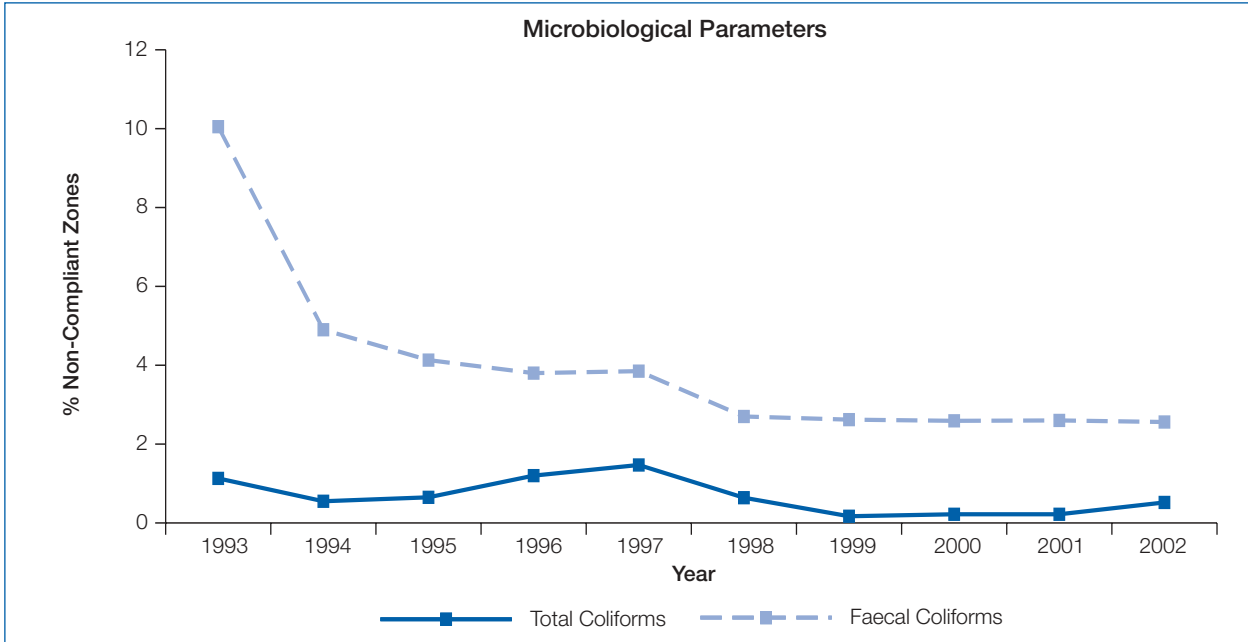


Figure 9 'Aesthetic' Parameters

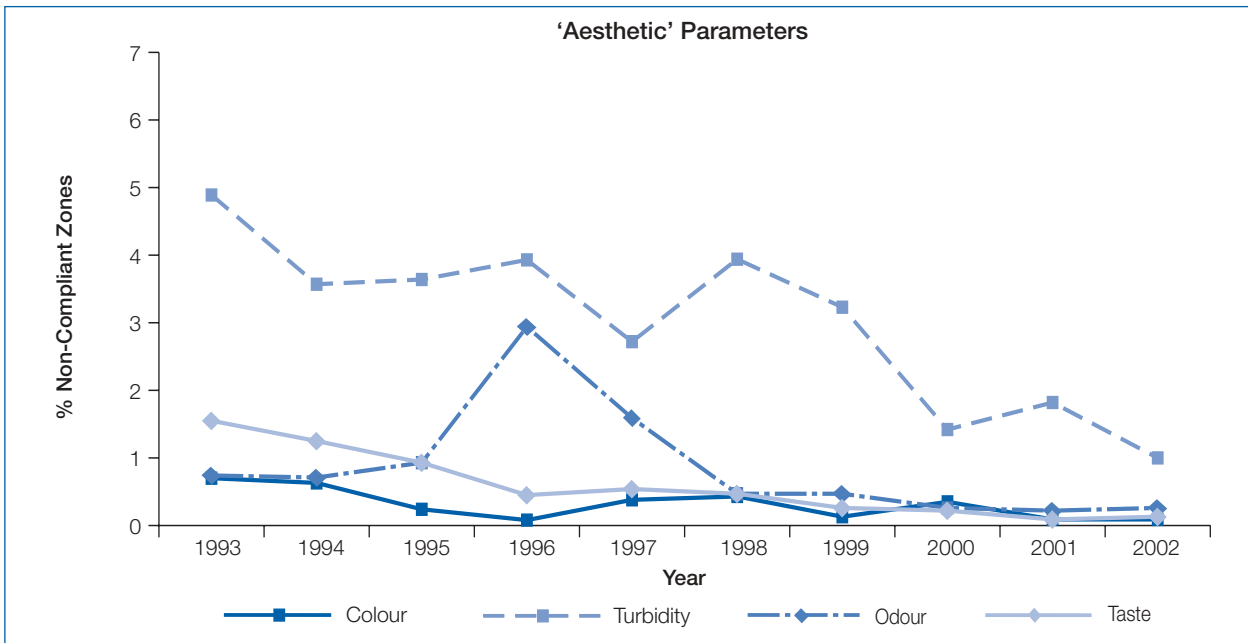


Figure 10 – ‘Metals’ parameters

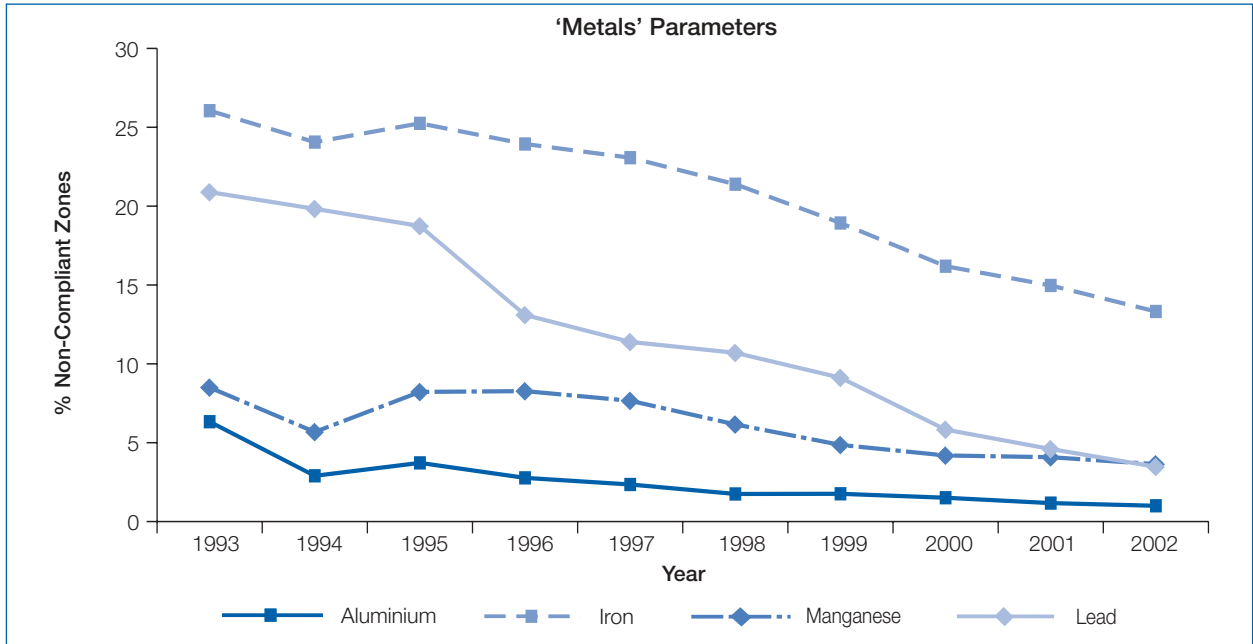


Figure 11 – ‘Ionic’ Parameters

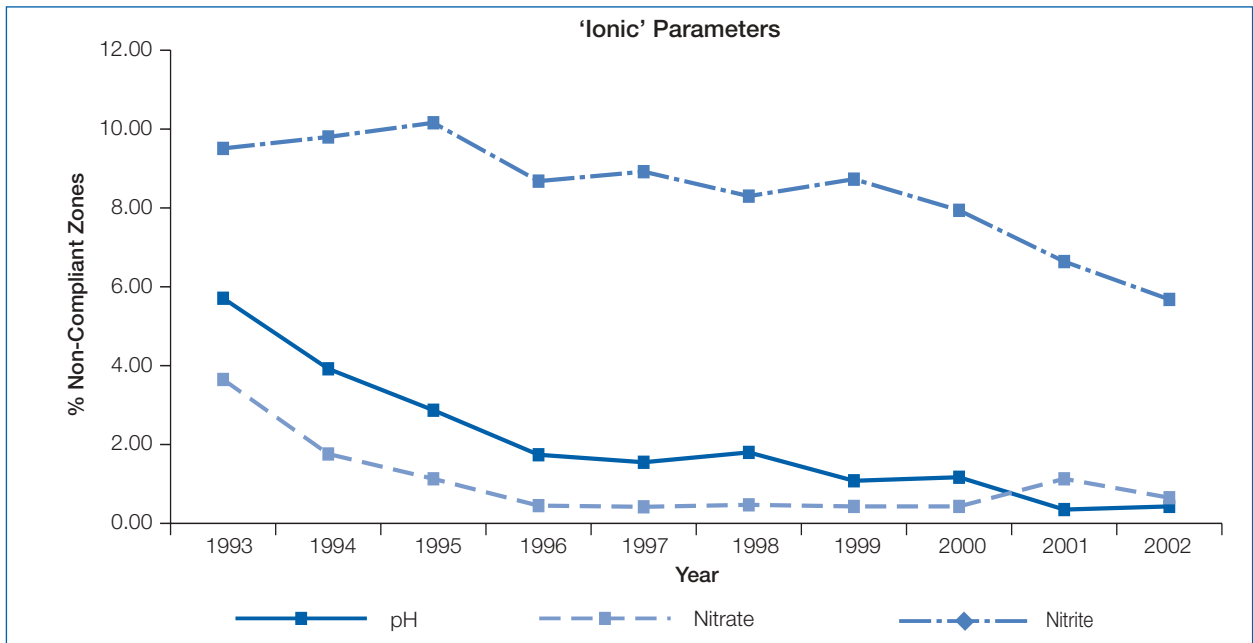


Figure 12 – ‘Organic’ Parameters

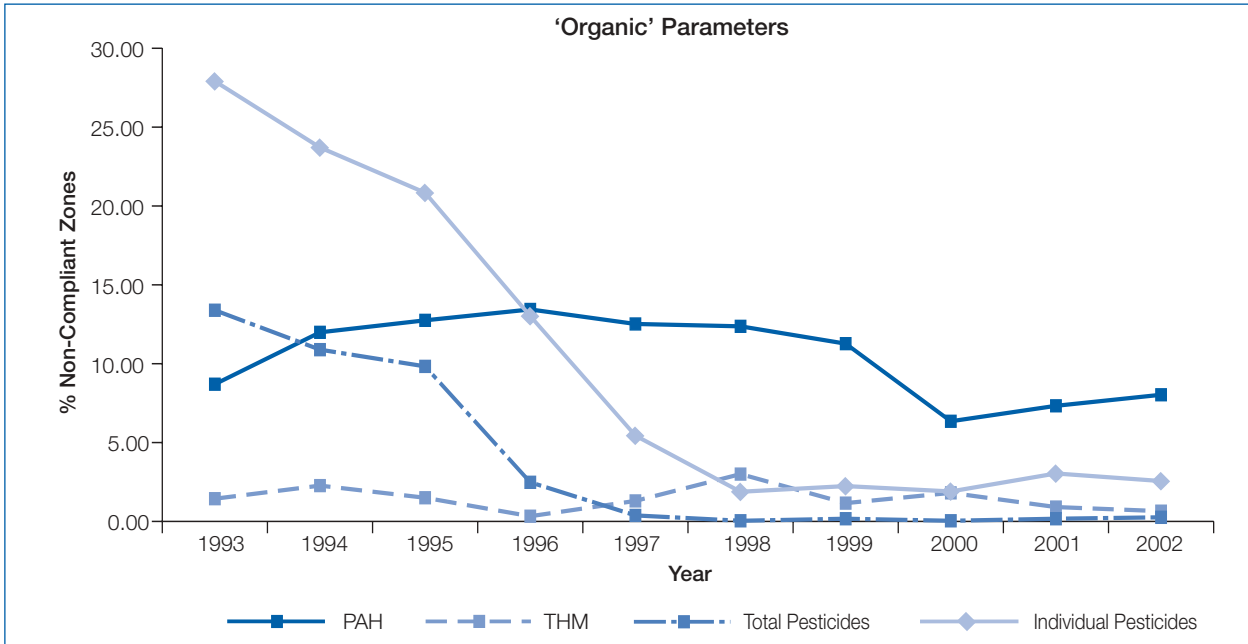
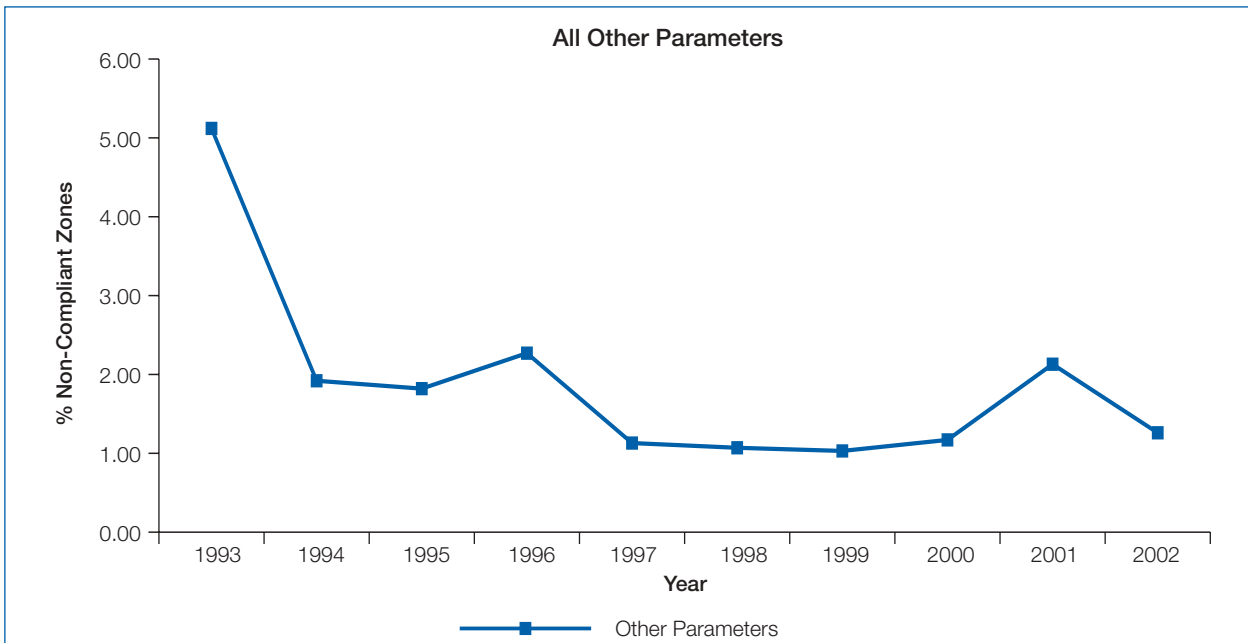


Figure 13 – All Other Parameters



Non-Compliant Zones

A zone may be non-compliant because a single result has breached a standard. Some of these breaches have been regarded as trivial in the compliance assessment and do not indicate a serious problem with water quality.

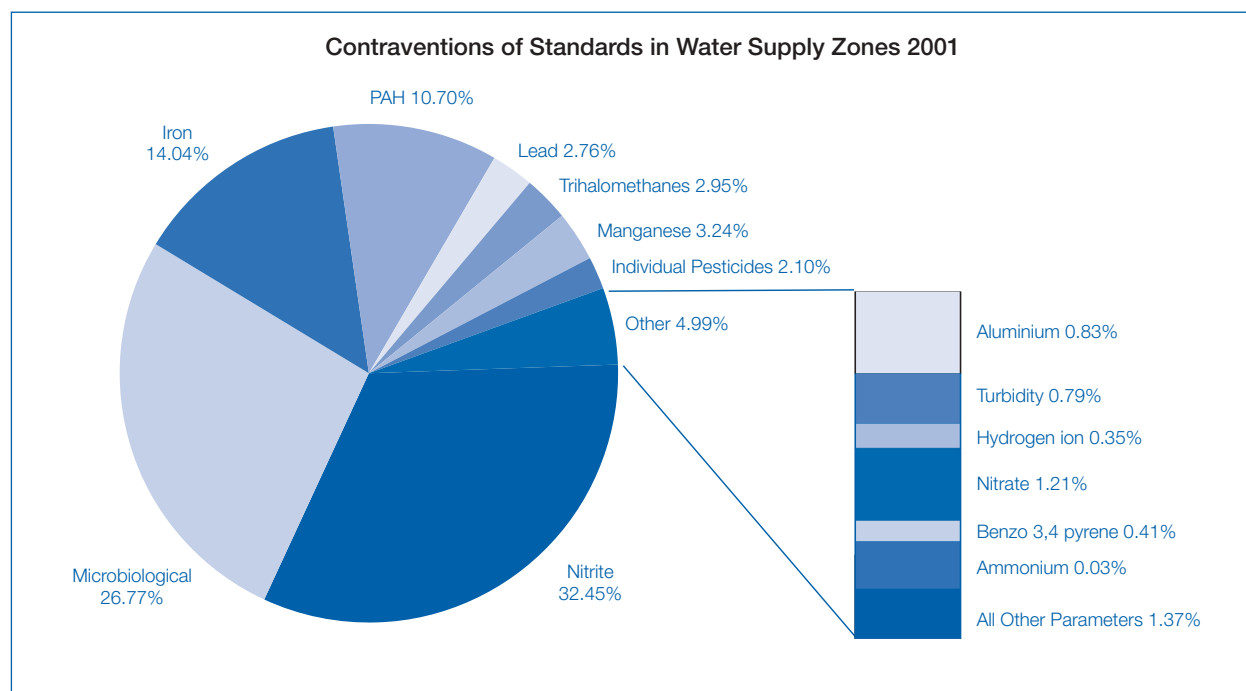
In other cases, a breach of a standard, although not trivial, is considered unlikely to recur as a result of prompt remedial action taken by the company, or is being remedied through an undertaking given by the company to carry out appropriate work as part of an improvement programme.

Enforcement action has been considered in a small number of cases, where the contravention is likely to recur and where no remedial action is in place. Such action has been considered, or is under

consideration, for breaches of standards for seven parameters in 16 (0.70%) water supply zones. Full details of this enforcement action are given in Part 3, Section E, of this report and in individual company sections.

Figure 14 below shows those parameters for which breaches of standards have occurred in 2002. Each is shown as a percentage of the 3,152 individual breaches in water supply zones. A commentary on significant parameters is given below.

Figure 14 – Contraventions of Standards in Water Supply Zones in 2002



Microbiological Parameters

The number of zones breaching the total coliform standard has shown a slight increase since last year. The increase is not statistically significant and the number of non-compliant zones remains lower than in the years preceding 1999. The number of zones breaching the faecal coliform standard is slightly less than last year.

Breaches of the standards in samples taken from consumers' taps can sometimes be caused by the condition of the plumbing and therefore do not necessarily reflect fully the microbiological quality of the water supplied. However, companies are expected to take appropriate action in the event of any breach of the microbiological standards. The Inspectorate requires evidence, including repeat sampling and sampling from related points, before accepting that the condition of a consumer's tap may be responsible for the breach.

A small number of zones breaching the microbiological standards are already covered by undertakings. For the remainder, the Inspectorate is ensuring that appropriate steps are taken by the companies to restore compliance with the standard.

Iron

There has been a decrease in the number of water supply zones failing to comply with the iron standard during 2002. A total of 307 (13.32%) zones failed to comply with the iron standard in 2002 compared with 345 (14.97%) zones in 2001.

Iron can affect the taste and appearance of the water, and give cause for concern. However, there are no health risks associated with the breaches of the iron standard. Many of the breaches are the result of localised problems within the distribution system, especially where there are unlined cast iron mains. In a few cases the breaches are due to inadequate removal of iron at a treatment works.

Nearly all the breaches occurred in zones covered by undertakings. These undertakings have been given by the companies to carry out improvements in the distribution system or at treatment works. The steady underlying trend of improving compliance with the iron standard can be attributed to the work being carried out under these undertakings. These improvements should continue as the programmes of work are progressed.

Lead

There has been a steady decrease since 1993 in the number of zones not complying with the lead standard. A total of 80 (3.47%) zones failed to comply with the standard for lead in 2002 compared with 1993, when 538 (20.89%) zones failed to comply.

This continued improvement largely reflects the additional treatment that companies have installed, or are installing, under the terms of their undertakings in respect of lead. Such treatment makes the water less able to dissolve lead from pipework, i.e. makes it less plumbosolvent.

The main sources of lead in drinking water are lead service pipes, i.e. the connection from the water main to the property, or internal lead plumbing, which may be present in older buildings. Occasionally, the use of lead solder can cause problems. When considering breaches of the lead standard, it is particularly important to bear in mind that the nature and condition of the pipework at the sampling location may greatly influence the outcome. The detection of lead in samples taken from a particular zone does not necessarily mean that the water is plumbosolvent or that samples from other properties in the zone will fail the standard. As long as lead continues to be present in household plumbing it is likely that occasional breaches of the lead standard will occur in water at consumers' taps.

The current standard for lead is 50 µg/l. The new Drinking Water Directive sets a more stringent interim standard for lead of 25 µg/l, to be achieved by the end of 2003, and a final standard of 10 µg/l, to be met by the end of 2013. These changes to the standard have been incorporated into the new Water Supply (Water Quality) Regulations 2000¹. Where necessary, companies have strategies and legally-binding programmes of work for achieving compliance with these tighter standards.

Nitrite

The number of zones contravening the standard for nitrite has shown a slight decrease since last year. The decrease is not statistically significant but has resulted in the lowest level of non-compliance to date. However, with 1,022 individual tests found to contain nitrite above the standard, it was the most commonly failing parameter.

Detection of nitrite above the current standard of 0.1 mg/l is usually associated with the use of chloramination. In this process, a small amount of ammonia is added after final chlorination to produce a chloramine residual in the water entering the distribution system. The benefits of the process are a longer-lasting residual disinfectant in the distribution system, and a reduction in consumer complaints of chlorine taste or odour. The principal disadvantage is that chloramines can break down under certain conditions to form nitrite.

Where chloramination is used, companies have to optimise the process to minimise the risk of nitrite production. Since 1993, the number of zones not complying with the standard has decreased from 245 (9.51%) to 131 (5.68%). As with all parameters, there is a wide margin of safety between the standard and the concentration that is considered potentially harmful to health.

¹ The Water Supply (Water Quality) Regulations 2001 in Wales

The new EC Drinking Water Directive contains a revised combined standard for nitrite and nitrate, which is based on a formula and recognises the relationship between the two parameters. The Directive also introduces a separate individual nitrite standard which applies at the treatment works, rather than in water supply zones, to take account of the use of chloramine. These changes have been incorporated into the new Water Supply (Water Quality) Regulations 2000, which implement the Directive.

Polycyclic Aromatic Hydrocarbons (PAH)

A steady rise in the number of zones not complying with the standard for PAH was apparent from 1991 to 1996. This trend was reversed in 1997 and a downward trend occurred until 2000. This reflected the programmes of work being carried out as part of the companies' distribution system undertaking. However, in both 2001 and 2002 the number of zones not complying has increased again. In 2002, 185 (8.03%) zones failed to comply with the PAH standard compared with 147 (6.40%) in 2000. This increase is not statistically significant.

PAH is derived from the distribution system and is often a localised problem. Breaches of the standard in a zone does not mean that the entire water supply in that zone is non-compliant. The short term remedial measures taken by water companies to alleviate acute water quality problems, such as discolouration, may give rise to breaches of the PAH standard. The distribution undertakings require companies to take account of non-trivial breaches of the PAH standard when assessing priorities for mains renovation.

Although all PAH breaches are investigated, detailed examination of the results shows that, in almost all cases, the contravention of the standard has been caused by only one of the six indicator substances determined in the definition of PAH, namely fluoranthene.

The new EC Drinking Water Directive no longer includes fluoranthene as an indicator substance in the PAH standard, and this has been taken into account during the making of the new Regulations to implement the Directive. Water distribution undertakings have been adjusted accordingly to give priority to breaches of other standards.

Pesticides (Individual and Total)

During 2002, ten individual pesticides were detected above 0.1µg/l in 53,812 samples. In every instance the concentrations found corresponded to exposures far smaller than those known to be harmful or likely to affect health.

There has been a decrease in the number of zones breaching the individual pesticide standard. In 2002, 59 (2.56%) breached the standard compared with 70 (3.04%) in 2001.

Compliance with the pesticide standards remains significantly higher than in 1993.

Turbidity

There has been a significant decrease in the number of zones failing to meet the turbidity standard compared with last year. In 2002, 23 (1.00%) zones breached the standard compared with 42 (1.82%) in 2001.

Manganese

The number of zones failing to meet the manganese standard has decreased. In 2002, 84 (3.64%) zones failed to comply with the standard compared with 94 (4.08%) zones in 2001. The majority of the breaches occurred in zones covered by undertakings.

Other parameters

In 2002, all zones complied with the Regulations in respect of 25 of the other 38 parameters with numerical standards. The standards for a further 13 parameters were breached on only a few occasions in a small number of zones.

Summary Information

Table 4 below provides a summary of the key information for each of the 26 water companies, listed alphabetically.

It is not designed to make any direct comparisons between companies. The issue of comparison is covered in the next section.

Table 4

Company Name	Consumers Supplied	Water Supplied (Mld)	Proportion Surface Water	Proportion Ground Water	Number of Treatment Works	Number of Service Reservoirs	Number of Zones	Length of Mains (Km)	Samples taken at Treatment Works	Failures for Total Coliforms	Failures for Faecal Coliforms	Samples taken at service reservoirs	Failures for treatment standard for <i>Cryptosporidium</i>	Failures taken at service reservoirs	Failures for Total Coliforms	Failures for Faecal Coliforms	Total Samples Taken in Zones	Failures in Zones	Total Tests Taken	Total Number of Failures	% Compliance
Albion	474	0.083	100%	0%	0	0	1	0	0	0	0	0	0	0	0	0	474	0	474	0	100.00%
Anglian	4,100,000	1,200	48%	52%	140	383	189	35,995	25,984	3	0	41,488	0	154,388	8	1	154,388	832	226,403	844	99.63%
Bournemouth & West Hants.	432,000	157	82%	18%	8	21	15	2,800	4,394	2	1	2,196	0	9,526	0	0	9,526	18	18,036	21	99.88%
Bristol	1,086,000	290	75%	25%	17	182	52	6,500	6,262	0	0	18,424	0	19,016	15	1	19,016	33	45,208	49	99.89%
Cambridge	291,700	72	0%	100%	22	33	14	2,194	3,174	0	0	3,466	0	4,806	1	0	4,806	17	11,446	18	99.84%
Cholderton	2,100	0.6	0%	100%	1	1	1	44	102	0	0	104	0	341	0	0	341	1	547	1	99.82%
Dees Valley	258,500	71	96%	4%	7	31	18	1,953	2,712	0	0	3,172	0	7,084	0	0	7,084	20	14,071	20	99.86%
Dŵr Cymru	2,800,000	1,000	94%	6%	96	544	171	24,900	21,192	4	0	55,863	0	95,711	21	3	95,711	167	179,513	195	99.89%
Essex & Suffolk	1,700,000	482	95%	5%	25	106	66	8,393	8,132	4	0	10,456	0	100,748	10	1	100,748	72	120,728	87	99.93%
Folkestone & Dover	163,300	50	15%	85%	17	13	10	1,101	2,908	0	0	1,352	0	2,988	0	0	2,988	8	7,228	8	99.89%
Hartlepool	91,000	35	0%	100%	3	6	4	513	728	0	0	624	0	1,289	1	0	1,289	4	2,641	5	99.81%
Mid Kent	574,700	167	12%	88%	34	67	21	4,167	5,822	3	0	6,592	0	15,972	3	1	15,972	24	28,286	31	99.89%
Northumbrian	2,600,000	760	95%	5%	37	244	112	16,687	14,112	2	1	25,142	0	204,640	23	6	204,640	141	247,139	173	99.93%
Portsmouth	647,000	186.3	13%	87%	20	41	23	3,200	5,969	2	0	4,306	0	12,701	2	0	12,701	14	23,769	18	99.92%
Severn Trent	7,360,000	2,000	65%	35%	162	605	285	41,000	30,018	15	1	62,426	0	187,447	32	6	187,447	194	282,799	248	99.91%
South East	1,400,000	370	28%	72%	63	171	90	9,663	11,806	4	1	17,396	0	31,331	36	2	31,331	100	63,885	143	99.78%
South Staffordshire	1,200,000	336	50%	50%	22	37	40	5,828	5,678	1	0	3,912	0	28,327	5	0	28,327	24	38,776	30	99.92%
South West	1,500,000	455	90%	10%	34	336	81	15,000	15,185	2	0	35,964	0	117,034	20	1	117,034	117	172,739	140	99.92%
Southern	2,220,000	598	30%	70%	95	210	116	13,350	14,734	4	0	21,596	0	36,261	18	4	36,261	59	76,658	85	99.89%
Sutton & East Surrey	637,000	160	15%	85%	8	33	22	3,373	4,446	2	0	3,446	0	15,647	3	1	15,647	34	23,905	40	99.83%
Tendring Hundred	145,000	30	20%	80%	3	8	4	910	772	1	1	820	0	2,147	1	1	2,147	2	3,739	6	99.84%
Thames	7,900,000	2,850	75%	25%	101	367	244	31,400	30,871	9	0	38,821	0	466,777	26	2	466,777	371	542,555	408	99.92%
Three Valleys	2,900,000	896	42%	58%	83	138	110	13,500	19,282	5	2	13,960	0	41,100	10	2	41,100	120	76,307	139	99.82%
Wessex	1,200,000	385	20%	80%	95	315	98	10,800	22,306	7	1	33,697	0	107,081	25	6	107,081	81	163,599	120	99.83%
Yorkshire	4,710,000	1,313	78%	22%	102	414	205	31,000	20,618	15	0	41,866	0	201,286	49	11	201,286	213	266,444	288	99.89%
United Utilities	6,800,000	1,940	92%	8%	149	385	292	42,200	47,328	60	12	39,512	0	248,366	58	8	248,366	486	336,666	624	99.81%
Totals	52,718,774	15,804			1,344	4,691	2,284	326,471	327,535	145	20	486,601	0	2,112,368	367	57	2,112,368	3,152	2,973,561	3,741	99.87%

Comparisons of Drinking Water Quality between Companies

Consumers and organisations frequently ask the Inspectorate how drinking water quality varies from water company to water company.

The Regulations cover 55 parameters with numerical standards, some of which are more important than others in respect of public health and aesthetic considerations. Also, companies vary considerably in size, supplying anywhere between 300 and 7.5 million consumers.

Furthermore, drinking water quality in all water companies is very high with the overall percentage of tests complying with the standards approaching 100%. Meaningful comparisons have to be able to detect small differences in compliance between companies that are statistically significant and have not occurred by chance.

To allow a meaningful comparison to be made, the Inspectorate publishes, for each company, an overall quality index, based on 15 key parameters, and an operational performance index based on six of those key parameters: iron, manganese, aluminium, turbidity, faecal coliforms and trihalomethanes.

It is important to note that the simple percentage of tests complying is a different measure from the overall quality and operational performance indexes. *These different measures must not be confused with one another, as they are not directly comparable.*

Overall Quality Index

Table 5 lists the water companies in decreasing order of overall quality index for the calendar year 2002 in three columns; statistically significantly below average, not statistically significantly different from average; and statistically significantly above average. It should be noted that for the smaller water companies with relatively low numbers of samples it is not possible to show whether their index is statistically significantly different from average.

Table 5 – Overall Quality Index: 2002

Index	Company		
	Statistically significantly below average	Not statistically significantly different from average	Statistically significantly above average
100.00		Albion	
100.00		Hartlepool	
99.97		Bournemouth & W Hants.	
99.97		Sutton & East Surrey	
99.97			Three Valleys
99.96			Anglian
99.94		South Staffordshire	
99.93		Portsmouth	
99.93		Southern	
99.93		Dee Valley	
99.92		Essex & Suffolk	
99.92			Severn Trent
99.92		Bristol	
99.92		Tendring Hundred	
99.90		Wessex	
99.89		Thames	
99.89		Mid Kent	
99.88		South East	
99.87		Dŵr Cymru	
99.86		England & Wales	
99.82		South West	
99.82		Yorkshire	
99.79		Cambridge	
99.76	Northumbrian		
99.67	United Utilities		
99.58		Folkestone & Dover	
99.17		Cholderton	

Trends in the overall quality index over the calendar years 1996 to 2002 inclusive have been assessed to determine whether there is a significantly improving trend, no statistically significant trend or a significantly deteriorating trend. Table 6 shows that there were no companies with a significantly deteriorating trend, and for four companies, South Staffordshire, Thames, Dŵr Cymru and South West, there is a significantly improving trend. All other companies showed no significant trend.

Table 6 – Trend in Overall Quality Index for 1996 to 2002

Statistically significant deteriorating trend	Statistically significant improving trend
–	South Staffordshire
	Thames
	South West
	Dŵr Cymru

Operational Performance Index

Table 7 lists the water companies in decreasing order of operational performance index for the calendar year 2002 in three columns in a similar manner to the overall quality index.

Table 7 – Operational Performance Index: 2002

Index	Company		
	Statistically significantly below average	Not statistically significantly different from average	Statistically significantly above average
100.00		Albion	
100.00		Hartlepool	
99.99		Cambridge	
99.99		Portsmouth	
99.96			Three Valleys
99.96			Thames
99.96		Sutton & East Surrey	
99.96		Folkestone & Dover	
99.95		Bournemouth & W Hants	
99.95			Anglian
99.94		South Staffordshire	
99.93		Essex & Suffolk	
99.92		Southern	
99.92			Severn Trent
99.87		South East	
99.86		Bristol	
99.84		Wessex	
99.83		Dee Valley	
99.83		Tendring Hundred	
99.81		England & Wales	
99.79		Dŵr Cymru	
99.78		Mid Kent	
99.69	South West		
99.66	Yorkshire		
99.62	Northumbrian		
99.50	United Utilities		
97.92		Cholderton	

Table 8 shows the trend in the operational performance index over the calendar years 1996 to 2002 inclusive. No companies show a significantly deteriorating trend, and for four companies, Anglian, Essex & Suffolk, Dŵr Cymru and South West, there is a significantly improving trend. Again, all other companies showed no significant trend.

Table 8 – Trend in Operational Performance Index for 1996 to 2002

Statistically significant deteriorating trend	Statistically significant improving trend
–	Anglian
–	Essex & Suffolk
–	Dŵr Cymru
	South West