



Other regulatory processes

Part 5

Drinking Water in England 2004

Part 5

Other regulatory processes

This section of the report presents information on:

- The periodic review process PRO4
- Water company drinking water improvement programmes
- Control of *Cryptosporidium* risk
- The approval of chemicals and materials of construction used in contact with public water supplies

Each of these activities addresses either a particular aspect of the safety or the acceptability to consumers of drinking water supplies in England and Wales.

2004 Periodic review (PRO4)

In December 2004 the Director General of Water Services set the limits on price increases that water companies will be able to charge consumers for the period 2005 – 2010. This price review process was referred to as the 2004 Periodic Review (PRO4).

The price limits were set to enable water companies to deliver the services required of them over the next five year period. These include allowing for capital maintenance of assets, ensuring security of supply and compliance with the requirements for drinking water quality and environmental standards.

The policies and priorities for drinking water quality for PRO4 were set for England by the Secretary of State for Environment, Food and Rural Affairs in the documents:

- ‘Directing the flow – Priorities for future water policy (November 2002)’;
- ‘Initial guidance from the Secretary of State to the Director General of Water Services – 2004 periodic review of water price limits (January 2003)’;
- ‘Principal guidance from the Secretary of State to the Director General of Water Services – 2004 periodic review of water price limits (March 2004)’; and
- ‘Final guidance from the Secretary of State to the Director General of Water Services – 2004 periodic review of water price limits (September 2004)’.

For Welsh-based water companies, policies and priorities for PR04 were published by the Welsh Assembly Government in the documents:

- 'Initial Guidance from the Welsh Assembly Government to the Director General of Water Services on the 2004 Periodic Review of Water Price limits ("PR04") (March 2003)',
- 'Guidance from the Welsh Assembly Government to the Director of Water Services on the 2004 Periodic Review of Water Price Limits ("PR04") (March 2004)'; and
- 'Water Pricing 2005 – 2010 (September 2004)'.

The Inspectorate had a key role in the review in respect of drinking water quality issues. It was responsible for identifying requirements for drinking water quality which were published in Information Letters¹ agreeing priorities with Ministers including informing ministerial guidance, and agreeing specific drinking water quality programmes of work with individual water companies for inclusion in their business plan submissions to Ofwat for possible funding.

The Inspectorate's objectives for PR04 were to:

- Meet current and future drinking water quality standards; and
- Facilitate the transition from large quality-driven programmes of work to a water company-driven strategic maintenance programme to achieve agreed minimum levels of service.

All drinking water quality improvement programmes supported by the Inspectorate were provided for in price limits.

¹ *IL 13/02 – The 2004 Periodic Review of Prices and AMP4 – Initial Guidance*

IL 14/02 – The 2004 Periodic Review of Prices and AMP4 – Confirmation of Initial Guidance

IL 15/02 – Distribution Operation & Maintenance Strategies – DWI Requirements & Expectations

IL 4/03 – The 2004 Periodic Review of Prices and AMP4 – Further Guidance

IL 5/03 – The 2004 Periodic Review of Prices and AMP4 – Appraisal Methodology for Water Company Proposals for Drinking Water Quality Improvement Schemes

The PR04 assessment process

Letters of support by the Inspectorate were issued for individual scheme proposals in December 2003 following a process of submissions, consultations, preliminary assessment, detailed assessment and technical audit. A Letter of Confirmation was issued to each water company in March 2004 summarising the programme content, and graphically illustrating the agreed delivery profiles using project management software. These were confirmed in subsequent guidance from the Secretary of State and the Welsh Assembly Government.

The Principal Guidance from the Secretary of State supported the dialogue that the Inspectorate had commenced with the Environment Agency, English Nature and water companies in respect of nitrate, levels of which are dependant on wider environmental considerations, to ensure that the proposed solutions were appropriate and the most cost effective. This process was completed and letters to confirm the outcome for nitrate schemes were issued to companies in August 2004.

The Inspectorate contributed towards a Regulatory Impact Assessment of some of the PR04 drinking water and environment improvement policies for England, to inform the final ministerial guidance. It identified the costs and benefits associated with specific schemes to improve the consumer acceptability of drinking water. This was published for external consultation ('Regulatory Impact Assessment of the PR04 drinking water and environment improvement policies that go beyond existing commitments').

In November 2004 the Inspectorate confirmed to companies the regulatory procedure that would apply to each of the supported schemes. This took account of the changes in legislation (Water Act 2003) and the coming into force of the new regulations on 25 December 2003. Following publication of price limits in December 2004, the Inspectorate initiated enforcement to put in place formal documentation for all of the schemes. The companies were advised to review the draft documentation and submit draft undertakings for most schemes by mid-January 2005. For a small number of schemes (mainly for the lead parameter) these documents were sent in February 2005. The agreed final drinking water quality improvement programmes were in place by April 2005.

Tables 5.1 and 5.2 below describe the programme and illustrate how the focus of the work is on water treatment and consumer acceptability schemes. Within the water treatment schemes, work to reduce nitrate, turbidity, and risks from *Cryptosporidium* and pesticides, form a large part of the programme.

Table 5.2 demonstrates the challenge made to company programmes by the Inspectorate between October 2002 (when original plans were submitted) and April 2004 when the process was completed. This review process resulted in a number of schemes being dropped from the programme.

Table 5.1: Summary of drinking water quality programme

Quality driver	Number of schemes		
	England	Wales	Total
Distribution system renovation schemes	7	1	8
Water treatment schemes	226	3	229
Consumer acceptability schemes	35	5	40
Lead pipe replacement schemes	10	0	10
TOTAL	278	9	287

Table 5.2: Changes to the scope of the drinking water quality programme

Quality driver	Number of schemes						
	October 2002	June 2003		August 2003		April 2003	
		England	Wales	England	Wales	England	Wales
Distribution system renovation	7	7	1	7	1	7	1
Nitrate treatment	94	84	0	71	0	72	0
Pesticide treatment	54	28	2	18	2	18	2
Trihalomethane treatment	21	14	2	7	0	6	0
Turbidity schemes	156	36	1	30	1	22	1
<i>Cryptosporidium</i> treatment	54	33	0	30	0	30	0
Other water treatment	161	111	2	77	0	78	0
Consumer acceptability schemes	189	62	7	38	6	35	5
Lead Pipe Replacement	22	22	1	16	1	10	0
TOTAL	758	397	16	294	11	278	9
Combined totals for England and Wales	758	413		305		287	

Table 5.3: Drinking water quality programme by company

Company	Number of schemes submitted	Number of schemes		
		Issued with a letter of support	Issued with a letter declining to Support	Issued with a withdrawal letter
Albion Water Ltd	0	0	0	0
Anglian Water Services Ltd	42	30	11	1
Bournemouth & West Hampshire Water Plc	0	0	0	0
Bristol Water Plc	14	9	1	4
Cambridge Water Company Plc	4	2	2	0
Cholderton & District Water Company Ltd	0	0	0	0
Dee Valley Water Plc	0	0	0	0
Dŵr Cymru Welsh Water	16	10	4	2
Folkestone & Dover Water Services Ltd	9	1	7	1
Hartlepool Water Plc	0	0	0	0
Mid Kent Water Plc	7	4	3	0
Northumbrian Water Ltd (including Essex & Suffolk Water Plc)	7	6	1	0
Portsmouth Water Ltd	10	8	1	1
Severn Trent Water Ltd	39	27	11	1
South East Water Plc	12	3	9	0
South Staffordshire Water Plc	2	1	1	0
South West Water Ltd	40	18	18	4
Southern Water Services Ltd	11	7	3	1
Sutton & East Surrey Water Plc	1	0	1	0
Tendring Hundred Water Services Ltd	2	0	1	1
Thames Water Utilities Ltd	12	11	1	0
Three Valleys Water Plc	12	6	5	1
United Utilities Plc	111	93	13	5
Wessex Water Services Ltd	30	23	3	4
Yorkshire Water Services Ltd	32	28	2	2
TOTAL	413	287	98	28

Table 5.4: Drinking water quality programme by driver

Quality driver	Number of schemes submitted		Number of schemes					
			Issued with letter of support		Issued with a letter declining to support		Issued with a withdrawal letter	
	England	Wales	England	Wales	England	Wales	England	Wales
Distribution system renovation	7	1	7	1	0	0	0	0
Nitrate treatment	84	0	72	0	7	0	5	0
Pesticide treatment	28	2	18	2	10	0	0	0
Trihalomethane treatment	14	2	6	0	8	2	0	0
Turbidity schemes	36	1	22	1	10	0	4	0
<i>Cryptosporidium</i> treatment	33	0	30	0	1	0	2	0
Other water treatment	111	2	77	1	21	0	13	1
Consumer acceptability schemes	62	7	35	5	25	1	2	1
Lead pipe replacement	22	1	10	0	12	1	0	0
Total	397	16	277	10	94	4	26	2

Drinking Water Quality Improvement Programmes of Work

Water companies, with the agreement of the Inspectorate, can put in place programmes of remedial action to improve drinking water quality whenever these are necessary.

Programmes of work arise in three ways:-

- as a result of the process for setting price limits for a five year period. (e.g. the PRO4 process described above has given rise to 287 AMP4 programmes of work);
- as a result of enforcement for contraventions of the drinking water standards for parameters in the regulations; and
- as a result of enforcement for issues arising out of an assessment by the Inspectorate of a drinking water quality incident or technical audit.

A summary of the programmes under key headings to identify their origins follows.

Improvement programmes arising from the 1999 Periodic Review process.

Following the 1999 Periodic Review of price limits for the five-year period 2000 - 2004 (AMP3), drinking water quality improvement programmes were put in place to meet the regulations in place at the time of the review, and the new regulations due to come into force on 25 December 2003. In early 2000, the Inspectorate agreed with water companies Statements of Intent which specified steps to be taken for these improvement programmes. The Inspectorate also agreed with water companies Regulation 41 Programmes of Work for requirements in the new Regulations due to come into force on 1 January 2004. Since 2000, the Inspectorate has monitored progress with the implementation of all these improvement programmes carrying out audits of individual schemes.

Most of the improvement programmes were delivered by their due dates. However, four schemes (for bromate at Barrow works, Bristol Water; for solvents at Mill End works and nitrate at Oakley Farm works, Severn Trent Water; and for trihalomethanes at Denton works, United Utilities) were delayed for reasons beyond the companies' control. Three of the four were finally completed during 2004. The improvement programme at Oakley Farm works for nitrate was put back in time because the risk of exceeding the nitrate standard needed to be re-assessed. The installation of a new treatment process has now commenced and a new programme of work (in the form of a Statement of Intent) has been agreed with a completion date of July 2006.

Most improvement programmes agreed in the PRO99 process were completed by 31 December 2004. However, 20 schemes have completion dates extending beyond 31 December 2004 either because the schemes could not be programmed for completion any earlier or they were delayed for reasons beyond the control of the water companies.

Improvement Programmes of Work for plumbosolvency treatment measures for lead

The new regulations set an interim standard for lead of 25 µg/l (the current standard) and a final standard of 10 µg/l to be achieved by 25 December 2013. To achieve the interim standard, the Inspectorate put in place regulation 41 programmes which required water companies to:

- install additional treatment at water treatment works to reduce the plumbosolvency of water supplied at the tap;
- optimise the treatment measures installed;
- carry out opportunistic lead pipe replacement in the distribution system;
- carry out strategic lead pipe replacement in the distribution system to meet the 25 µg/l standard; and
- carry out strategic lead pipe replacement in the distribution system to meet the 10 µg/l standard.

Funding for these programmes was provided for in the 1999 Periodic Review of Prices for the years 2000 - 2005 (AMP3 period). Water companies were also allowed some financial provision to make a start on programmes to meet the new 10 µg/l standard. Where it can be established that optimal treatment cannot achieve compliance with the final standard of 10µg/l, there will be a need to continue with further programmes of work for strategic lead pipe replacement to achieve the standard by December 2013. These programmes will provide for the replacement of the water company's part of service pipes.

By the beginning of 2004, the installation and commissioning of new treatment was substantially complete for most companies and early indications are that it has been very effective in reducing lead concentrations in drinking water. Work is now progressing on the optimisation of treatment to meet the final standard of 10 µg/l. For some water companies, programmes of strategic replacement of water companies' lead pipes may be required. Where water companies are planning strategic replacement of lead pipes, they will be required to give priority to areas where lead concentrations are highest, or where such measures would have a considerable impact on reducing exposure to lead in the drinking water.

Improvement Programmes arising from enforcement action

If a water company supplies water that does not meet the drinking water standards, it must investigate the cause of the problem and notify the Inspectorate of its findings. The Inspectorate assesses each notification and determines whether the failure is likely to recur. Water companies may also approach the Inspectorate if they consider that they are likely to fail a drinking water standard.

If the Inspectorate considers that the failure is likely to recur, it requires the Company to put in place a legally binding improvement programme of work to improve drinking water quality. The three types of improvement programmes are:

- Undertakings (accepted under Section 19 of the Water Industry Act 1991);
- Enforcement Orders (served under Section 18 of the Water Industry Act 1991); and
- Authorisations (granted under regulation 20 of the Regulations).

Section 19 undertakings and enforcement orders

Consideration of enforcement action is the first step in a legal process that is used by the Inspectorate to make improvements to drinking water quality following a failure of a standard or if there is a risk of failure of a standard. Enforcement action can also be taken for failure to meet other enforceable duties such as carrying out sampling and analysis, the provision of adequate water treatment and the duty to provide information to the Inspectorate, a requirement of the Water Undertakers (Information) Direction 2004.

The process begins with the company being served with a 'notice of intention to enforce'. The company then usually gives a legally binding undertaking to carry out a programme of work to secure or facilitate compliance with the required standard or duty within an agreed time scale. Where a company fails to demonstrate that effective action has been taken, or fails either to give or to honour an undertaking, the Inspectorate may make a provisional or final enforcement order against the company. No enforcement orders have been made in 2004 because companies, where required, have entered into suitable legally binding undertakings.

The Inspectorate will not initiate enforcement action when a company, after becoming aware of a breach of a regulatory requirement, takes immediate remedial action and demonstrates that compliance has been achieved.

The Inspectorate's general policy is to initiate enforcement action and accept undertakings for breaches of national standards and other enforceable regulatory duties.

Consideration of enforcement action usually arises from either the technical audit process – in particular the assessment of water companies' compliance data, or from the assessment of drinking water quality incidents. In 2004, consideration of enforcement action was taken against three companies as shown in Table 5.5 below.

Table 5.5: Consideration of Enforcement Action Identified During 2004

Company	Failure of regulatory duty	Location	Outcome
Dwr Cymru Welsh Water	Likely to fail Benzo(a)pyrene standard	Rhymney/Bargoed water supply zone	Undertaking agreed
South Staffordshire	Likely to fail the standard for Benzo(a)pyrene	Hayley Green water supply zone	Undertaking agreed
United Utilities	Failure of the standard for total coliforms at nine treatment works	Sutton Hall (1 and 2); Prescott No 1; Rivington; Sweetloves; Wayoh; Simmonds Hill; Buckton Castle; Lightshaw; Godley	Undertaking agreed
United Utilities	Failure of the coliform and faecal coliform standards at five treatment works	Martholme Accrington; Dale Springs; Watchgate; Braesteds Springs; Townsend Fold	Undertaking agreed
United Utilities	Failure of the coliform standard in distribution	Blackpool Central water supply zone	Undertaking agreed
United Utilities	Likely to fail the standard for Benzo(a)pyrene	Knutsford water supply zone	Undertaking agreed

Progress with existing undertakings

At the beginning of 2004, there were 37 undertakings in place as a result of enforcement action taken by the Inspectorate in previous years. Twenty-three of these undertakings were due for completion during 2004 and of these, twelve were completed on schedule. The remaining eleven were delayed due to circumstances beyond the control of the company and for nine of these, new undertakings were offered with revised completion dates either later in the year or in 2005. For two of the delayed undertakings, a new undertaking was not submitted but the work has now been completed.

Of the 37 undertakings in place at the beginning of 2004, fifteen were long-term programmes of work to carry out improvements to distribution systems (strategic distribution undertakings). These programmes cover parameters such as iron, aluminium, manganese and turbidity, which are affected by the condition of the mains. Details of the lengths of mains renovated or replaced in 2004 for each of these water companies can be found in the regional section in Part 1 of this report. The programme of work for Tendring Hundred Water Services was completed in 2004. The programmes of work for the remaining 14 companies are ongoing with the work to renovate or replace mains due to be completed between 1 January 2005 and 31 March 2010.

A further eight undertakings were for iron or turbidity in water supply zones which had not been included in a strategic distribution undertaking but failures of the standards had occurred. These are termed maintenance distribution system undertakings. Table 5.6 shows details of all undertakings due to completion in 2004.

Table 5.6: Section 19 Undertakings Due for Completion During 2004

Company	Parameter	Location	Completion Date	Details
Cambridge Water	Nitrate	Odsey works	31-Mar-04	Completed on schedule
Dee Valley	Manganese	Nant Y Ffrith works	31-Mar-04	Delayed. New undertaking submitted with due date October 2004 which was met.
Dee Valley	Manganese	Pendinas works	31-Mar-04	Delayed. New undertaking submitted with due date October 2004 which was met.
South East Water	Iron	Blackhurst water supply zone	28-Feb-04	Delayed. Replaced by new undertaking with due date 31-Dec-2005
South East Water	Iron	Oakley water supply zone	31-Mar-04	Completed on schedule
South East Water	Iron	Greatham water supply zone	31-Mar-04	Completed on schedule
Sutton & East Surrey Water	Turbidity (Chalk)	All zones in the distribution system	31-Jan-04	Completed on schedule
Sutton & East Surrey Water	Iron and turbidity	All zones in the distribution system	30-Jun-04	Delayed to early 2005
South West	Iron	St Columb water supply zone	1-Jan-04	Completed on schedule
Three Valleys Water	Iron	All zones in the distribution system	31-Dec-04	Delayed to February 2005
United Utilities	<i>E.coli</i>	Ridgegate water supply zone	30-Sep-04	Delayed. New undertaking submitted with due date November 2004 which was met.
United Utilities	Total Coliforms	Huntington No 2 works	31-Mar-04	Completed on schedule
United Utilities	Total Coliforms	Ashworth Moor works	31-May-04	Completed on schedule
United Utilities	Total Coliforms	Worsthorne works	31-May-04	Completed on schedule
United Utilities	Total Coliforms	Cowm works	31-May-04	Delayed. New undertaking submitted with due date 31-Oct-2004 which was met.

Table 5.6: Section 19 Undertakings Due for Completion During 2004 (continued)

Company	Parameter	Location	Completion Date	Details
United Utilities	<i>Cryptosporidium</i>	Lostock works	31-Jan-04	Delayed. New undertaking submitted with due date 30-Apr-2004 which was met.
United Utilities	<i>Cryptosporidium</i>	Barnacre/Thirlmere works	31-Jan-04	Delayed. New undertaking submitted with due date 31-May-2004 which was met.
United Utilities	<i>Cryptosporidium</i>	Hoghton works	30-Apr-04	Delayed. New undertaking submitted with due date 31-May-2004 which was met.
United Utilities	Ammonia	Loveclough works	30-Apr-04	Completed on schedule
United Utilities	Iron	Poaka Beck works	30-Jun-04	Completed on schedule
Welsh Water	Iron and manganese	Abergele water supply zone	28-Feb-04	Delayed. New undertaking submitted with due date 31-Dec-2005.
Wessex Water	Iron	Cattistock water supply zone	31-Dec-04	Completed on schedule
Yorkshire Water	THMs	Oughteshaw works	30-Jan-04	Completed on schedule

Undertakings accepted during 2004

Thirty-three new undertakings were accepted by the Inspectorate during 2004. Twenty-two of these were as a result of the assessment of compliance data (four as a result of enforcement action for failures of the standards in 2003, 18 as a result of enforcement action for failures of the standards during 2004). Eleven new undertakings were replacements for existing undertakings. Further details are given in Table 5.7 below.

Table 5.7: Section 19 Undertakings Approved During 2004

Water Company	Parameter	Location	Reasons for undertaking
Anglian	Iron	Grimsby South water supply zone	New undertaking following enforcement in 2003
	Iron and/or turbidity	Corby North East water supply zone	New undertaking following enforcement in 2003
	Iron	Scunthorpe West water supply zone	New undertaking following enforcement in 2003
Dee Valley	Manganese	Nant Y Ffrith works	Replacement undertaking
	Manganese	Pendinas works	Replacement undertaking
Folkestone	Iron and/or turbidity	Paddlesworth water supply zone	Replacement undertaking
Northumbrian	Iron, Aluminium, Manganese and turbidity	Distribution system	Replacement Schedule and Annex to existing undertaking
Severn Trent	Iron and/or turbidity	Distribution system	Replacement Schedule and Annex to existing undertaking
	Iron	Belper & Alvaston water supply zone	Replacement undertaking
South East	Iron	Blackhurst water supply zone	Replacement undertaking
South Staffordshire	Benzo(a)pyrene	Hayley Green water supply zone	New undertaking following enforcement action in 2004 (see table 5.5)
South West	Iron and/or Manganese	Distribution system	Replacement Schedule and Annex to existing undertaking
United Utilities	<i>E.coli</i>	Ridgegate works	Replacement undertaking
United Utilities	Coliforms (total)	Cowm works	Replacement undertaking
United Utilities	Coliforms (total)	Nine water treatment works	New undertaking following enforcement action in 2004 (see table 5.5)
United Utilities	Coliforms (total and faecal)	Five water treatment works	New undertaking following enforcement action in 2004 (see table 5.5)
United Utilities	Coliforms (total)	Blackpool Central water supply zone	New undertaking following enforcement action in 2004 (see table 5.5)
United Utilities	Benzo(a)pyrene	Knutsford water supply zone	New undertaking following enforcement action in 2004 (see table 5.5)
Dŵr Cymru Welsh Water	Iron and/or manganese	Abergele water supply zone	Replacement undertaking
Dŵr Cymru Welsh Water	Benzo(a)pyrene	Rhymney & Bargoed water supply zone	New undertaking following enforcement action in 2004 (see table 5.5)
Wessex Water	Iron	Bowden water supply zone	New undertaking following enforcement in 2003

Authorised Departures

For certain drinking water standards a water company may apply to the Inspectorate for authorisation for a departure from the standard for a period not exceeding three years. This procedure applies only to those standards in the regulations which derive from the Drinking Water Directive.

At the beginning of 2004, eight Authorised Departures were in place, two of which were due to expire during the year. The related improvement programmes for both (for nitrate at Babraham works, Cambridge Water; for trihalomethanes at Lound works, Essex and Suffolk Water) were completed on schedule. There were no new authorisations granted in 2004.

Controlling *Cryptosporidium* in drinking water

The Regulations

In 1999, following two major outbreaks of water-related cryptosporidiosis (Torbay 1995, North London & Hertfordshire 1997) regulations to protect public health by improving water treatment to reduce the risk from the parasite *Cryptosporidium* in drinking water supplies came into force. These same provisions are now incorporated into the new regulations (regulations 27, 28 and 29).

The regulations set a treatment standard of an average of less than one oocyst in ten litres of water supplied from a treatment works. The standard does not take into account different species of *Cryptosporidium* or whether any oocysts detected are viable, i.e. alive and potentially able to cause infection. It is an offence for a water company to contravene the standard subject to a defence that it took all reasonable steps and exercised all due diligence to avoid committing the offence.

The regulations specify continuous sampling of not less than 40 litres per hour of treated water going into supply at all sites where there is a significant risk of the treatment standard being contravened. Also specified are the conditions that have to be met for the sampling and analysis of samples and the reporting of the results and it is an offence if these conditions are not met.

Implementing the Regulations

Water companies are required to carry out a risk assessment for each of their water treatment works. Guidance on risk assessment issued in 1999 can be found on the Inspectorate's website. The guidance identified several risk factors to be taken into account: the quality of the source water; the nature of the catchment; the use of direct abstraction, or abstraction with storage of less than seven days from a river or stream; evidence of rapid surface water connection to an aquifer; the type of treatment provided; a history of an unexplained outbreak of drinking water-related cryptosporidiosis, where no specific action had been taken to prevent recurrence. Water companies' risk assessments are provided to the Inspectorate for review and confirmation of a significant risk of contravening the standard.

The risk classification does not, of itself, imply a contravention of the standard. Rather it identifies a potential for *Cryptosporidium* oocysts to be present in the treated water under certain conditions. For those works identified as being at significant risk, water companies must treat the water to ensure the standard is met. They must also demonstrate compliance by continuous monitoring and reporting the results of daily analysis to the Inspectorate. In 2004 the Inspectorate audited all monitoring points in use in England and Wales.

Water companies can revise a risk assessment whenever they believe a works is no longer a significant risk, typically, after a new treatment process has been installed and is operating successfully. Treatment processes at these works should be operated and maintained in a way that ensures the standard is met. As an alternative to continuous monitoring, a water company may install a treatment process capable of continuously removing or retaining particles greater than one micron diameter. Under these circumstances the company has to demonstrate the efficacy of the process to the Inspectorate. In cases where suitable treatment cannot be installed, companies have chosen either to abandon or operate them in combination with others where appropriate water treatment is in place.

Analysis of samples

The protocol issued with the regulations sets out the requirements for the laboratory facilities and the analytical method to be used. Testing can only be carried out at laboratories approved by the Inspectorate and these are subject to both announced and unannounced inspections. During 2004 each of the approved laboratories had at least one announced and one unannounced audit.

Normally samples must be tested within three days of being taken but if there is an indication at the works that the number of *Cryptosporidium* oocysts in the water may have increased (such as an increase in the turbidity of the water) tests must be completed within a day of the sample being taken.

Strict rules are laid down for all aspects of sampling and analysis. These rules provide robust evidence, should this be required, in a court of law. Full details of all these procedures are available on the Inspectorate's website.

Improvement programmes and monitoring results

When a works is identified as being at significant risk and the existing water treatment is considered to be inadequate, the Inspectorate agrees with the company a water treatment improvement programme. Table 5.8 shows all the works identified as being at significant risk and subject to regulatory monitoring for *Cryptosporidium* for all or part of 2004. Table 5.9 lists works with improvement programmes and the status of these.

The regulations involved water companies in taking over 45,000 samples across England and Wales for *Cryptosporidium* analysis in 2004. These results can be found in the regional sections of Part 1 of this report. The very low number of samples containing

ooocysts coupled with the lack of any reported outbreaks of cryptosporidiosis demonstrates the success of the regulatory framework as a public health protection measure.

Future of the *Cryptosporidium* Regulations

The regulations are an excellent example of a risk-based approach to regulation for the purpose of protecting public health. They have ensured that actions by water companies have been proportionate to risk whilst also providing the necessary degree of assurance required by local authorities, health authorities and consumers.

The Inspectorate is of the opinion that the lessons learned from this regulatory approach can be applied more widely in the context of implementing the water safety plan approach to drinking water quality published in 2004 by the World Health Organisation.

Table 5.8: Water treatment works where regulatory monitoring for *Cryptosporidium* was required in 2004

Water treatment works	Comments
England	
Anglian Water	
Bedford, Heigham, Marham, Saltersford, Stoke Ferry	
Bristol Water	
Littleton, Purton, Shipton Moyne,	
Oldford	Regulatory sampling ceased in May 2004 following the installation of a membrane process.
Bournemouth and West Hampshire Water	
Alderney Knapp Mill (Domestic Supply) Knapp Mill (Fawley) Matchams	
Stanbridge Mill	Notice of Satisfaction issued in December 2004 confirming that the site was no longer at significant risk, taking into consideration improvement work and monitoring results.
Essex and Suffolk Water	
Barsham, Langford, Langham, Ormesby	
Northumbrian Water	
Broken Scar, Horsley, Lumley, Warkworth	
Honeyhill	Part of the year only. Occasional sampling required when the River Tyne is used as the source water.
Mosswood	Part of the year only. Occasional sampling required when the River Tyne is used as the source water.
Portsmouth Water	
Fishbourne, Maindell, River Itchen, Soberton	
Lovedean	Part of the year only. Installation of membrane process completed during 2004.
Severn Trent Water	
Campion Hills, Church Wilne, Little Eaton, Mitcheldean, Mythe, Shelton, Strensham, Whitacre	
Trimpley	Monitoring ceased in January 2004. Part of the year only, depending on use.
South East Water	
Arlington, Barcombe 2, Bray Gravels, Bray River Crowhurst Bridge, Deep Dean, Friston Greywell, Hazards Green, Holywell-Cockhaise, Tonbridge	
Barcombe 1	Sampling subject to water source and flow.

Table 5.8: Water treatment works where regulatory monitoring for *Cryptosporidium* was required in 2004 (continued)

Water treatment works	Comments
Southern Water	
Arundel, Burham, Burpham	
Carisbrooke	Part of the year only. Revised <i>Cryptosporidium</i> risk assessment. Notice of Satisfaction confirming site no longer at significant risk issued in May 2004.
Hardham - river water	
Newmarket C and D	Part of the year only. Revised <i>Cryptosporidium</i> risk assessment. Notice of Satisfaction confirming site no longer at significant risk issued in May 2004.
Otterbourne - Groundwater	
Otterbourne - river water	
Plucks Gutter	Part of the year only, depending on use.
Sandown, Testwood Industrial, Testwood Main Unit	
South Staffordshire Water	
Hampton Loade	
South West Water	
Allers, Bastreet, Bratton Fleming, Crownhill, Delank, Dousland, Littlehempston, Pynes, Restormel, St Clear, Watercombe, Wendron	
Prewley	Sampling required when the West Okement River is in use as the source water.
Sutton and East Surrey Water	
Elmer	
Thames Water	
Addington, Dorney/Taplow, Eaton/Datchet, Fobney, Grimsbury, Hornsey, Old Chalford, Playhatch, Shalford, Sheafhouse (Blockley), Surrey Street, Swinford, Upper Swell	
Haslemere	Part of year only. A revised <i>Cryptosporidium</i> risk assessment. Notice of Satisfaction confirming the site was no longer at significant risk was issued in September 2004.
Speen	Part of year only. A revised <i>Cryptosporidium</i> risk assessment. Notice of Satisfaction confirming the site was no longer at significant risk was issued in September 2004.
Three Valleys Water	
Egham, Iver, Walton	

Table 5.8: Water treatment works where regulatory monitoring for *Cryptosporidium* was required in 2004 (continued)

Water treatment works	Comments
Batchworth	Part of the year only. Sampled during April due to membrane problems.
Chertsey	Part of the year only. Installation of membrane process completed during 2004.
Mill End	Part of the year only. Installation of membrane process completed during 2004.
United Utilities Water	
Bridgend	Regulatory monitoring commenced April 2004.
Cumwhinton	Regulatory monitoring commenced September 2004.
Dark Lane	
Franklaw	Regulatory monitoring commenced May 2004.
Hug Bridge	
Huntington	Regulatory monitoring commenced September 2004.
Hurleston	
Lancaster	Regulatory monitoring commenced October 2004.
Lightshaw	
Lostock	Regulatory monitoring commenced April 2004.
Rivington	Regulatory monitoring commenced November 2004.
Springfield Well	
Sutton Hall	Regulatory monitoring commenced September 2004.
Ulpha	Regulatory monitoring commenced September 2004.
Watchgate	Regulatory monitoring commenced October 2004.
Wessex Water	
Ashford, Belhuish Burngate, Bossington, Brixton Deverill, Calstone, Sturminster Marshall, Sutton Poyntz, Upton Scudamore (Springs)	
Corfe Mullen	Part of the year only. Installation of membrane process completed January 2004.
Friar Wadden	Part of the year only. Installation of membrane process completed January 2004.
Monkswood (Washpool)	Part of the year only. Installation of membrane process completed January 2004.
Yorkshire Water	
Acomb Landing, Eccup 2, Elvington, Huby, Irton, Loftsome Bridge, Ruswarp	
Chellow Heights (East)	Only when the River Nidd raw water aqueduct intakes are open.
Chellow Heights (West)	Only when the River Nidd raw water aqueduct intakes are open.
West Stonesdale	Part of the year only. Occasional sampling when the membrane process is bypassed.

Table 5.8: Water treatment works where regulatory monitoring for *Cryptosporidium* was required in 2004 (continued)

Water treatment works	Comments
Wales	
Dee Valley	
Llwyn Onn	
Boughton	Site is located in England.
Dŵr Cymru Welsh Water	
Bolton Hill, Brecon (Penygrug), Brecon (St Davids), Bretton Builth, Capel Dewi, Court Farm, Llechryd, Llyswen, Monmouth (Mayhill), Nantybawch, Pendine, Tynywaun	
Broomy Hill	Site is located in England.
Whitbourne	Site is located in England.

Table 5.9: Water treatment works where a *Cryptosporidium* programme applied in 2004

Water treatment works	Completion Date	Status	Comments
England			
Folkestone and Dover Water			
Drellingore	31-Dec-03	Process completed 2004	
Portsmouth Water			
Lovedean	31-Mar-04	Process completed 2004	
Severn Trent Water			
Bigwell	30-Jun-05	Process being installed	
Newent	31-Dec-05	Process being installed	
South East Water			
Beenhams Heath / Hurley	31-Dec-04	Process completed 2004	
Hartlake	30-Sep-03	Delayed	Construction complete, commissioning on-going
Itchell	30-Nov-04	Delayed	Work due to be completed Mar 2005
West Ham	30-Mar-05	Process being installed	
Southern Water			
Arundel	31-Mar-05	Process being installed	
Carisbrooke	30-Mar-04	No action required	Risk assessment revised, site no longer at risk
Newmarket C&D	30-Mar-04	No action required	Risk assessment revised, site no longer at significant risk
Otterbourne GW	31-Jul-03	Delayed	Construction completed 2004, commissioning on-going
South West Water			
Avon	31-Mar-04	Completed in 2004	
Sutton and East Surrey Water			
Dorking	31-Mar-05	Process being installed	
Elmer	31-Mar-05	Process being installed	
Thames Water			
Swinford	31-Mar-05	Process completed 2004	
Three Valleys Water			
Mill End	31-Dec-03	Process completed 2004	
West Hyde	31-Dec-03	Process completed 2004	
United Utilities Water			
Bankwood Springs	31-Dec-04	Delayed (completed Jan 05)	

Table 5.9: Water treatment works where a *Cryptosporidium* programme applied in 2004 (continued)

Water treatment works	Completion Date	Status	Comments
Barnacre	31-May-04	Process completed 2004	
Barnacre - TA	31-May-04	Process completed 2004	
Braesteads	31-Dec-04	Delayed	
Bridgend	30-Nov-03	Process completed 2004	
Bullfell	31-Dec-04	Delayed (completed March 05)	
Buttermere	31-Dec-04	Process completed 2004	
Cumwhinton	30-Sep-04	Process completed 2004	
Denton	31-Dec-04	Delayed (completed Jan 05)	
Fishmoor	31-Dec-04	Process completed 2004	
Franklaw	31-May-04	Process completed 2004	
Hayeswater	31-Dec-04	Delayed (completed March 05)	
Heaton Park	28-Feb-04	Process completed 2004	
Hodder	25-Dec-03	Process completed 2004	
Hoghton	31-May-04	Process completed 2004	
Hug Bridge	30-Oct-04	Process completed 2004	
Huntington	30-Sep-04	Process completed 2004	
Lamaload	28-Feb-05	Process being installed	
Longlands	25-Jun-04	Process completed 2004	
Lostock	30-Apr-04	Process completed 2004	
Millbrook	30-Apr-06	Process being installed	
Prescot Bypass	31-Jul-05	Process completed 2004	
Ridgegate	31-Jan-05	Process being installed	
Rivington	30-Nov-04	Completed 2003	
Springfield Springs	30-Nov-03	Process completed 2004	
Sutton Hall	30-Sep-04	Process completed 2004	
Swindale	31-Dec-04	Delayed (completed March 05)	
Thirlspot	30-Nov-03	Process completed 2004	
Ulpha	30-Sep-04	Process completed 2004	
Underscar	30-Nov-03	Process completed 2004	
Watchgate	31-Oct-04	Process completed 2004	
Wessex Water			
Brixton Deverill	30-Sep-04	No action required	Risk assessment being revised
Sturminster Marshall	30-Sep-04	No action required	Risk assessment being revised
Yorkshire Water			
Langthwaite	31-Dec-04	Delayed	
Wales			
Severn Trent Water			
Llanwrin	30-Nov-04	Delayed	

Products and processes in the provision of water supplies

Regulations 31 to 33 of the Water Supply (Water Quality) Regulations 2000 provide for the approval of substances, products and processes used in the provision of public water supplies. Approvals are issued by the Secretary of State for Environment, Food and Rural Affairs and the National Assembly for Wales (collectively referred to as the Authorities). The legislative framework is different in Scotland and Northern Ireland. Nevertheless, approvals issued by the Authorities in England and Wales are recognised throughout the United Kingdom and in many other parts of the world.

The Committee on Products and Processes

The Committee on Products and Processes for Use in Public Water Supply (the Committee) advises the Authorities on approval issues. The Committee is an Advisory Non-Departmental Public Body. It consists of six members with expertise in engineering, materials science, toxicology, chemical analysis, water treatment and consumer relations. The Committee met approximately every two months and the dates of future Committee meetings are posted on the Inspectorate's website: <http://www.dwi.gov.uk/cpp/ccmeet.shtm>.

The Inspectorate provides technical and administrative support to the Committee. The Committee's Technical Secretariat can be contacted on cpp@defra.gsi.gov.uk

Basis of approval

When considering an application for approval, the Committee considers only whether the use of a substance or product will adversely affect the quality of water or cause a risk to the health of consumers. The Committee does not assess fitness for purpose and approval by the Authorities cannot be taken as a favourable assessment of the performance or technical merits of a product.

Applications are considered for all construction products used in contact with water in water treatment processes, water supply pipelines (including raw water pipelines) and drinking and raw water storage installations. In addition they consider water treatment chemicals and filtration media which are not covered by a published BS EN standard; products that conform with a BS EN standard may be used without the approval of the Authorities.

A series of advice sheets gives an overview of the regulatory requirements and information that must be provided in support of applications. The sheets include information on the general approval procedure, Instructions of Use documents and Advice on the Application requirements for certain product types. The Committee also publishes a series to test protocols for use in assessing the suitability of products for use with drinking water. Those advice sheets and protocols are available on our website. <http://www.dwi.gov.uk/cpp/guidance.shtm>.

The annual list of approved products

A list is published each year of all substances, products and processes for which approval has been granted, refused, revoked or modified, or for which their use has been prohibited. This document is posted on the Inspectorate's website: <http://www.dwi.gov.uk/cpp/pagea.shtm>.

Activities during 2004

During 2004 the Committee met on six occasions and 95 applications for approval were considered, including 58 new applications. The Authorities approved 59 products and no product was refused approval. The Authorities agreed to the modification of approval conditions to five currently listed products.

Communications with water industry and approval holders

Six Regulation 31 Information Letters were issued in 2004:

- *1/2004* introduced the 2003 list of approved products.
- *2/2004* informed water companies of a recently developed method of analysis for acrylamide monomer in drinking water, encouraged water companies to use the method where appropriate and sought water company input to a review of the controls on the use of polyacrylamide flocculants in drinking water treatment.
- *3/2004* gave notice of the introduction on 30 June 2004 of a new condition of approval for factory-applied cement mortar lined pipes.
- *4/2004* initiated the process of consultation over the new Operational Requirements and the associated Code of Practice for resin materials that are applied in-situ to water supply pipes.
- *5/2004* set out the arrangements for implementing the control of the minimum level of hardness in water supplies where softening or desalination treatment is used. Water companies were requested to notify the Inspectorate of water treatment works where they have installed, or propose to install, softening or desalination treatment, or any other treatment that might necessitate control of hardness including re-hardening of water.
- *6/2004* provided further guidance on the continuing use of emergency equipment that had been obtained before the introduction of the Water Supply (Water Quality) Regulations 2000 (England) and 2001 (Wales) and for which records of any testing or approval relating to fitness for use in contact with drinking water are not available.

The layout and content of the Committee's area of the Inspectorate's website has been extensively revised during 2004 and now includes:

Revision of relevant European Standards as BS EN numbered standards;

Review of the Committee's audit scheme;

Addition of four Frequently Asked Questions (FAQ);

Revision of application forms, advice sheets, "instruction for use" guidance and test protocols;

Introduction of Summary minutes of committee meetings.

Audit of approved products

A requirement for audit of approved products was introduced in July 2002 and the programme of auditing, which started in autumn 2002, has continued throughout 2004. To date 179 products have been audited and 50 formerly approved products have been removed from the List of Approved products. Some products have been removed from the list because they are no longer available; in four cases approval has been revoked because the product failed the audit tests or because the approval holder had failed to comply with a condition of approval. Full details of products removed and revoked during 2004 are contained in Appendix 1 and 2 of the 2004 List of Approved Products.

European developments in construction products and treatment chemicals

The majority of chemicals and filter materials for drinking water treatment are now the subject of European standards. A full listing of standards published by BSi Standards in its BS:EN series is contained in Appendices 1.6 and 1.7 in the List of Approved Products. Appendix 1.8 lists the European standards for testing the effects of organic materials on water intended for human consumption.

The Inspectorate serves as the UK representative on the European Commission's Regulatory Group - Construction Products Drinking Water. This group is developing the European Acceptance Scheme (EAS) for drinking water construction products. The EAS will provide harmonised arrangements throughout the European Union for testing and acceptance of drinking water construction products. Progress with the EAS and a copy of the interim report are posted on the DG Enterprise website: http://europa.eu.int/comm/enterprise/library/enterprise-europe/issue10/articles/en/enterprise12_en.htm

The Inspectorate has a number of initiatives underway preparing for the transition from national to European requirements for testing and certification. These include:

Meetings to disseminate information about the EAS and its implications for the UK (details of current activities are posted on our website: www.dwi.gov.uk/cpp/seminar.shtm).

Certification and testing infrastructure. BuildCert and BSi are now notified bodies for the purposes of the EAS. The Committee's designated test laboratories are being encouraged to provide testing services.

Research to assess the impact of European test requirements on the UK water industry and its suppliers (details of research outputs are posted on the Foundation for Water Research website: www.fwr.org.uk). Where appropriate, early implementation of European test requirements.

The EAS will replace the testing and certification responsibilities of the Water Regulations Advisory Scheme (WRAS) and the approval powers of the Government Authorities. In preparation for the EAS, WRAS and the Committee now use jointly designated test laboratories.

