

The Provision and Quality of Drinking Water in Ireland

A Report for the Year 2010



Environmental Protection Agency

The Environmental Protection Agency (EPA) is a statutory body responsible for protecting the environment in Ireland. We regulate and police activities that might otherwise cause pollution. We ensure there is solid information on environmental trends so that necessary actions are taken. Our priorities are protecting the Irish environment and ensuring that development is sustainable.

The EPA is an independent public body established in July 1993 under the Environmental Protection Agency Act, 1992. Its sponsor in Government is the Department of the Environment, Community and Local Government.

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The work of the EPA is carried out across four offices:

- Office of Climate, Licensing and Resource Use
- Office of Environmental Enforcement
- Office of Environmental Assessment
- Office of Communications and Corporate Services

The EPA is assisted by an Advisory Committee of twelve members who meet several times a year to discuss issues of concern and offer advice to the Board.



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Environmental Protection Agency

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ISBN: 978-1-84095-419-7

11/2011/750

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ACKNOWLEDGEMENTS

The Environmental Protection Agency (EPA) would like to acknowledge the help and contribution of all the local authorities and the National Federation of Group Water Schemes in the preparation of this report. Thanks also to Deirdre Kirwan, Una Cullen and James Doyle (EPA) for their work with the EDEN system to manage the drinking water data, to Aisling McElwain (EPA) for her assistance in the preparation of the geographic information system maps for this report and to Brian MacDomhnaill of the National Federation of Group Water Schemes for the section on 'Group Water Schemes and Private Water Supplies'. Special thanks are due to Mr. Dave Molloy and Dr. Una Fallon from the Health Service Executive.

The authors would also like to acknowledge the assistance of colleagues: Derval Devaney, Cliona Ni Eidhin, Margaret Keegan, Niall Dunne, Niamh O'Neill-Kennedy, Ruth Barrington, Teresa Byrne, Alan Andrews, Nonie Quane, Conor Ruane, Bobby O'Keeffe, Daniel O'Neill and Rosemarie McGowan.

This report was prepared under the direction of Mr. Dara Lynott, Director of the Office of Environmental Enforcement.

EXECUTIVE SUMMARY

The *European Communities (Drinking Water) No. 2, Regulations, 2007* assign the Environmental Protection Agency (EPA) the role of supervisory authority over public drinking water supplies and provides powers of enforcement to ensure actions are taken where the quality of public drinking water is deficient.

Each year the EPA collects and analyses over 250,000 Water Services Authority monitoring results for all drinking water supplies. This current report assesses the safety and security of drinking water supplies based on the results of Water Services Authority monitoring carried out in 2010 and enforcement by the EPA in the same period. Analysis is carried out on three groups of parameters - microbiological, chemical and indicator. In public health terms the microbiological are the most important as their presence can indicate a potential risk to health, followed by the chemical for which prolonged exposure can indicate a potential risk to health and the indicator parameters which are not a risk to health but indicate that an investigation and corrective action is required before it becomes a potential risk to health.

The EPA is required to be notified by local authorities of any failure to meet the microbiological and chemical standards or where there is a potential danger to human health and is responsible for ensuring that the cause of the failure is investigated and that appropriate corrective action is taken by the local authority.

In Ireland, the majority of drinking water comes from public water supplies (84.8%) with the remainder provided by group water schemes and private supplies (including wells serving single houses).

Safety of water supplies:

The safety of water supplies in Ireland is determined by comparing the results of monitoring tests carried out on 945 public water supplies, 671 public group water schemes, 497 private group water schemes and 1,284 small private supplies with the drinking water standards.

On water supply safety, the EPA found that in 2010:

- *Escherichia coli* (*E. coli* – a bacteria that is an indicator of whether human or animal waste has entered a water supply) was detected during compliance monitoring on at least one occasion in 2.2% of public water supplies (20), continuing the downward trend of recent years. Figure E-1 shows the positive trend in microbiological compliance for public water supplies since 2004.
- The incidence of *E. coli* in the larger public water supplies (i.e. serving > 5,000 persons) was 0.01% of samples. This figure is in line with countries such as England and Wales (0.02%), Netherlands (0.02%)¹ and Scotland (0.01%). Thus, for the first time large public water supplies in Ireland show similar compliance levels to similar supplies in England and Wales, and the Netherlands. These large supplies provide drinking water to almost 3 million people in Ireland.

¹ Netherlands data is from 2009

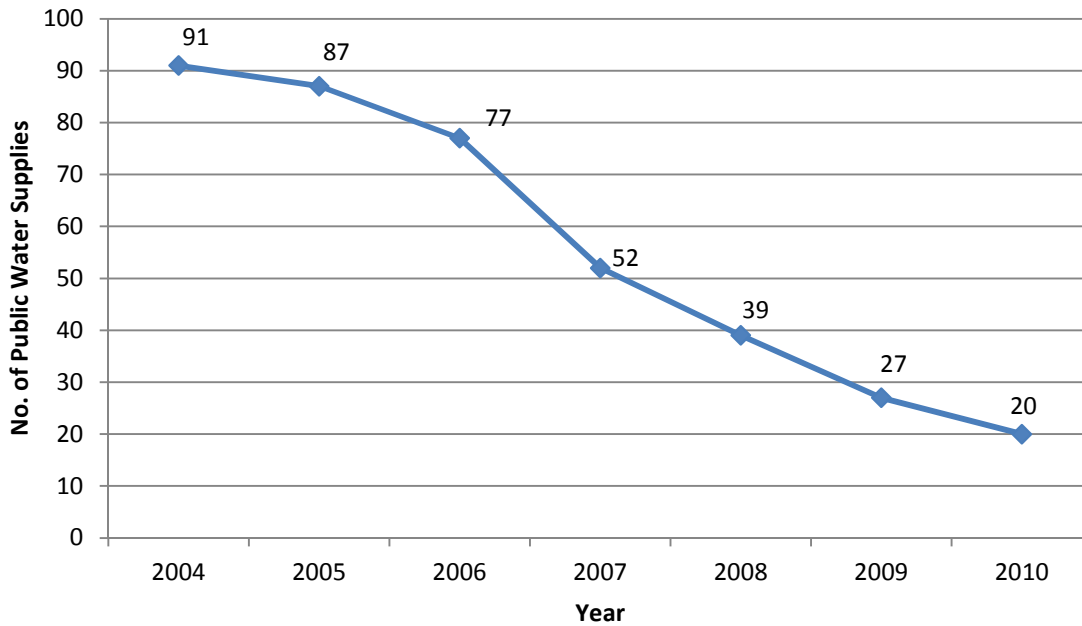


Figure E-1: Number of public water supplies in which *E. coli* was detected in compliance monitoring at least once from 2004 to 2010.

- The number of private group water schemes where *E. coli* was detected dropped from 87 (17.0%) in 2009 to 56 (11.6%) in 2010. In general, the microbiological quality of private group water schemes remains inferior to public water supplies.
- Chemical standard compliance in public water supplies was 99.2% in both 2009 and 2010. That said, trihalomethanes (THMs) compliance remains an area for improvement. An analysis of the causes of THM non-compliances indicates that the majority of THM failures were caused by either the absence of adequate treatment to remove organic matter or the presence of treatment that is incapable of removing organic matter (which are THM precursors).
- Overall compliance with indicator parameters such as aluminium (97.8%) and turbidity (92.0%) at the water treatment plant is in need of further improvement.

Security of water supplies:

To improve the performance of a supply and to enable a supply to be removed from the Remedial Action List, the necessary remedial works should be completed to the satisfaction of the EPA. For a supply to be ultimately secure, a Water Services Authority needs to put in place a water safety plan. Such a plan provides security to the authority that it will not be hindered in achieving the objective of clean and wholesome drinking water.

In relation to the security of water supplies, the EPA found that:

- A remedial action list (RAL) of public water supplies was prepared by the EPA in 2008. Since then, 49% (166) of supplies on the original RAL have been removed from the RAL because the necessary remedial actions have been completed. Remedial works have been completed in a further 39 supplies and the Water Services Authorities are currently in the process of verifying the effectiveness of the remedial works. Remedial works in a further 97 supplies are scheduled for completion by the end of 2011.

- At the end of September 2011, 240 public water supplies remained on the RAL (67 new supplies have been added to the RAL since 2008). The list includes 70 supplies identified as high risk where appropriate barriers to *Cryptosporidium* need to be installed. The EPA expects remedial works will be complete in 35 of these supplies by the end of 2011. The progress made with the reduction in the number of public water supplies on the RAL is illustrated in Fig. E-2. The population served by supplies that have been removed from the RAL is 600,000. The remaining supplies on the RAL collectively supply water to a population of 1,078,739 persons. Six Water Services Authorities (in respect of 15 supplies) did not provide an estimation of the timeframe for the completion of remedial works.

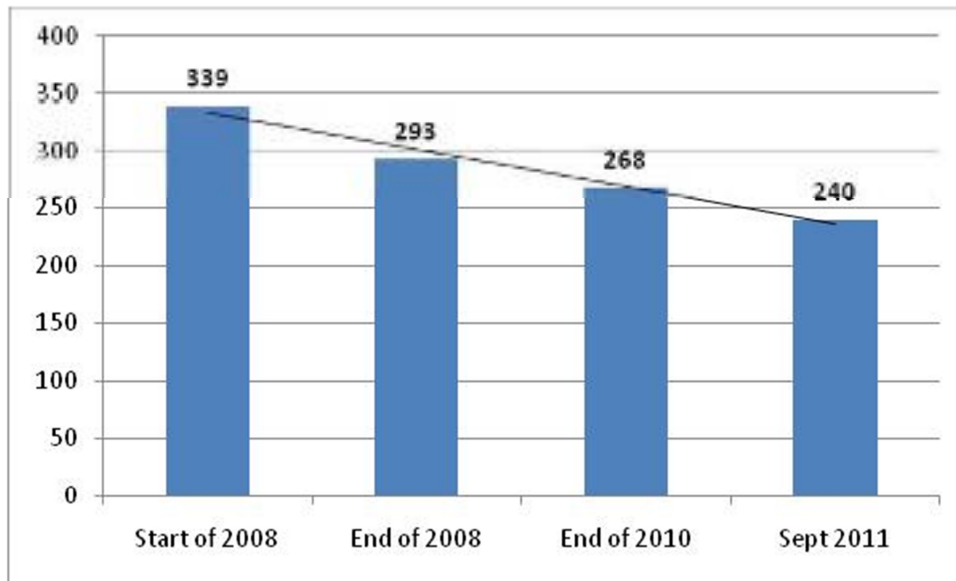


Figure E-2: Progress with the number of public water supplies on the Remedial Action List.

- There has been an 18% increase in the provision of chlorine monitors and alarms at treatment plants. At the end of 2010, 99% of public water supply treatment plants had such equipment in place. The remaining work was completed in 2011 and all public water supplies now have a chlorine monitor and alarm in place. These monitors and alarms are a vital instrument to control the disinfection process and thus reduce the incidence of *E. coli* in drinking water.
- 43 new boil water notices and 7 new water restrictions notices (serving approximately 65,000 persons) were put in place by 16 Water Services Authorities in 2010. Adverse weather conditions (freezing) in December 2010 alone led to the imposition of boil water notices on 6 public water supplies (serving approximately 21,000 persons). There was also an increase in the number of precautionary boil water notices put in place arising from remedial works being carried out on public water supplies.

The Enforcement of Drinking Water Quality in Ireland

The EPA was notified of the detection of *E. coli* in public water supplies on 46 occasions in 2010, down from 63 occasions in 2009. Analysis of the cause of these failures indicates that there has been a dramatic drop in the number of failures attributed to inadequate treatment at the plant (down from 24 failures to 13) and chlorination process breakdown (down from 35 to 13) compared to 2005 when this analysis was previously carried out. This is undoubtedly due to the improvements to the security

of disinfection systems such as the installation of chlorine monitors and alarms, duty/standby dosing arrangements and flow proportional/residual based dosing.

There has been a drop in the number of public water supplies where the detection of trihalomethanes was notified to the EPA from 96 in 2009 to 79 in 2010. Nonetheless, this is an area for improvement. THM exceedances can be eliminated by reducing organic matter in the raw water, optimising treatment to remove organic matter and optimising chlorination. However, care must be taken not to reduce chlorination in such a way as to compromise the microbial safety of drinking-water. A balance should be struck between an uncertain, small and long-term risk associated with elevated THMs and the significant, large, immediate and serious risk associated with inadequate chlorination e.g. *E. coli* O157 outbreak. All supplies where persistent or intermittent THM failures have been detected are on the EPA Remedial Action List and action programmes are being implemented to return such supplies to compliance.

The EPA carried out 83 audits of water treatment plants in 2010. Improvements were found across all key indicators examined with the exception of source protection and reservoir security which were identified as areas for further improvement. Source protection is the first barrier for the production of safe drinking water quality. By decreasing contamination of source water, the amount of treatment and quantity of chemicals needed to treat the water is reduced. Uncovered vents or unlocked access points in reservoirs can allow unauthorised human or animal access to treated water resulting in contamination. The EPA issued 9 legally binding Directions to 7 local authorities in 2010. The Directions require specific actions to be undertaken to improve the security of the relevant public water supply.

The EPA continues to adopt a risk based and outcome-driven approach to the enforcement of the Drinking Water Regulations – focusing on issues that present the greatest risk to health, such as contamination with *E. coli* and *Cryptosporidium*. The Agency continues to track and report the number of supplies on the RAL closed out; drinking water exceedance notifications received; active boil water notices on public water supplies; the public water supplies without chlorine monitors and alarms, supplies served by surface water that do not have *Cryptosporidium* barriers in place; and the number of Water Services Authority staff trained in the EPA *Disinfection Manual* and the EPA *Drinking Water Handbook*.

Provision of Drinking Water Information to the Public

The annual drinking water report provides a snapshot of the quality of drinking water and the outcomes of enforcement work by the EPA. This report also provides information for policymakers and benchmarks the quality of drinking water in Ireland with other EU Member States. The posting of up-to-date monitoring results by Water Services Authorities on their websites is also important as it allows consumers to gain timely access to information on the quality of their drinking water. To this end, the Minister for Environment issued a circular on 20th July 2009, requesting Water Services Authorities to provide up to date information on the quality of drinking water on their respective websites. The EPA found that just over half of the Water Services Authorities (19) are currently publishing some or all of their drinking water quality data as required by the Ministerial direction. Mayo and Kerry County Council were found to be in substantive compliance with the Ministerial direction providing detailed information on their drinking water supplies to the public.

1.

Drinking Water in Ireland



1. Drinking Water in Ireland

This report covers the quality of drinking water in Ireland in 2010. Issues identified by the Environmental Protection Agency (EPA) during compliance checking on the safety and security of water supplies are also presented along with the enforcement actions taken by the EPA in 2010.

1.1 Drinking Water Supply in Ireland

To ensure that the EU and national drinking water standards are met, each water supply must be monitored on a regular basis. The monitoring frequency is legally set out in national Regulations, and minimum monitoring frequencies for drinking water depend on the size of the supply in question. Though the Regulations specify two types of supplies (“public” and “private”), in practice there are five distinct categories of water supply in Ireland (see also Table 1-1):

- **Public Water Supplies (PWS).** These are Water Services Authority operated schemes (though these may be run by a private contractor on behalf of the Water Services Authority). They supply water to the majority of households in Ireland.
- **“Public” Group Water Schemes (PuGWS).** These are schemes where the water is provided by the Water Services Authority but responsibility for distribution of the water rests with the group scheme. These schemes tend to be supplied by larger public water supplies.
- **“Private” Group Water Schemes (PrGWS).** These are schemes where the owners of the scheme (usually representatives of the local community) source and distribute their own water. Combined, the “public” and “private” group water schemes supply water to around 8% of the population of Ireland.
- **Small Private Supplies (SPS).** This is a group of different types of supplies (1,284) comprising industrial water supplies (such as those used in the brewing industry) to boreholes serving commercial premises (e.g. pubs, hotels etc.) and public buildings (e.g. schools, nursing homes).
- **Exempted Supplies.** These are supplies serving less than 50 persons and not supplying water as part of a public or commercial activity. The majority of these supplies are private wells serving individual houses. These supplies serve approximately 7% of the population.

This report and the assessment of monitoring carried out covers the year 2010.

Table 1-1: Water Supply Zones (WSZs) and Proportion of the Population Served, 2010.

Type of Supply	No. of WSZs ²	% of Total Population Served
Public Water Supply	945	84.8
Public Group Water Scheme	671	2.6
Private Group Water Scheme	497	5.2
Small Private Supply	1,284	0.7
Exempted Supplies ³	N/A	6.7

² A water supply zone (WSZ) is a geographically defined area within which drinking water comes from one or more sources and water quality is uniform.

³ Exempted supplies are supplies that are provided from either an individual supply providing less than 10m³ a day on average or serving fewer than 50 persons and do not supply water as part of a public or commercial activity. Exempted supplies may also be a supply used exclusively for the purposes in respect of which the sanitary authority is satisfied that the quality of the water has no influence, either directly or indirectly, on the health of consumer's concerned (e.g. industrial cooling water).






















In Ireland the majority of drinking water originates from surface water (81.9%) and the remainder originates from groundwater (10.3%) and springs (7.8%). Public water supplies are particularly reliant on surface water sources. The numbers of Small Private Supplies reported have increased in the past year. This may be because of more comprehensive reporting by Water Services Authorities. The owners of Small Private Supplies are subject to the requirements of the Drinking Water Regulations and Water Services Authorities have an enforcement role with regard to these supplies, which is set out in the Regulations.




1.2 Quality of Drinking Water in Ireland

The Regulations set out the required standard for each of the 48 parameters. Compliance is assessed by comparing the results of the analysis of samples taken from supplies with the required standard set out in the Regulations.

Table 1-2 lists the level of compliance with seven key water quality parameters of the 48 parameters to be monitored under the Regulations. These parameters are *E. coli*, *Enterococci*, lead, nitrate, trihalomethanes, aluminium and turbidity (at the water treatment plant). Appendix IV provides the compliance levels of each supply category against the 48 parameters set out in the Regulations.

Table 1-2: Non-compliance with Drinking Water Standards by Supply Category for samples taken in 2010⁴.

Parameter	Public Water Supplies		Public Group Water Schemes		Private Group Water Schemes	
	No. of non-compliant samples	% of non-compliant samples	No. of non-compliant samples	% of non-compliant samples	No. of non-compliant samples	% of non-compliant Samples
Microbiological Parameters						
<i>E. coli</i>	 22	0.2	 8	0.5	 72	4.1
<i>Enterococci</i>	 5	0.2	 3	1.3	 8	2.4
Chemical Parameters						
Lead	 30	1.2	 0	0	 0	0
Nitrate	 15	0.3	 0	0	 3	0.3
Trihalomethanes (Total)	 162	10.7	 25	13.8	 43	14.5
Indicator Parameters						
Aluminium	 174	2.3	 37	3.2	 17	1.4
Turbidity (at WTW)	 126	8.3	 2	6.1	 2	3.4

 Improvement on 2009
  Disimprovement on 2009
  Similar to 2009

⁴ This assessment of compliance is based on results submitted.

Chapter 2 provides a discussion of compliance with the microbiological, chemical and indicator parametric values per water supply zone in 2010. Appendix I contains a summary report on a county-by-county basis for all Water Services Authorities.

European Union (EU) Member States are required to report to the European Commission on the quality of drinking water in supplies serving more than 5,000 persons every three years to historically compare the quality of drinking water across Europe. A number of Member States including Ireland, the UK and the Netherlands publish this information on an annual basis. However, the majority of EU Member States do not make drinking water quality information available at this frequency.

A comparison of non-compliance with the *E. coli* parametric value in Irish public water supplies with the UK, Czech Republic and the Netherlands has been a feature of recent EPA drinking water reports. The majority of public water supplies in Ireland are small (serving less than 5,000 persons) while in the UK and the Netherlands few public water supplies of this size exist. Hence, Fig. 1-2 illustrates the comparison of larger Irish public water supplies with those in the UK and the Netherlands. It also shows that the smaller supplies (i.e. serving < 5,000 persons) have a higher rate of non-compliance with the *E. coli* parametric value as compared to the larger supplies.

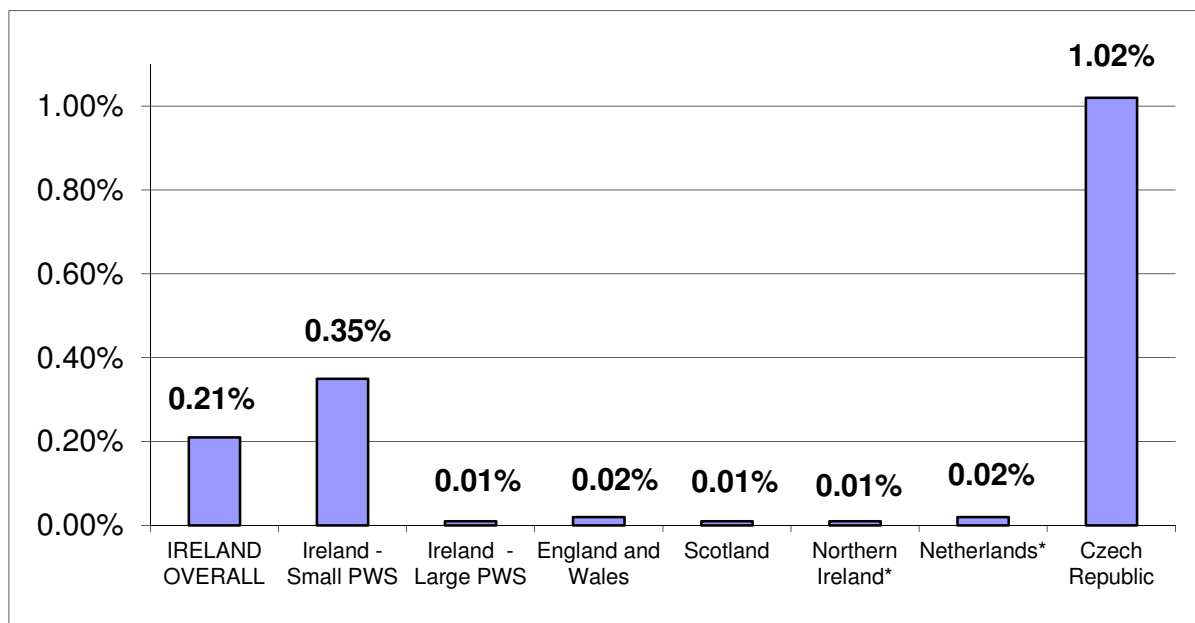


Figure 1-2: Comparison of non-compliance with the *E. coli* parametric value in large public water supplies (> 5,000) in Ireland and other EU Countries for 2010 (for number of non-compliant *E. coli* samples)
 (Source: Member State Annual Drinking Water Reports – data for countries marked * is from 2009).

The quality of water supplied in England and Wales to similar sized water supplies in Ireland (i.e. those serving >5,000 persons) compares favourably in 2010 (see Fig 1-2). In such supplies the percentage of non-compliant samples has dropped from 0.10% to 0.01% and is now similar to England and Wales for the first time.

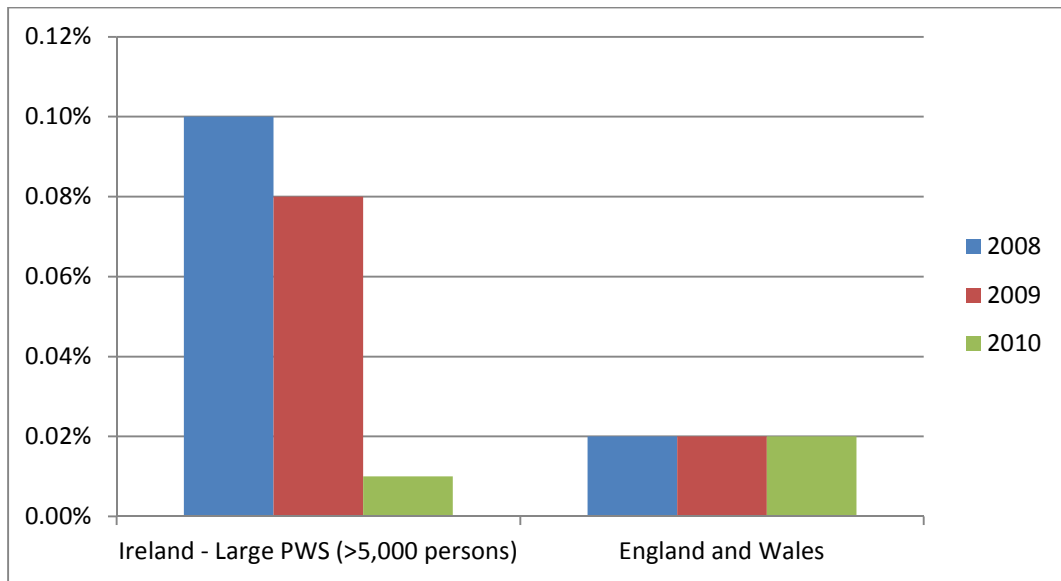


Figure 1-3. Comparison of Non-Compliance with the E. coli parametric value in England and Wales with large public water supplies (serving >5,000 persons) in Ireland.

1.3 Securing Water Supplies

For Ireland's drinking water supplies to be deemed secure every WSA must profile and manage the risks to the supply using the water safety plan approach. While there is no legal requirement for WSA to complete water safety plans, the EPA will continue, as a priority to support the development of water safety plans by WSAs with the emphasis in 2012 being on the larger public water supplies.

The EPA's safe and secure model (see Figure 1-4) for the provision of drinking water supply is consistent with the World Health Organisation's water safety plan approach and is the most effective means of consistently ensuring the safety of a drinking water supply. This is done through the use of a comprehensive risk assessment and risk management approach that encompasses all steps from the catchment to the consumer. A drinking water safety plan is developed specifically for each drinking water supply and should be considered as a risk management strategy to ensure the continuous supply of safe water. A plan should:

- Create and protect value for the security of the water supply;
- Be an integral part of all organisational processes of the water supply chain;
- Be part of the decision making process at every level of the water supply chain;
- Be dynamic, iterative and responsive to change;
- Explicitly address uncertainty;
- Facilitate the continual improvement of the security of the water supply.

In Ireland, responsibility for the development and implementation of water safety plans for public water supplies rests with the Water Services Authorities. In 2010, the EPA collaborated with Galway City Council and neighbouring Water Services Authorities to develop a water safety plan for the Terryland public water supply. This pilot project will provide a useful reference to other Water Services Authorities in adopting and implementing their own water safety plans. The pilot project assisted in the preparation of the *EPA Advice Note No.8 – Developing Drinking Water Safety Plans* and is available on the EPA website. To improve the security of a supply and to enable a supply to be removed from the Remedial Action List the necessary remedial works must be completed to the satisfaction of the EPA.

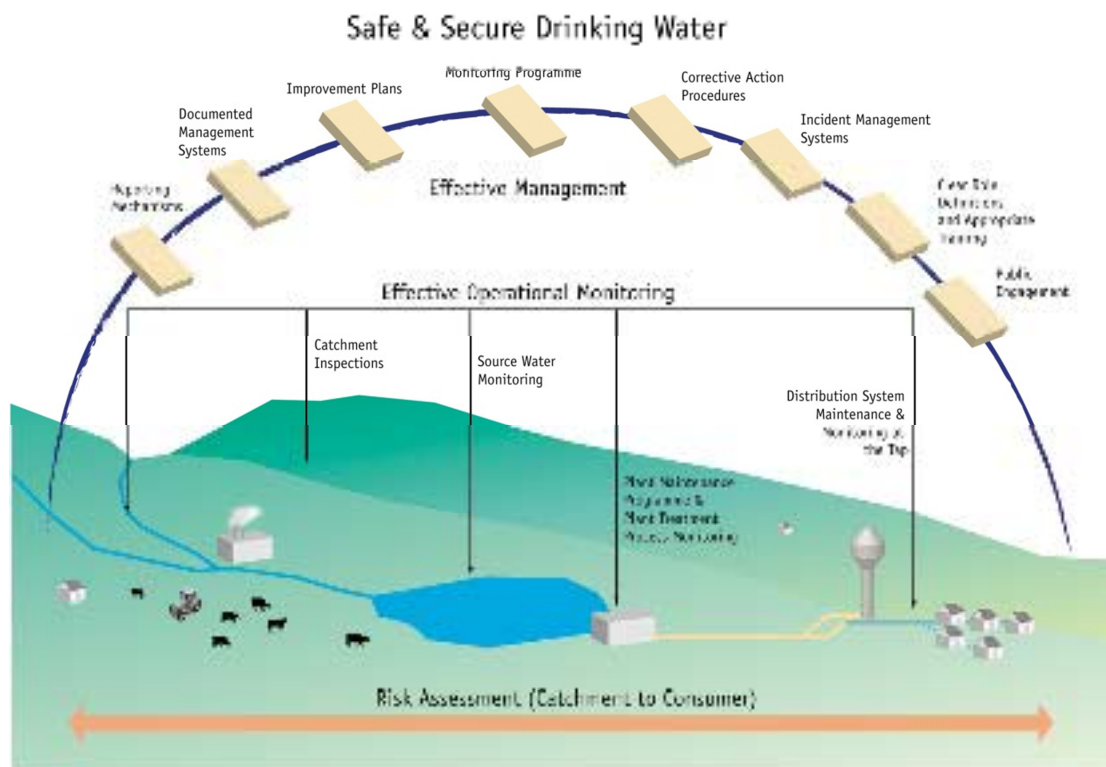


Figure 1-4. Essential Components of a Drinking Water Safety Plan.

2.

The Safety of Drinking Water



2. THE SAFETY OF DRINKING WATER

2.1 Monitoring

This report assesses the monitoring carried out on treated drinking water during 2010. The safety of drinking water supplies can only be validated if the drinking water supplies in question have been monitored adequately. The level of monitoring undertaken by Water Services Authorities is in line with the levels set out in the 2007 Drinking Water Regulations.

Table 2-1 below provides a summary of the number of water supply zones (WSZ⁵) not monitored in 2010.

Table 2-1: Summary of the Water Supply Zones (WSZs) not monitored in 2010.

Parameter	No. of WSZs Not Monitored in 2010	Estimated Population Served in 2010	No. of WSZs Not Monitored in 2009	Estimated Population Served in 2009
Public Water Supplies	2 (0.2%)	39	3 (0.3%)	522
Public Group Water Schemes	3 (0.5%)	242	2 (0.3%)	375
Private Group Water Schemes	2 (0.4%)	50	1 (0.2%)	49

2.1.1 Monitoring of Public Supplies

Monitoring of public water supplies has improved. Two public water supplies (0.2%) serving 39 persons were not monitored in 2010. This compares to 3 public water supplies (0.3%) serving 522 persons not monitored in 2009.

2.1.2 Monitoring of Private Supplies

Three public group water schemes (0.5%) serving 242 persons were not monitored in 2010. This compares to two public group water schemes (0.3%) serving 375 persons not monitored in 2009.

Two private group water schemes (0.4%) serving 50 persons were not monitored in 2010. This compares to one private group water scheme (0.2%), serving 49 persons not monitored in 2009.

2.1.3 Overall Monitoring

In total, seven drinking water supplies (serving 331 persons) were not monitored in 2010; this can be compared to the six drinking water supplies (serving 946 persons) not monitored in 2009. Overall, the monitoring of public and private water supplies has improved but the monitoring of a number of small private supplies remains somewhat inadequate. It should also be noted that many of the compliant Water Services Authorities are carrying out monitoring far in excess of that required by the Regulations.

2.2 Compliance with the Microbiological Standards

The most important health indicators of drinking water quality in Ireland are the microbiological parameters and, in particular, *E. coli*. These parameters are present in very high numbers in human or animal faeces and are rarely found in the absence of faecal pollution in surface waters or groundwaters. As such, the presence of *E. coli* in drinking water indicates that the treatment process at the water treatment plant is not operating adequately or that contamination has entered the water

⁵ A WSZ is a geographically defined area within which water intended for human consumption comes from one or more sources and water quality may be considered as being approximately uniform.

distribution system after treatment. The World Health Organisation (2008⁶) states that: “the presence of *E. coli* provides evidence of recent faecal contamination, and detection should lead to consideration of further action, which could include further sampling and investigation of potential sources such as inadequate treatment or breaches in the distribution system integrity”.

Similar to *E. coli*, *Enterococci* bacteria are present in large numbers in sewage and water environments polluted by sewage or wastes from humans and animals. They are generally present in numbers lower than *E. coli* but they survive longer than *E. coli* and thus can indicate pollution that has occurred in the past.

2.2.1 *E. coli*

The majority of the population (84.8%) receive their water from public water supplies. There has been a further reduction in the percentage of public water supplies and private group water schemes contaminated with *E. coli* during 2010. Since 2005, there has been a 77% reduction in the number of public water supplies contaminated with *E. coli*. However, the percentage of private group water schemes exceeding the *E. coli* parametric value remains unacceptably high at 11.6% (Table 2-2). The number of private group water schemes contaminated with *E. coli* during 2010, as a proportion of the total number of schemes (see Fig 2-2).

Table 2-2: Summary of Water Supply Zones (WSZs) where *E. coli* was detected at least once in 2010.

	No. of WSZs monitored in 2010	No. of WSZs with exceedances in 2010
Public Water Supplies	929	20 (2.2%)
Public Group Water Schemes	656	6 (0.9%)
Private Group Water Schemes	484	56 (11.6%)
Small Private Supplies	972	72 (7.4%)
Total:	3041	154 (5.1%)

A total of 154 supplies (out of 3,041 supplies) failed to meet the standard for *E. coli* at one time or more during the 2010, down from 200 in 2009 (Table 2-2). Overall, *E. coli* was detected at least once in 5.1% of water supplies during 2010, an improvement from 6.6% in 2009. The majority of supplies where *E. coli* was detected were private group water schemes and small private and public water supplies.

⁶ World Health Organisation (2008). WHO - Guidelines for Drinking-water Quality – third edition incorporating the first and second addenda, Volume 1, Recommendations (see Appendix IV).

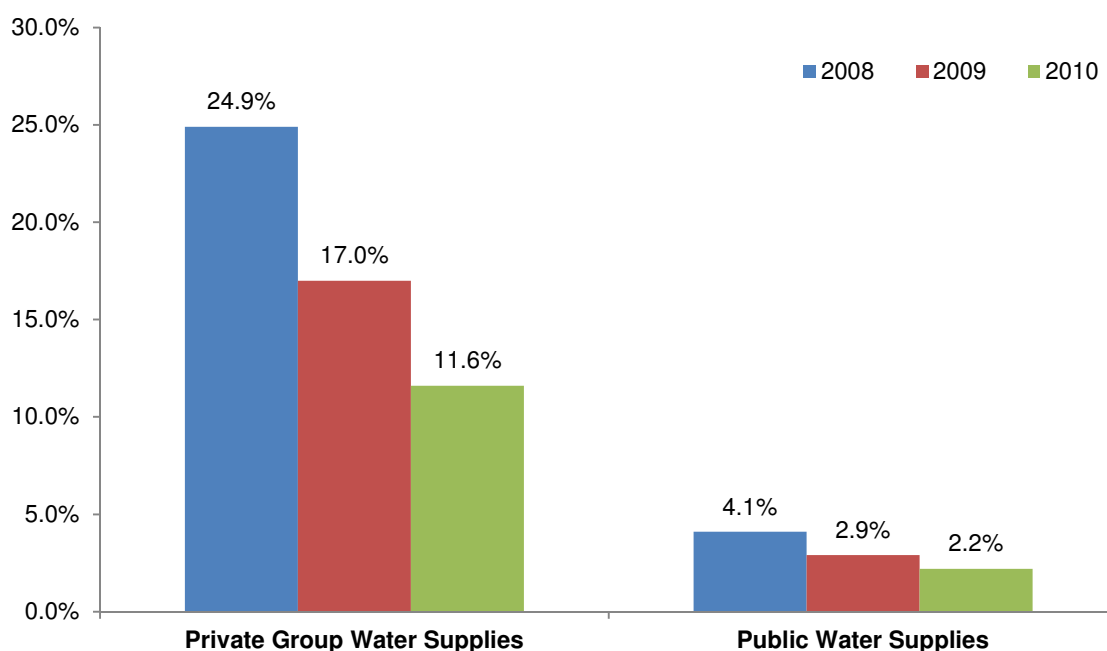


Figure 2-1: Percentage of supplies where *E. coli* was detected, 2007 to 2010.

2.2.2 *Enterococci*

The total number of supplies where *Enterococci* was detected in 2010 was 61 compared to 83 in 2009. There was a decrease in the number of public water supplies and private group water schemes failing to meet the *Enterococci* parametric value while the number of public group water schemes where *Enterococci* was detected increased. The level of non-compliance with the *Enterococci* parametric value in small private supplies remained at the same level.

Table 2-3: Summary of Compliance with the *Enterococci* Parametric Value, 2010.

	No. of WSZs monitored in 2010	No. of WSZs with Exceedances in 2010	No. of WSZs monitored in 2009	No. of WSZs with Exceedances in 2009
Public Water Supplies	683	5 (0.7%)	703	20 (2.8%)
Public Group Water Schemes	134	3 (2.2%)	119	1 (0.8%)
Private Group Water Schemes	261	8 (3.1%)	248	14 (5.6%)
Small Private Supplies	467	45 (9.6%)	465	48 (10.3%)
Total:	1,545	61 (3.9%)	1,535	83 (5.4%)

2.3 Compliance with the Chemical Standards

The Regulations set out the required quantitative standard for each of the 26 chemical standards. Table 2-4 provides a complete list of the chemicals monitored under the Regulations. Chemicals monitored include; metals (e.g. lead), naturally occurring trace elements (e.g. boron), chemicals originating from organic and inorganic sources (e.g. nitrate) and disinfection by-products (e.g. trihalomethanes). Of the 26 chemical parameters, 100% sample compliance was reported for 11 parameters in 2010, while compliance levels in excess of 99% were reported for a further 10 parameters (Table 2-4). Compliance for 2 parameters was less than 99% in 2010 (fluoride and trihalomethanes). Overall, chemical compliance levels increased from 99.2% in 2009 to 99.3% in 2010. Three additional parameters (acrylamide, epichlorohydrin and vinyl chloride) do not require to be directly monitored but are controlled by product specification.

Table 2-4: Total Number of Water Supply Zones (WSZs) Monitored and Samples Analysed for Chemical Parameters, 2010.

Parameter	No. of WSZs Monitored	No. of WSZs with Exceedances	% of WSZs Complying	No. of Samples Analysed	No. of Samples Exceeding	% of Samples Complying
Chemical⁷ Parameters						
1,2-dichloroethane	931	0	100	1591	0	100
Antimony	882	0	100	1494	0	100
Benzo(a)pyrene	912	0	100	1424	0	100
Boron	949	0	100	1661	0	100
Cadmium	1125	0	100	1911	0	100
Chromium	1095	0	100	1845	0	100
Cyanide	843	0	100	1345	0	100
Mercury	949	0	100	1619	0	100
Nitrite (at tap)	2220	1	100	7989	1	100
PAH	909	0	100	1406	0	100
Tetrachloroethene & Trichloroethene	928	0	100	1587	0	100
Benzene	938	1	99.9	1615	1	99.9
Pesticides - Total	846	1	99.9	1335	1	99.9
Selenium	935	1	99.9	1612	3	99.8
Bromate	1003	2	99.8	1620	2	99.9
Arsenic	1060	4	99.6	1807	4	99.8
Copper	1329	6	99.5	2333	6	99.7
Nickel	1163	6	99.5	1945	6	99.7
Nitrate	2138	19	99.1	7244	26	99.6
Nitrites (at WTW)	112	1	99.1	820	1	99.9
Lead	1539	23	98.5	3724	30	99.2
Fluoride	1185	64	94.6	4118	87	97.9
Trihalomethanes (Total)	1006	130	87.1	1938	234	87.9

⁷ Compliance with the acrylamide, epichlorohydrin and vinyl chloride parametric values is to be determined by product specification and not by laboratory analysis.

2.3.1 Lead

The Regulations impose a parametric value of 25 µg/l Pb until 24 December 2013, after which the parametric value of 10 µg/l Pb becomes effective. The results for 2010 are examined in the context of compliance with the current standard of 25 µg/l Pb, as well as the future standard of 10 µg/l Pb.

Table 2-5: Compliance with the Lead Parametric Value, 2010.

	Current Standard (25 µg/l)		2013 Standard (10 µg/l)	
	% of Samples Complying	No. of Non-Compliant WSZs	% of Samples Complying	No. of WSZs with >10 µg/l
Public Water Supplies	98.8	23	97.2	55
Public Group Water Schemes	100	0	100	0
Private Group Water Schemes	100	0	99.3	3
Small Private Supplies	100	0	99.2	3
Overall:	99.2	23	98.4	61

A total of 23 supplies reported lead exceedances during 2010 (24 in 2009); however, 61 supplies have reported levels of lead in excess of the 2013 parametric value of 10 µg/l (62 in 2009). The majority of these are public water supplies.

Reduction of the plumbosolvency can be implemented by correcting pH. Implementation of this measure can assist the Water Services Authorities in achieving a higher level of compliance, but the best means of assuring full compliance is to initiate a programme for removing all lead pipes from the distribution network. Owners of dwellings where lead pipes are used should be informed of the risks and given advice by the water supplier on their safe replacement.

In the past, many samples tested for lead tend to have been fully flushed before sampling. However, this does not meet the requirements of the current Regulations and it is recommended that the random daytime sampling⁸ method be used. All Water Services Authorities should move to implement this sampling method, if they have not already done so. The EPA *Advice Note No.1* ('Lead compliance monitoring and surveys') should be followed by each Water Services Authority to determine the extent of lead in the distribution network of each water supply. EPA *Advice Note No.2* ('Action programme to restore the quality of drinking water impacted by lead pipes and lead plumbing') outlines a risk-based strategy for dealing with lead pipes.

2.3.2 Nitrate

Exceedances of the nitrate parametric value were reported in 19 supplies in 2010 (up from 16 in 2009). There was an increase in the number of public water supplies with elevated levels of nitrates. The population affected by nitrate exceedances also increased, 5,254 in 2009 to 23,153 in 2010 (Table 2-6). The large increase in the population affected was down to a once off exceedance in a supply serving approximately 20,000 people. All other samples taken from this supply were well below the parametric limit.

⁸ Random daytime sampling is defined as taking water directly from the tap normally used for consumption without any prior water abstraction, flushing or cleaning of the tap prior to sampling. The sample should be chosen randomly during the day but during normal office hours.

Table 2-6: Summary of Water Supply Zones (WSZs) Non-Compliant with Nitrate Parametric Value, 2010.

	No. of WSZs with Exceedances in 2010	Population Affected in 2010	No. of WSZs with Exceedances in 2009	Population Affected in 2009
Public Water Supplies	8	22,738	5	4,636
Public Group Water Schemes	0	0	1	78
Private Group Water Schemes	3	415	3	540
Small Private Supplies	8	N/A	7	N/A
Overall:	19	23,153	16	5,254

2.3.3 Trihalomethanes – Total

Trihalomethanes (THMs) are formed in drinking-water primarily as a result of chlorination of organic matter present naturally in raw water supplies. The rate and degree of THM formation increase as a function of the chlorine and humic acid concentration, temperature, pH and bromide ion concentration.

There was an increased level of monitoring in 2010 with 1,938 samples analysed in 1,006 water supply zones. The Regulations impose a parametric value of 100 µg/l. The results, as shown in Table 2-7, show that the trihalomethanes parametric value was exceeded in 12.9% of all water supplies during 2010, an improvement from 15.6% in 2009. Trihalomethane compliance in public water supplies improved from 83.9% in 2009 to 86.5% in 2010. Public water supplies are sampled more frequently than other supply types for trihalomethanes. A more detailed discussion of THM exceedances notified to the EPA is provided for in Section 3.4.3.

Table 2-7: Compliance with the Trihalomethanes (Total) Parametric Value in 2010.

	No. of WSZs Monitored	No. of Non-compliant WSZs	No. of Samples Analysed	No. of Non-compliant Samples
Public Water Supplies	652	88 (13.5%)	1,514	162 (10.7%)
Public Group Water Schemes	95	24 (25.3%)	105	25 (23.8%)
Private Group Water Schemes	248	17 (6.9%)	296	43 (14.5%)
Small Private Supplies	11	1 (9.1%)	23	4 (17.4%)
Overall:	1006	130 (12.9%)	1938	234 (12.1%)

2.3.4 Fluoride

Naturally elevated levels of fluoride are quite rare in Ireland and thus any exceedances reported are due almost entirely due to public water supplies being dosed with fluoride at levels in excess of the legally permitted dose. There has been a decrease on the previous year for the number of public water supplies, 51 in 2010, down from 53 in 2009 failing to meet the fluoride parametric value. There was an increase in the number of public group water schemes 11 in 2010, up from 10 in 2009 that failed to meet the fluoride parametric value. The number of private group water schemes exceeding the fluoride parametric value was unchanged from 2009 (2 in 2009 and 2010). There was no fluoride exceedances reported for small private supplies in 2010. It is important to note that the Irish standard of 0.8mg/l is more stringent than the EU Drinking Water Directive Standard of 1.5 mg/l. One public water supply exceeded the 1.5 mg/l standard in 2010.

Table 2-8: Compliance with the Fluoride Parametric Value, 2010.

	No. of WSZs Monitored in 2010	% of Samples Complying in 2010	No. of non-Compliant WSZs in 2010
Public Water Supplies	693	97.8	51
Public Group Water Schemes	209	97.2	11
Private Group Water Schemes	246	99.3	2
Small Private Supplies	37	100	0
Total:	1185	97.9	64

2.4 Compliance with the Indicator Parametric Values

The indicator group of parameters is a diverse group of parameters designed to provide information on the management of the treatment process and the organoleptic (perception by sensory organs) and aesthetic quality of drinking water. As such, several parameters do not have quantitative standards but are dependent on acceptability to consumers. Others are based on practical consideration, for example, the iron parametric value is set at a level that will ensure that water is acceptable to consumers rather than that which is a risk to public health. In this regard, comparing the indicator parameter monitoring results to the parametric values should be given less importance than comparing the microbiological or chemical monitoring with their respective parametric values. In other words, a value reported above the indicator parametric value should not, *de facto*, be considered a cause for concern but a guide for the Water Services Authority to initiate an investigation into the cause of the elevated level of the particular parameter. In many cases, it is not the indicator parameter that is of concern, rather, it is what the presence of that parameter may imply. For example, elevated levels of indicator parameters may indicate that the treatment plant is not operating adequately, that the plant is operating above its design capacity, or that the plant is not capable of providing a treatment barrier. A summary of compliance with the indicator parameters is provided in Table 2-9.

Table 2-9: Total Number of Water Supply Zones (WSZs) Monitored and Samples Analysed for the Indicator Parameters, 2010.

Parameter ⁹	No. of WSZs Monitored	No. of WSZs with Exceedances	% of WSZs Complying	No. of Samples Analysed	No. of Samples Exceeding	% of Samples Complying
Indicator Parameters						
Oxidisability	4	0	100	4	0	100
Conductivity	2971	4	99.9	15456	4	100
Sulphate	902	1	99.9	1548	1	99.9
Chloride	1127	2	99.8	1944	3	99.8
Taste	1632	3	99.8	9548	10	99.9
Odour	2793	14	99.5	14065	23	99.8
Ammonium	3016	28	99.1	15032	36	99.8
Sodium	1114	20	98.2	1876	21	98.9
Total Organic Carbon	893	19	97.9	1568	20	98.7
Turbidity (at tap)	3031	88	97.1	15151	99	99.3
Colony Count @ 22Å°C	721	37	94.9	1539	43	97.2
Aluminium	2099	130	93.8	10701	234	97.8
Clostridium Perfringens	2108	138	93.5	11590	166	98.6
Manganese	1723	122	92.9	4920	164	96.7
Colour	3024	217	92.8	15166	404	97.3
Iron	2290	188	91.8	9838	290	97.1
pH	3033	450	85.2	15260	793	94.8
Coliform Bacteria	3044	651	78.6	15304	854	94.4
Turbidity (at WTW)	202	55	72.8	1618	130	92.0
Radioactivity						
Tritium	49	0	100	80	0	100
Total Indicative Dose	42	0	100	74	0	100

Most failures to meet the indicator parametric values are caused by:

- i. Poor performance of a water treatment plant, for example, elevated levels of turbidity indicate poor treatment of water in the filters.

⁹ For several of the indicator parameters there are no specific standards in the Regulations. Therefore, for comparison purposes arbitrary levels have been assigned above which the Water Services Authority may be concerned about the quality of the water and should investigate further.

- ii. Poor disinfection efficiency, for example, regrowth of coliform bacteria can occur in an inadequately disinfected water supply.
- iii. Naturally present substances, for example, iron and manganese may be naturally present in groundwater.

2.4.1 Aluminium

The level of compliance with the aluminium parametric value rose to 97.8% in 2010 from 97.0% in 2009. Compliance with the aluminium parametric value has been poor in a number of supplies in Ireland due to inadequate control over addition of treatment chemicals. Failure to meet the aluminium parametric value can be due to several reasons, including naturally elevated levels of aluminium in the raw water, operation of the treatment plant above design capacity, poor management of the treatment plant or inadequate management of the distribution network. While a small number of water supply zones have naturally elevated levels of aluminium, the majority of aluminium non-compliances in Ireland in 2010 are due to operational management and design, in particular, poor control over pH.

The compliance rates in the different types of water supplies are presented in Table 2-10.

Table 2-10: Summary of Aluminium Monitoring, 2010.

	No. of WSZs Monitored	% of Samples Complying	No. of Non-Compliant WSZs
Public Water Supplies	718	97.7	77
Public Group Water Schemes	521	96.8	33
Private Group Water Schemes	363	98.6	14
Small Private Supplies	496	99.2	6
Total:	2098	97.8	130

The low percentage of compliance in public group water schemes may indicate poor aluminium dosing at the treatment plant or a requirement for a programme of regular flushing and scouring of the distribution network.

2.4.2 Coliform Bacteria

There was a large decrease in the number of public water supplies failing to meet the coliform bacteria standard, 150 in 2010, down from 190 in 2009. The number of private group water schemes failing to meet the coliform bacteria parametric value also improved, 149 in 2010, down from 194 in 2009.

Table 2-11: Summary of Coliform Bacteria Monitoring, 2010.

	No. of WSZs Monitored	% of Samples Complying	No. of Non-Compliant WSZs
Public Water Supplies	929	98.0	150 (16.1%)
Public Group Water Schemes	656	97.2	40 (6.1%)
Private Group Water Schemes	484	87.7	149 (30.8%)
Small Private Supplies	974	75.9	312 (32.0%)
Total:	3043	94.4	651 (21.4%)

These non-compliances are caused by a combination of poor-quality water being supplied into the distribution network and by poor management of the distribution mains. There should be a regular programme of flushing and cleaning to ensure that there is no contamination in the network.

2.4.3 Turbidity

Operators of water treatment plants should strive for a turbidity value of 1.0 NTU (nephelometric turbidity units) at the plant. Turbidity at the tap indicates a very different problem to turbidity at the treatment plant. Elevated levels of turbidity at the tap may indicate sediment in the mains or ingress into the distribution network while turbidity at the treatment plant may indicate poor performance of filters and inadequate treatment barriers.

Table 2-12: Percentage of Samples in Compliance with the Turbidity Parametric Values in 2010.

Parameter	Overall	PWS	PuGWS	PrGWS	SPS
Turbidity (at the tap)	99.3	99.6	99.3	99.3	97.4
Turbidity (at WTW)	92.0	91.7	93.9	96.6	N/A

[A parametric value of 4.0 NTU at the tap is used for comparative purposes as this was the parametric value in the 1988 Drinking Water Regulations].

Measuring turbidity at the plant is a useful tool to determine whether *Cryptosporidium* is being removed adequately. Turbidity monitoring as set out in Table 2-12 indicates a low rate of compliance with the turbidity parametric value at the water treatment works. Although limited monitoring was reported, the results indicate that 27% (55 of 202) of supplies monitored at the water treatment works reported results in excess of the turbidity parametric value (see Appendix IV). Elevated levels of turbidity have been shown to be associated with outbreaks of *Cryptosporidium* (Carlow in 2006 and Galway City in 2007) and as such emphasises the importance of monitoring turbidity at the plant.



Photograph 2-1: Foynes (Shannon Estuary) Water Treatment Plant (Co. Limerick)

2.5 Group Water Schemes and Private Water Supplies

The rural water investment programme continued to deliver improving levels of compliance with the drinking water quality standards in the group water scheme (GWS) sector during 2010. Nonetheless, microbiological water quality in a significant proportion of group water schemes continues to be inferior to that in public water supplies. Whereas, the quality of drinking water in publicly-sourced group water schemes is broadly similar to that of the public water supplies themselves, the same cannot be said for the microbiological quality of water supplied by many privately-sourced group water schemes. That said, chemical compliance amongst many privately-sourced group water schemes remained high.

The results for 2010 shows that 56 schemes or 11.6% (down from 17.0% in 2009) of all privately-sourced group schemes monitored were contaminated with *E. coli* at least once during 2010. The percentage of supplies contaminated with *E. coli* from 2008 to 2010 is illustrated in Fig. 2-1.

The rural water sector continued to benefit from significant capital investment with more than €70 million being allocated under the Rural Water Programme.

The DBO bundling strategy moved into its final phase in 2010 with the commencement of construction for the final two projects, Galway no. 2 (16 GWS water treatment plants) and Roscommon/Leitrim (5 GWS water treatment plants). The second Mayo DBO bundle witnessed considerable progress in 2010, as eight of the ten proposed GWS water treatment plants were completed and brought into production.



Photograph 2-2: Blackstairs Group Water Scheme (Co. Wexford) which was part of the Leinster DBO bundle completed in 2010.

There was considerably less activity in connecting group water schemes to public supplies and in the taking-in-charge of group water schemes than was the case in 2009. 11 schemes that had been

privately-sourced were connected to public mains in 2010, most as a first step in being taken in charge.

Water Services Authorities (as supervisory authorities for the Group Water Schemes) have issued Directions in cases where schemes were failing to agree a viable upgrade strategy. Where a potential danger to human health exists, Water Services Authorities have an obligation under the Drinking Water Regulations to take the steps necessary to remedy the situation.

As in recent years, training was a major area of activity for the National Federation of Group Water Schemes (NFGWS) in 2010. The Quality Assurance (QA) training, first introduced by the NFGWS in 2007, was completed by 100 schemes in 2010. A training programme for managers/administrators of group water schemes was officially launched at the NFGWS annual delegate conference in March 2010. Produced jointly by the Irish Co-operative Organisation Society (ICOS) and the NFGWS (with support from FÁS), the 5-module course was rolled out to 30 GWS managers over two days in May.

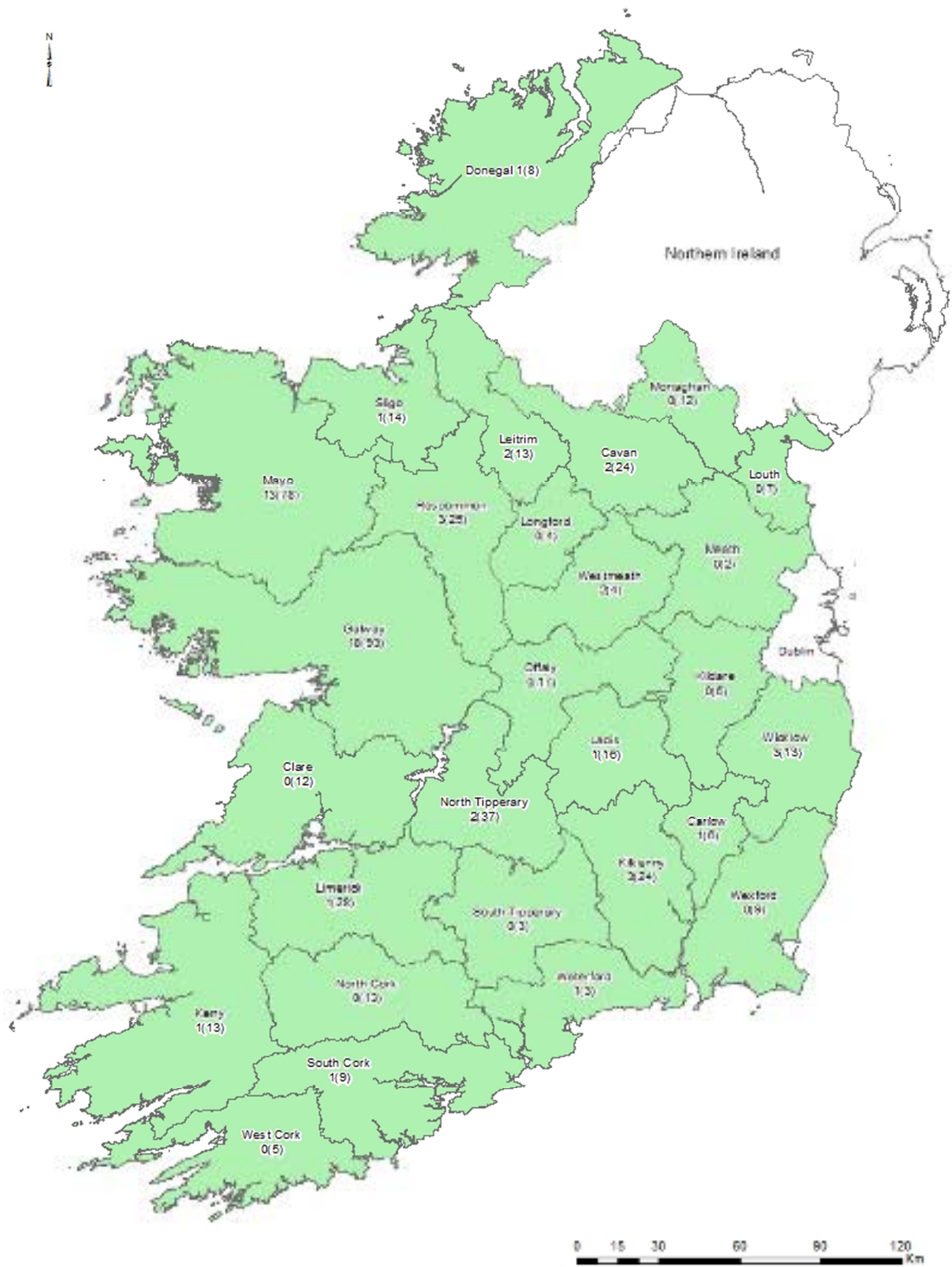


Figure 2-2: Number of Private Group Water Schemes contaminated with *E. coli* during 2010¹⁰ as a proportion of the total number of schemes

¹⁰ There are no group water schemes serving >50 persons in any of the four Dublin Water Services Authority areas.

2.6 Access to Information on Drinking Water Quality

On 20 July 2009, the Minister for the Environment, Community and Local Government (DECLG) a circular letter instructing¹¹ Water Services Authorities to commence publishing the results of their drinking water sampling programmes on their websites. The Minister directed that all Water Services Authorities should publish the results and that access to the data should be made available in a prominent position on each Water Services Authority website homepage. The EPA carried out an assessment of compliance with the requirements of the Ministerial circular letter and notes the following findings, based on information available at that time:

- Just over half of the Water Services Authorities (19 out of 33) were publishing some or all of the microbiological, chemical and indicator data required by the DECLG circular.
- Websites are being used to communicate supplies where there is a risk to human health (e.g. boil water notices), however, the majority of Water Services Authority do not publish maps of the affected areas to enable consumers to easily determine if they are in an affected area.
- The monitoring results that are published were not always up to date and few, if any of the Water Services Authorities publish the data within one month of the receipt of the results from laboratories.

The circular also makes a number of recommendations about additional information that the Water Services Authorities should publish on their websites. In particular, it recommends that the following information be published on the Water Services Authority websites:

- Details of any notifications sent to the EPA;
- The relevant Water Services Authority drinking water summary report from the most recent EPA Drinking Water Report;
- EPA Drinking Water Audit Reports;
- The Remedial Action List of supplies in each Water Services Authority's functional area.

Mayo and Kerry County Council were in substantive compliance with the Ministerial direction on access to information on drinking water pointing for the need for all other authorities to improve the posting of information on their websites.

¹¹ Circular Letter (WSP 6/09) on the *Publication of Drinking Water Quality Monitoring Results*.

3.

EPA Enforcement of Public Drinking Water Supplies



3. EPA Enforcement of Public Drinking Water Supplies

3.1 Statutory Powers of the EPA

The powers assigned to the EPA under the 2007 Drinking Water Regulations include:

- The use of enforceable Directions to ensure that water supplies comply with the relevant quality standards.
- The oversight of actions taken by Water Services Authorities in public water supplies to continue to meet the relevant quality standards.
- The oversight of monitoring carried out by Water Services Authorities.
- The completion of audits at Water Services Authorities water treatment plants.
- The publication of guidance to assist compliance with the Drinking Water Regulations.

Water Services Authorities, have been designated as the supervisory authority over private water supplies (including group water schemes) and have similar powers and responsibilities to the EPA in relation to these supplies.

The Regulations require Water Services Authorities to notify the EPA of failures to meet the quality standards following which the EPA can direct the Water Services Authority to take corrective action where necessary. Only when a corrective action, as directed, is not complied with, can a prosecution be considered by the EPA. In other words, the EPA may prosecute a Water Services Authority only if it fails to comply with an EPA Direction and not for supplying water that is not clean and wholesome.

3.2 Remedial Action List

As part of its supervisory role under the Regulations, the EPA prepares a list of public water supplies where remedial action or management action is required to ensure compliance with the requirements of these Regulations into the future. This list is called the “Remedial Action List for Public Drinking Water Supplies” (RAL). The EPA uses the RAL to focus attention on resolving any deficiencies in public water supplies and to ensure that Water Services Authorities prepare and implement an action programme for each public water supply on the list.

a. Criteria for inclusion on the RAL

Public water supplies were included on the original RAL in 2008 for one or more reasons:

- The supply had reported failure(s) of the following priority RAL parameters in the previous two years:
 - Table A (microbiological parameters): *E. coli*
 - Table B (chemical parameters): nitrate, trihalomethanes, bromate
 - Table C (indicator parameters): aluminium, turbidity
- The supply had inadequate treatment (e.g. no treatment other than chlorination for a surface water supply or poor turbidity removal or excessive levels of aluminium in the treated water).
- Monitoring results or compliance checks by the EPA indicate a lack of operational control at the supply’s treatment plant.
- The supply was identified by the Health Service Executive as a supply where improvements were required.

The RAL includes supplies where the primary issue to be addressed is the water treatment plant. The list does not include supplies where there are issues of quality caused by the distribution network. For example, supplies that have failed to meet the lead parametric value due to the presence of lead pipework in the distribution network are not included on the list.

b. Adding to and removing supplies from the RAL

At quarterly intervals, additional supplies may be added to the RAL as further information is gathered from EPA audits, notifications of exceedances or information gathered from Water Services Authorities, the Health Service Executive and the Department of Environment, Community and Local Government. Supplies are removed from the list at each quarterly update when sufficient corrective action is taken by the Water Services Authority. In general, a supply will not be removed from the list on the basis of monitoring results alone, the Water Services Authority must demonstrate that appropriate actions have been taken (e.g. new infrastructure, procedures or training) to ensure that compliance is secured and the risks of failure have been minimised.

In 2009, the EPA published revised guidance (Guidance Booklet No.3) to outline the purpose of the RAL and the actions that must be taken before a supply can be removed from the RAL. This guidance has subsequently been incorporated into the *European Communities (Drinking Water) Regulations (No.2) 2007: A Handbook on the Implementation of the Regulations for Water Service Authorities for Public Water Supplies*, available to download at www.epa.ie

c. Numbers of supplies on the RAL

The first RAL collated by the EPA in January 2008 identified 339 public water supplies representing 36% of public drinking water supplies that require detailed profiling to ensure that the supply is providing clean and wholesome drinking water. The progress of supplies on the original RAL is as follows:

1. 166 (49%) of the original 339 supplies have been removed from the RAL.
2. Remedial works will be complete in a further 107 supplies on the original RAL by the end of 2011 (therefore 80% of supplies on the original RAL are scheduled for completion by the end of 2011).
3. 39 supplies were added to the original RAL but have been subsequently removed.
4. 67 supplies were added to the original RAL and remain on the current RAL.
5. 240 supplies in total were on the RAL as of the end of September 2011 (see Fig. 3-1).

The population served by supplies where the necessary remedial works have been completed and have been removed from the RAL is over 600,000. However, the remaining supplies on the RAL collectively supply water to a population of 1,078,739 persons. Remedial works have also been completed on a further 39 water supplies serving 104,988 persons and Water Services Authorities are in the process of verifying the effectiveness of these remedial works. Following verification, it is expected that the population served by supplies on the RAL will be 973,751 persons.

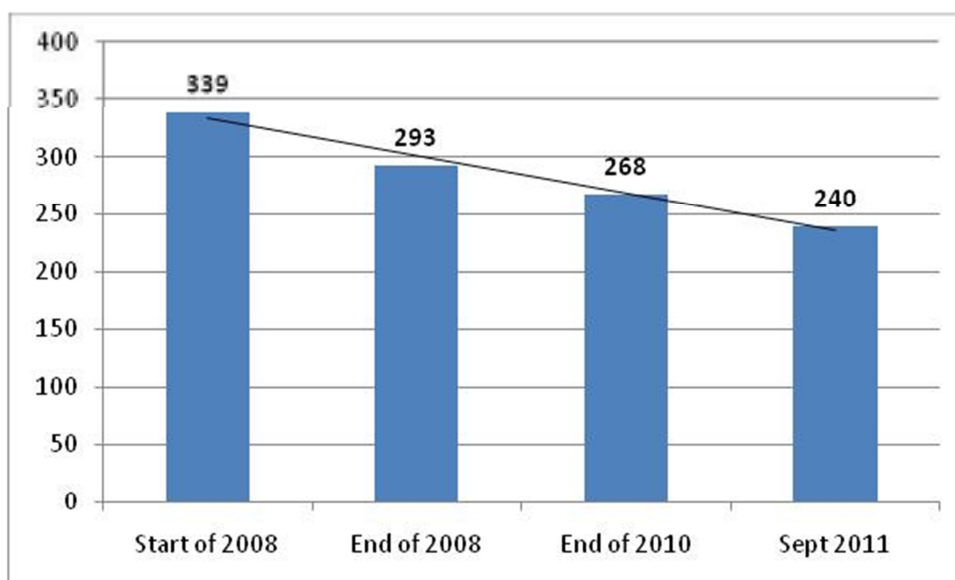


Figure 3-1: Progress with the number of public water supplies on the Remedial Action List.

Table 3-1 gives a summary of the supplies added or removed from the original RAL.

Table 3-1: Summary of Supplies Added or Removed from the Remedial Action List.

	No. of water supplies
Supplies added to the original RAL that are still on the RAL	
Table A: Microbiological failure e.g. <i>E. coli</i> , <i>Cryptosporidium</i>	18
Table B: Chemical Failure e.g. nitrate, trihalomethanes	8
Table C: Indicator Failure e.g. aluminium, coliforms	3
Other ¹²	38
Total No. of Supplies Added	67
Supplies removed from the original RAL	
Abandoned or Replaced	55
Upgraded	64
Improved Operations	36
Other ¹⁴	11
Total No. of Supplies Removed from the Original RAL	166

d. Progress with Remedial Actions

Water Services Authorities with supplies on the RAL were requested by the EPA to put in place a programme of remedial actions to ensure water supplies were made safe and secure. Each action programme involves the profiling of the water supply from catchment to consumer, the identification of

¹² Other includes supplies identified as having lack of operational control or improvements required, as identified by the EPA or HSE.

risks to the safety and security of the water supply and the management measures to address the risks identified. These measures could include abandoning or replacing the source, upgrading the treatment facilities or improving operational and maintenance arrangements. Each Water Services Authority was required to submit a report to the EPA by 30 November 2009 outlining the remedial actions proposed and an estimate of the timeframe for the completion of these remedial actions. A brief summary of the proposed actions is available on the RAL summary which is available to download from the EPA's website (www.epa.ie) while Table 3-2 gives an overview of the actions proposed.

Table 3-2: Summary of Actions to be taken for the 240 Current RAL Supplies (to end September 2011).

	No. of Water Supplies
To be Abandoned or Replaced:	34
To be Upgraded:	187
To Improve Operations:	19
Total No. of Supplies:	240

Since its initial publication in January 2008, a number of large public water supplies have been removed from the RAL. In particular, the major water supplies to Galway, Limerick and Waterford cities have all been upgraded to the satisfaction of the EPA, such that they have been removed from the RAL. To ensure the security of these supplies WSAs should implement a water safety plan approach such that the objective of the supply of clean and wholesome water is not hindered.

Progress in undertaking the remedial actions necessary to ensure that the water supplies are secure varies between Water Services Authorities. Table 3-3 shows the number of supplies each Water Services Authority had on the original RAL and the number that have been removed from the original RAL. Clare, Donegal, Laois, Leitrim, Limerick, Monaghan, North Tipperary, Waterford, Wexford and Wicklow County Councils have been proactive in implementing remedial actions and over 50% of the supplies in each of these areas have now been removed from the original RAL. There are no supplies on the RAL in Dun Laoghaire Rathdown, Fingal, Galway City, Kildare, Limerick City, Waterford City, Offaly and Westmeath.

Three water treatment plants that provide water directly and indirectly (e.g. mixed with other sources prior to supply) to 18 water supplies zones on the RAL collectively supply water to a population of 511,135 persons. These plants are the Vartry Reservoir (supplying 335,135 persons in Dublin and Wicklow), Lee Road (supplying 123,000 persons in Cork City), and Staleen (supplying 55,000 persons in Meath and Louth). Progress with the remedial measures in the first two of these supplies has been slow and the actions required are summarised below:

- Vartry Reservoir – this plant is on the RAL due to the vulnerability of the Callow Hill tunnel. Replacement of this 150+ year old unlined tunnel is not scheduled to take place until the end of 2015 at the earliest.
- Lee Road – an upgrade of the Lee Road water treatment plant is required to address the operational limitations of the current plant. This is not scheduled to be completed until the end of 2014.
- Staleen – this plant is currently being upgraded to improve the existing level of treatment. It is scheduled for completion in September 2012.

Water Services Authority	No. of Supplies on RAL		Progress on Completion of Remedial Works			
	Original RAL	Current RAL	Works Completed	To be completed 2011 - 2012	To be completed after 2013	No Timeframe for Completion
Kerry County Council	41	54	3	42	6	3
Galway County Council	34	32	14	17	0	1
Cork Co. Co. (West)	17	16	2	14	0	0
Donegal County Council	33	13	0	1	4	8
Roscommon County Council	10	13	2	11	0	0
South Tipperary County Council	14	13	1	10	2	0
Waterford County Council	18	13	0	12	1	0
Wicklow County Council	22	13	3	1	8	1
Cork Co. Co. (North)	12	9	6	3	0	0
Cork Co. Co. (South)	9	8	2	6	0	0
Mayo County Council	15	8	0	7	1	0
Cavan County Council	10	5	3	2	0	0
Kilkenny County Council	7	5	0	5	0	0
Meath County Council	8	5	0	3	2	0
Limerick County Council	12	4	0	3	0	1
Sligo County Council	8	4	0	4	0	0
Dublin City Council	1	3	0	2	1	0
Dun Laoghaire Rathdown Co. Co.	0	3	0	2	1	0
Longford County Council	5	3	1	2	0	0
Louth County Council	3	3	0	3	0	0
Monaghan County Council	12	3	0	2	1	0
North Tipperary County Council	6	3	0	3	0	0
Carlow County Council	4	2	1	1	0	0
Clare County Council	9	1	1	0	0	0
Cork City Council	1	1	0	0	1	0
Laois County Council	8	1	0	0	1	0
Leitrim County Council	2	1	0	1	0	0
Wexford County Council	4	1	0	0	0	1
Fingal County Council	0	0	n/a	n/a	n/a	n/a
Galway City Council	1	0	n/a	n/a	n/a	n/a
Kildare County Council	0	0	n/a	n/a	n/a	n/a
Limerick City Council	1	0	n/a	n/a	n/a	n/a
Offaly County Council	8	0	n/a	n/a	n/a	n/a
South Dublin County Council	0	0	n/a	n/a	n/a	n/a
Waterford City Council	1	0	n/a	n/a	n/a	n/a
Westmeath County Council	3	0	n/a	n/a	n/a	n/a

Table 3-3: Number of Supplies on the Original RAL and Timeframes for the Completion of Remedial Action Plans for each Water Services Authority

A timeframe for the completion of the remedial actions for each supply on the RAL has been submitted to the EPA by each Water Services Authority. A summary of the completion dates for the remedial actions is illustrated in Fig. 3-2.

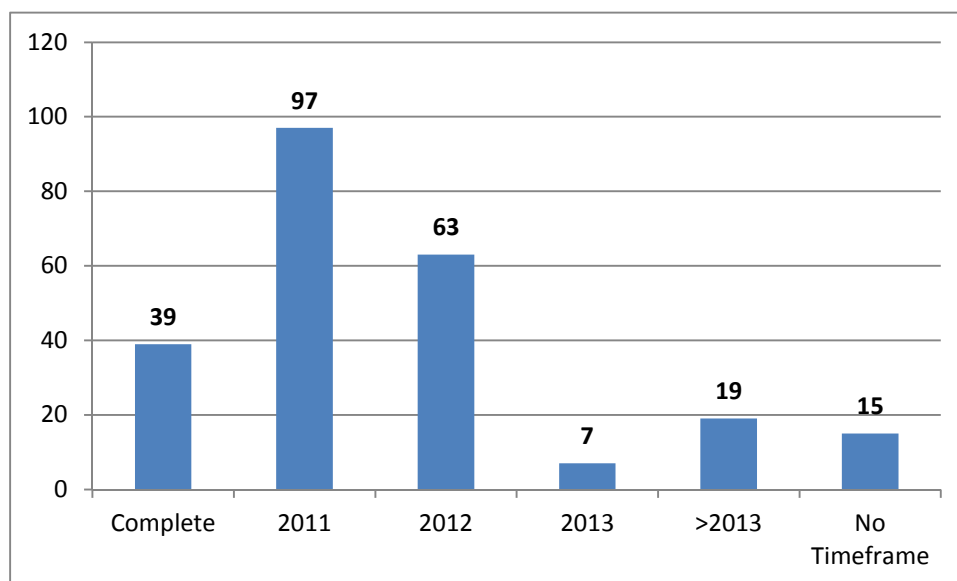


Figure 3-2: Timeframes for completion of Remedial Action Plans.

The EPA expects that remedial works will be complete in 136 supplies on the RAL by the end of 2011. Many of these supplies will be removed from the RAL once the appropriate monitoring has been carried out in the supply to verify that the actions taken have been successful in improving drinking water quality.

Six Water Services Authorities did not provide an estimation of the timeframe for the completion of the remedial actions for one or more of the supplies within their functional area (15 supplies in total). The majority of these supplies are located in Donegal (8). While some of these supplies were recently added to the RAL, 10 supplies were on the original EPA list published in January 2008. The number of supplies without a timeframe is down significantly from 44 at the start of 2011.

The EPA has initiated a targeted enforcement action against local authorities with responsibility for these supplies. Directions have been issued in respect of 11 of these supplies requiring the preparation and implementation of an action programme. Progress with the 4 other supplies is commencing and will be the subject of review by the EPA to determine whether further enforcement action is warranted.

The new Water Services Investment Programme 2010 – 2012 includes some €274 million to allow for the commencement of contracts in respect of supplies on the RAL. Where risks are identified by the EPA in future reports, the Department of the Environment, Community and Local Government has committed to working with the EPA and the Health Service Executive, to identify the most appropriate and effective solution, and where necessary, amend the Investment Programme through their annual review process.

The complete list of public water supplies currently on the RAL, including details of the proposed remedial measures and associated timeframes, is available to download from the EPA's website.

3.3 Audits of Public Water Supplies

The 2007 Drinking Water Regulations provide for the supervising authority to undertake audits of water supplies for which it has supervisory responsibility. Because the EPA is the supervisory authority with respect to public water supplies, it may audit the performance of Water Services Authorities to verify their compliance with the regulatory requirements. For private water supplies, the Regulations provide for the Water Services Authority, as the supervisory authority, to audit the performance of private water suppliers within its functional area to verify compliance with regulatory requirements.

The EPA carries out audits using a risk based approach targeting Water Services Authorities and water supplies where it is most necessary and will have the greatest effect. The EPA has developed clear criteria for audits which fall into the following categories:

- Targeted campaigns of audits to review a particular issue at a national level.
- Targeted audits of Water Services Authorities that are performing poorly.
- Reactive audits to follow up on issues as they arise during the year.

The EPA conducted 82 audits of Water Services Authorities drinking water treatment plants during 2010. Table 3-4 provides a summary of issues identified during EPA audits of Water Services Authority drinking water treatment facilities in 2010.















The main compliance issues identified are discussed in the following sections of this report:


- a. Inadequate protection of the source;
- b. Inadequate treatment;
- c. Distribution system hazards;
- d. Management and control vulnerabilities; and
- e. Risk from hazardous events.

The EPA also conducts scheduled and unscheduled audits of Water Service Authority drinking water treatment supplies as issues arise. The EPA conducts audits using a risk based approach targeting audits at Water Services Authorities and water treatment plants where issues have or are likely to arise. The plants to be audited are selected on the basis of performance of the Water Services Authority, the quality of water at the plant and the notification of incidents or water quality failures.


Overall there has been an improvement in the infrastructure, operation and management of treatment plants across 12 of the 14 key indicators noted during EPA audits (see Table 3-4). However, the high (and increasing) proportion of supplies with inadequate source protection measures and unsecured reservoirs suggests that these areas have not received the level of attention that is needed to safeguard drinking water. A key requirement of the safe and secure model of drinking water is protection of the source of the supply. Where measures are put in place to protect the source of a supply a reduction in the incidences of non-compliances with the standards can be achieved. Notwithstanding the improvements observed in the 12 key indicators further improvements are required such as improvements in chemical dosing and associated operational control.

Table 3-4. Issues Identified by EPA Audits of Drinking Water Treatment Plants during 2010.

	Issue	No. of Water Supplies where issues were confirmed during Audit	% of Supplies Audited (where item was applicable)	Change since 2009
1	Inadequate source-protection measures in place. <i>Reason: Potential sources of pollution could be present to contaminate the supply.</i>	46	56%	
2	No chlorine monitor and alarm. <i>Reason: Chlorine monitors and alarms alert the operator of the plant to inadequate treatment of the supply even when the plant is unattended.</i>	7	9%	
3	Inadequate disinfection contact time. <i>Reason: Inadequate contact time may result in micro-organisms posing a risk to human health.</i>	18	22%	
4	No duty and standby chlorine pumps. <i>Reason: If a pump fails undisinfecting water may enter the water supply and pose a risk to human health.</i>	8	10%	
5	Problems in the operation of the filters <i>Reason: Poor filtration indicates inadequate treatment of the water which may result in contaminants not being removed.</i>	15	23%	
6	No turbidity monitors on each filter. <i>Reason: Turbidity monitors are critical for controlling the quality of treated water post filtration.</i>	8	24%	
7	Final water turbidity >1.0 NTU¹³. <i>Reason: Excessive levels of turbidity indicate that if Cryptosporidium is present in the source water it is likely to be in the treated water and may pose a risk to human health.</i>	11	23%	
8	Floc carryover from the clarifier. <i>Reason: Floc carryover indicates poor control over chemical dosing and may result in excessive chemicals in treated water or inadequate treatment of water.</i>	9	32%	
9	Inadequate chemical dosing arrangements. <i>Reason: Failure to dose correctly will result in excessive chemicals in treated water or inadequately treated water.</i>	11	22%	
10	Unapproved/inappropriate chemicals used. <i>Reason: Unapproved/inappropriate chemicals may pose a risk to health.</i>	3	5%	
11	Treatment process partially or fully bypassed. <i>Reason: Bypassing treatment processes reduces the protection to the supply that these treatment processes provide and increase the likelihood of contamination.</i>	5	6%	
12	Plant operating >10% above design capacity. <i>Reason: Excessive loading on plant places stresses on treatment processes making them vulnerable to failure.</i>	2	2%	
13	Reservoir/clearwater tank not covered. <i>Reason: Direct contamination of treated water by animals or malicious intent may occur and may pose a risk to human health.</i>	2	3%	
14	Reservoir/clearwater tank not secure <i>Reason: Uncovered vents or unlocked access points can allow unauthorised human or animal access to treated water resulting in contamination.</i>	22	40%	



Improvement on 2009



Disimprovement on 2009

¹³ Nephelometric Units

a. Inadequate Protection of the Source

Source protection is the first barrier for the production of safe drinking water quality. By decreasing contamination of source water, the amount of treatment and quantity of chemicals needed to treat the water is reduced. This may also reduce the production of treatment by-products and minimise operational costs. Therefore, source protection is vital for effective production of drinking water.

Audits conducted by the EPA on public water supplies during 2010 found that:

- Inadequate protection of the source was noted in 56% of audits conducted by the EPA on public water supplies. This is an increase from 51% for 2009.
- Ingress of surface water into boreholes was observed in 4 of the 12 groundwater supplies examined for this purpose.

These audits were targeted at public water supplies that already had exceedances of the drinking water standards or were on the RAL and highlights an area of drinking water treatment requiring significant improvement.

The main issues identified included:

- Inadequate or poor borehole construction (e.g. unsealed boreholes);
- Evidence of ingress of surface water into boreholes;
- Animal access to surface waters in the vicinity of abstraction points;
- Inadequate security.

Source protection was the key indicator examined during audits in 2010 that disimproved compared to 2009. It would appear that while significant investment in infrastructure is taking place in tandem with improved training and awareness in the operation of treatment plants, the protection of the source of the supply has not received the same level of attention.



Photograph 3-1: A poorly protected source (note the cattle access opposite the abstraction point).



Photograph 3-2: A securely fenced off abstraction point.

b. Inadequate Treatment

Water is rarely suitable for drinking without some form of treatment. Exceptions would include an adequately protected borehole with a small distribution network (e.g. a house with a private well). All public water supplies should be subject to some form of treatment. The type of treatment that is necessary to ensure that the water supplied is clean and wholesome depends on the:

- source of the water supply (e.g. surface water supplies require more treatment than groundwaters);
- quality of the untreated water;
- risks to the quality of the water.

The most reliable approach to achieving a safe and secure water supply is to provide multiple barriers that keep water contaminants from reaching the consumer. The security provided by the multiple-barrier approach is reliant on each individual barrier being of the appropriate specification, and operated in accordance with best practice and guidance.

i. Disinfection

All water supplies should as a minimum be disinfected to ensure the safety of the final water for drinking. The disinfection system should be reliable (e.g. flow-proportional/residual based dosing, adequate contact time and with duty and standby dosing pumps) and verifiable (i.e. should have a chlorine monitor and an alarm). The most common disinfection technology used in the treatment of drinking water in Ireland is chlorination though UV is increasingly being used as a primary disinfectant in many supplies (usually with chlorination as a secondary disinfectant).

In 2010, the Agency audited 82 public water supplies on the adequacy of disinfection systems and found that:

- 10% of plants audited did not have a duty and standby disinfectant dosing arrangement as required; a decrease compared to the previous reporting period. This may leave consumers vulnerable to receiving water that is not adequately disinfected in the event of the failure of one chlorine dosing pump.
- 9% of drinking water treatment plants audited did not have a chlorine monitor and alarm in place; a decrease from 19% for the previous reporting period. In the absence of a chlorine monitor and alarm, the adequacy of chlorination cannot be verified. It is also not possible to rapidly detect and respond to a reduction below the required chlorine level. However, the EPA understands that all public water supplies nationally now have chlorine monitors and alarms in place as of June 2011.
- 22% of plants audited had inadequate disinfection contact time; a decrease compared to the previous period.
- Of the 73 drinking water treatment plants audited that had chlorine monitors and alarms in place, 8 were found to be either without a dial-out facility or had a dial out facility but alarms were not being responded to when triggered. Response to alarms is inadequate in some Water Services Authorities and in particular out of hours response needs to be addressed in some cases.



Photograph 3-3: Sodium Hypochlorite Disinfection System.

ii. Treatment Barriers

For proper disinfection and treatment, two barriers at a minimum are required. In the case of groundwater, the natural geology typically acts as one barrier and disinfection acts as the second. In the case of surface water supplies, a treatment system is required to act as the first barrier and disinfection as the second. This requirement is to ensure that water is wholesome and clean and to prevent the entry of *Cryptosporidium* into the water supply. When a Water Services Authority detects *Cryptosporidium* in a drinking water supply, it must consult with the Health Service Executive to establish if there is a risk to human health.

There was a drop in the number of cases of cryptosporidiosis reported to the Health Protection Surveillance Centre (HPSC) in 2010 (292 in 2010 down from 447 in 2009) (www.hpsc.ie).

The adequacy of installed barriers at drinking water treatment plants was examined during audits conducted by the EPA in 2010. The main findings in relation to barriers were that:

- Inadequate maintenance of filters were observed at 23% of plants audited (with filters in place as a barrier). While this is a welcome decrease from 55% in the previous reporting period, greater effort and attention is required in this important aspect of the drinking water treatment process. Particular deficiencies were found in the adequacy of filter media, backwashing practices and the filtered water quality.
- 24% of plants audited with filters in place in 2010 did not have individual turbidity monitors on each filter which is down from 53% in 2009. Such monitors facilitate an assessment of the performance of individual filters and optimisation of the filter process.
- 32% of plants audited that had clarifiers in place displayed floc carryover representing a decrease from the previous reporting period. This indicates poor control over chemical dosing and may compromise filter operation.
- 23% of plants audited had a final water turbidity reading that exceeded 1.0 NTU; a decrease from the previous reporting period.



Photograph 3-4: A poorly operated clarifier (note the excessive algal growth and overflow of water into the clarification channel).

c. Distribution System Hazards

There are a number of hazards¹⁴ which can occur after treated water enters the distribution system; these have the potential to compromise drinking water security and, consequently, its safety.

i. Integrity of treated water storage tanks:

Water Services Authorities can store treated water at the plant or at a location in the distribution system. Drinking water storage tanks or service reservoirs that are poorly constructed or inadequately sealed increase the risk of contamination of treated water by animals or those with malicious intent.

The integrity of treated water storage (clearwater) tanks and reservoirs was examined during EPA audits in 2010. The main findings were that:

- 40% of clearwater tanks/storage reservoirs inspected during audits were found to have inadequately sealed vents or were not secured.



Photograph 3-5: Uncovered Storage of Treated Drinking Water.



Photograph 3-6: Leaking Reservoir.

¹⁴ The WHO defines a **hazard** as 'any biological, chemical, physical or radiological agent that has the potential to cause harm' (e.g. *Cryptosporidium* is a water quality hazard, a potential danger to public health).

d. Management and Control Vulnerabilities

All treatment technologies employed at drinking water treatment plants require management by trained personnel to maintain their performance and reliability. Verification of the effectiveness of various stages of treatment is essential to assure drinking water security.

During EPA audits of public water supplies, management and control systems were assessed to highlight good practices and alert plant operators to any potential vulnerabilities. A total of 82 drinking water audits were completed by the EPA during 2010 and the following process management and system issues were observed:

i. Treatment Plant Capacity

Operating a drinking water treatment plant above its design capacity can place stress on the treatment processes and increase the risk of poor performance. Of the 82 Water Services Authority treatment plants audited by the EPA during 2010, two were operating more than 10% above their design capacity

These drinking water treatment plants were Westport and Louisburgh in Co. Mayo. Both plants were the subject of EPA enforcement action and both have subsequently brought the plants within their design capacity during 2011.

ii. Control and Supervision of chemicals used in the treatment of drinking water.

The use of chemicals as coagulants, coagulant aids and disinfectants is an essential part of the treatment of water - without their use the quality of drinking water would be compromised. Issues can arise where inappropriate or unapproved chemicals are used in treatment plants, where dosing is poorly controlled or where accidents occur. While the majority of chemicals used in Ireland are fit for purpose and used correctly, audits conducted by the EPA during 2010 identified the following issues associated with their use:

- 18 plants audited where chemical dosing (excluding chlorination, i.e. coagulation and flocculation) was used, need to improve their dosing arrangements. Issues such as duty/standby dosing arrangements and pH control account for the majority of the improvements required.
- 3 plants audited that had chemical treatment in place were found to be using inappropriate chemicals. These incidents related to the use of out of date testing reagents (e.g. to determine free chlorine) or the use of expired sodium hypochlorite.

e. Risks from Hazardous Events (Freezing Weather)

Severe weather events in recent years have posed a significant threat to many drinking water supplies. Freezing weather can lead to hazards such as increased demand (due to increased leakage due to bursts) and it can also impact on the treatment process. In particular the coagulation process is temperature dependent and any drop in temperature close to freezing for an extended period can necessitate a reduction in throughput at the plant. Two freezing weather events were experienced in 2010 in January and December. Boil water notices were put in place in six water supply zones arising directly or indirectly from the freezing weather.

3.4 Notifications of Failures to meet Parametric Values

The Drinking Water Regulations require Water Services Authorities (local authorities) to ensure that any failure to meet the limits set in the Regulations is immediately investigated to determine the cause of such a failure. The Water Services Authority must notify the EPA of any failure and the results of its investigations in accordance with the *Drinking Water Handbook on the Implementation of the Regulations for Water Service Authorities for Public Water Supplies*.

The EPA assesses each notification received and the corrective actions proposed by the Water Services Authority. If the corrective action is not deemed to be satisfactory the EPA may carry out an audit of the treatment plant to assess the actions taken or it may issue a legally binding Direction.

In advance of notifying the Agency, Water Services Authorities (WSA) are required to consult with the Health Service Executive where there is a potential danger to human health. The agreement reached determines whether the EPA is notified under Regulation 9 or Regulation 10 of the 2007 Drinking Water Regulations. Regulation 9 deals with circumstances where there may be a potential danger to human health while Regulation 10 deals with circumstances where there is an exceedance of the drinking water standards but there is not a potential danger to human health. Where there is a potential danger to human health a boil water notice or water restriction may be imposed on consumers of the supply.

Where a water supply has failed to meet the standard specified in the Regulations, the Water Services Authority must consult with the Health Service Executive. Where a WSA, in consultation and agreement with the HSE consider that a supply constitutes a potential danger to human health, they are required to ensure that the use of such water is restricted or other actions are taken to protect human health and that consumers are informed. As part of the determination of the potential danger to human health, the WSA/HSE may consider the concentrations found in the supply, the anticipated duration of the non-compliance, the history of the supply and the remedial works that are being undertaken or planned to be undertaken.

During 2010, the EPA received and assessed notifications in relation to public water supplies. There was a general reduction in the number of supplies in which key microbiological and chemical parameters were detected in 2010 compared to 2009.

A breakdown of the number of public water supplies in which a microbiological or chemical parameter exceeded the standards in 2009 and 2010 and was subsequently notified to the EPA is provided in Table 3-5.

Table 3-5. No. of Public Water Supplies where the detection of a microbiological or chemical parameter was notified to the EPA during 2010 and 2009.

Parameter	No. of PWSs with Parameter Exceeded in 2009	No. of PWSs with Parameter Exceeded in 2010	Change since 2009
Microbiological			
<i>E. coli</i>	48	45	↓ 3
<i>Enterococci</i>	11	9	↓ 2
Chemical			
Antimony	2	0	↓ 2
Arsenic	2	0	↓ 2
Benzene	1	0	↓ 1
Benzo(a)pyrene	2	0	↓ 2
Bromate	7	1	↓ 6
Cadmium	0	1	↑ 1
Copper	2	7	↑ 5
Epichlorohydrin	1	0	↓ 1
Fluoride	1	3	↑ 2
Lead	37	22	↓ 15
Nickel	2	6	↑ 4
Nitrate	5	7	↑ 2
Nitrite (at tap)	1	0	↓ 1
PAH	4	0	↓ 4
Pesticides	10	5	↓ 5
Trihalomethanes(Total)	96	79	↓ 17

↓ Improvement on 2009

↑ Disimprovement on 2009

The EPA assesses each notification of the failure to meet the parametric values within one working day of receipt. Priority is given to notifications received under Regulation 9, where the WSA has indicated there is a risk to public health. Where the investigation indicates that the risk cannot be resolved quickly and is due to the water treatment plant, the supply is added to the Remedial Action List. The WSA is then required to prepare a corrective action programme outlining what remedial measures are to be undertaken and to submit a timeframe for the completion of these remedial measures to the EPA.

A more detailed assessment of the supplies where there was a potential danger to human health (i.e. a boil water notice or water restriction was in place) and where notifications received for the four key parameters, *E. coli*, trihalomethanes, lead and nitrate is provided in the section below.

3.4.1 Boil Water Notices/Water Restrictions

In certain circumstances, the Health Service Executive (HSE) may advise the Water Services Authority that there is a potential danger to human health. The Water Services Authority must implement the advice provided by the HSE which may be to either prohibit the supply of water, boil the water prior to consumption, or to restrict the use of water.

In some cases, a boil water notice or water restriction notice does not apply to all of the supply. For example, the notice may apply to only those areas of a distribution network using lead piping, or to

water used for consumption by vulnerable groups such as infants, pregnant women, the elderly and immunocompromised patients.

During 2010, 43 new boil water notices and 7 water restriction notices were put in place. Eighty one individual boil water or water restriction notices were active at some stage during the 2010, representing an increase from the 69 notices active during 2009 (see Table 3-8).

Table 3-8: Summary of New Boil Notices / Water Restrictions during 2010.

Restriction Type	No. of Notices	No. of Supplies Affected
Boil Water Notices active during 2010:	59	51
Water Restrictions active during 2010 :	22	22
Total No. of Boil Notices / Water Restrictions:	81	73

The number of boil water notices active during 2010 increased from 52 in 2009 to 59 in 2010. The exceptional freezing weather experienced in December 2010 led to the imposition of 6 boil water notices due to the inability of the treatment plants to cope with the low temperatures (the coagulation stage is significantly affected). There was a rise in the number of precautionary boil water notices some of which were put in place in anticipation of potential water quality issues arising from remedial works being carried out on treatment plants (e.g. 4 BWNs in Galway were for this reason). Further details of the public water supplies affected by boil water notices or water restriction notices during 2010 are provided in Fig. 3-3 and in Appendix II.

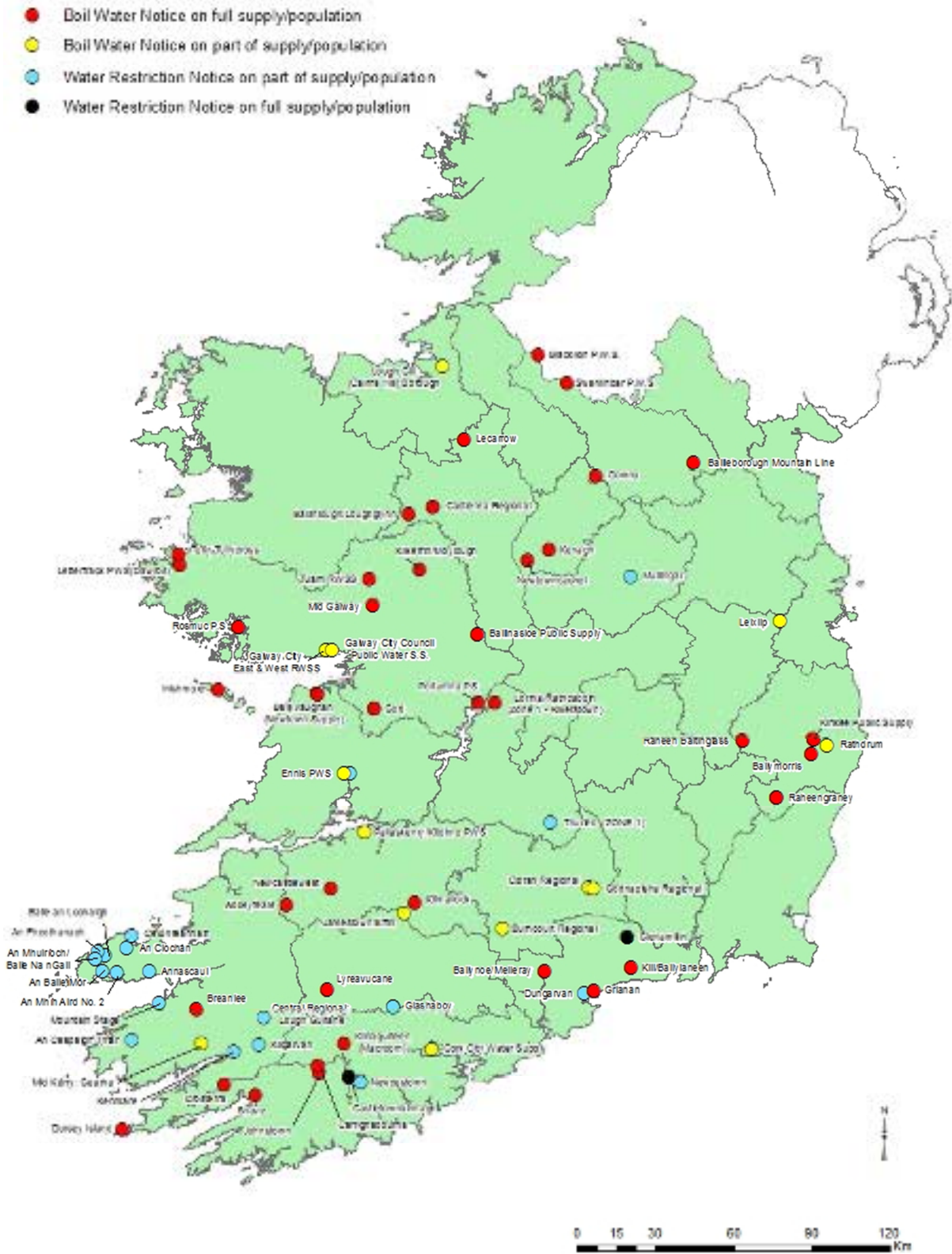


Figure 3-3: Map of Boil Water Notices/Restrictions of Use Placed or Active in Public Water Supplies during 2010.

3.4.2 *E. coli* Notifications

As outlined in Section 2.2, *E. coli* is a key health indicator of drinking water quality in Ireland. The EPA was notified of the detection of *E. coli* in public water supplies on 46 occasions in 2010 down from 63 occasions in 2009. The number of public water supplies in which *E. coli* was detected was 45 public water supplies in 2010 which is down slightly from 48 in 2009. A large number of public water supplies in 2009 in which *E. coli* was detected found *E. coli* on more than one occasion whereas in 2010 just one supply detected *E. coli* on more than one occasion (Table 3-9). Thus, while the number of supplies affected only reduced marginally, the number of repeat incidents of *E. coli* contamination appeared to reduce to nearly zero.

Table 3-9: Summary of *E. coli* Notifications.

	2010	2009
No. of PWS in which <i>E. coli</i> was detected	45	48
No. of times the detection of <i>E. coli</i> notified to the EPA	46	63

A detailed analysis of the likely cause of the *E. coli* failures is shown on Figure 3-4. The information in Figure 3-4 is a repeat of analysis carried out in the *Quality of Drinking Water in Ireland: A Report for the Year 2005* (EPA, 2006) which assessed the main causes of non-compliances with the *E. coli* standard. Since 2005 there has been a dramatic drop in the number of incidents of *E. coli* contamination in public water supplies. This analysis shows that although the number of incidents caused by pollution of the source and by network related issues (e.g. contamination at the tap or in the distribution network) has remained essentially the same, there has been a dramatic drop in the number of failures attributed to inadequate treatment at the plant (down from 24 failures to 13) and chlorination process breakdown (down from 35 to 13). This is undoubtedly due to the improvements to the security of disinfection systems such as the installation of chlorine monitors and alarms, duty/standby dosing arrangements and flow proportional/residual based dosing. It also highlights that if the number of *E. coli* incidents is to drop further a twin track approach of further improving and maintaining treatment and disinfection systems will be required in tandem with improvements in the distribution network.

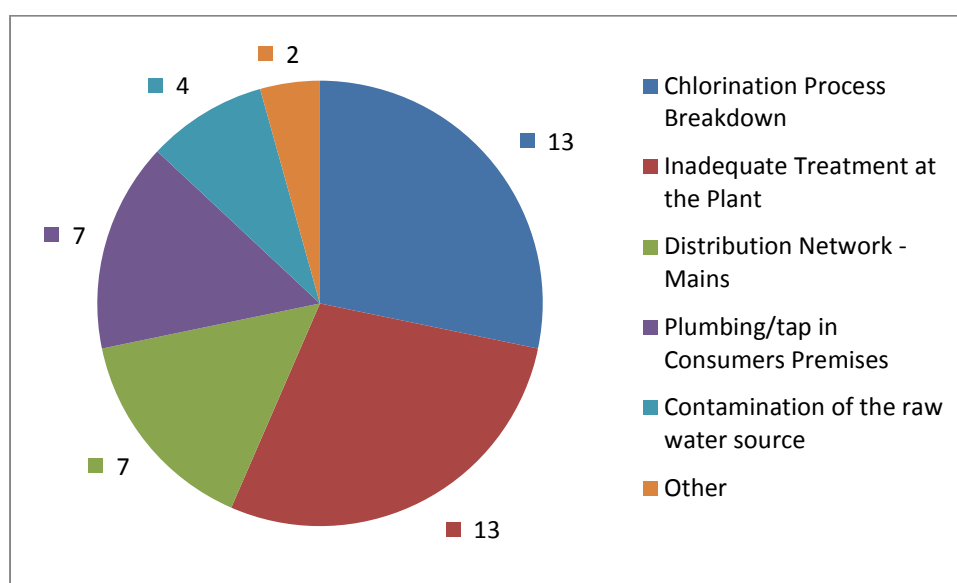


Figure 3-4. The Main Causes of *E. coli* Notifications in Public Water Supplies in 2010.

3.4.3 Trihalomethanes Notifications

There has been a drop in the number of public water supplies where the detection of trihalomethanes was notified to the EPA from 96 in 2009 to 79 in 2010. A breakdown of the main causes of the THM notifications is shown on Table 3-10. This shows that the majority of THM failures are caused by either the absence of adequate treatment to remove organic matter in any form or treatment systems that are incapable of removing organic matter (which are THM precursors).

Trihalomethanes are formed when chlorine reacts with naturally occurring organic matter in raw water. Chloroform and bromodichloromethane (two of the four THMs) are classified by the International Agency for Research on Cancer (IARC) as a 'possible carcinogen'. The Committee on the Toxicity of Chemicals in Food, Consumer Products and the Environment (COT) (UK) systematically reviewed the evidence with regard to THMs and cancer in 2008 and stated "*Problems remain in the interpretation of published studies. These include the small relative risks recorded, the possibility of residual confounding, and the problems with exposure assessment.*" They concluded "*the evidence for a causal association between cancer and exposure to chlorination by-products is limited and any such association is unlikely to be strong*". Although these associations are weak and are not consistently demonstrated in scientific studies, the possibility that they exist remains. Where evidence with regard to the environment and health is uncertain, the approach should be precautionary (reduce exposure to the hazard) and proportional (actions should not be disproportionate to the likely benefits and potential harms). THM exceedances can be eliminated by reducing organic matter in the raw water, optimising treatment to remove organic matter and optimising chlorination. However, care must be taken not to reduce chlorination in such a way as to compromise the microbial safety of drinking-water. A balance should be struck between an uncertain, small and long-term risk associated with elevated THMs and the significant, large, immediate and serious risk associated with inadequate chlorination e.g. *E. coli* O157 outbreak. Notwithstanding this, efforts to reduce and remove organic matter before chlorination should continue. The EPA and the HSE has prepared a position paper summarising the issues in relation to THM's in drinking water including health, legislation and interventions. This paper is available on the EPA and HSE websites.

The public should be reassured that all exceedances of the standards are examined to determine if there is a potential danger to human health. In determining this, the WSA and the HSE consider the concentration of THMs in the sample, the concentration over time, the history of the supply and the remedial works that are being undertaken and their timescale. Where there is a potential danger to human health, the Water Services Authority (WSA) must, in consultation with and subject to the agreement of the Health Services Executive (HSE) take follow up action and must inform consumers. To date the results of these assessments have not led to any water restrictions arising from any failure to meet the THM parametric value.

The elimination of all THMs exceedances is a priority of the EPA and it is for this reason that all supplies with persistent or intermittent THM exceedances have been included on the EPA's Remedial Action List. The majority of these supplies have action programmes in place and the EPA expects these remedial works to be complete as shown on Figure 3-5. However, where no action programmes have been received by the EPA, it has issued legally binding Directions in 2011 to require that appropriate actions are taken to eliminate THM exceedances.

Of the 240 supplies on the RAL 91 supplies providing water to 429,241 persons have reported THM exceedances, at least once. In other words, THM exceedances have been reported in up to 10% of public water supplies (serving approximately 10% of the population). Considerable work is being undertaken by Water Services Authorities to improve such supplies.

Table 3-10: Summary of Causes of THM Failures, 2010.

Reason for the Failure	No. of Public Water Supplies
No treatment barrier for the removal of organic matter	39
Organic removal in place at plant but not being operated optimally	19
Treatment plant in place but incapable of removing sufficient organic matter	16
Distribution network	2
Abnormal contamination of the raw water source	3

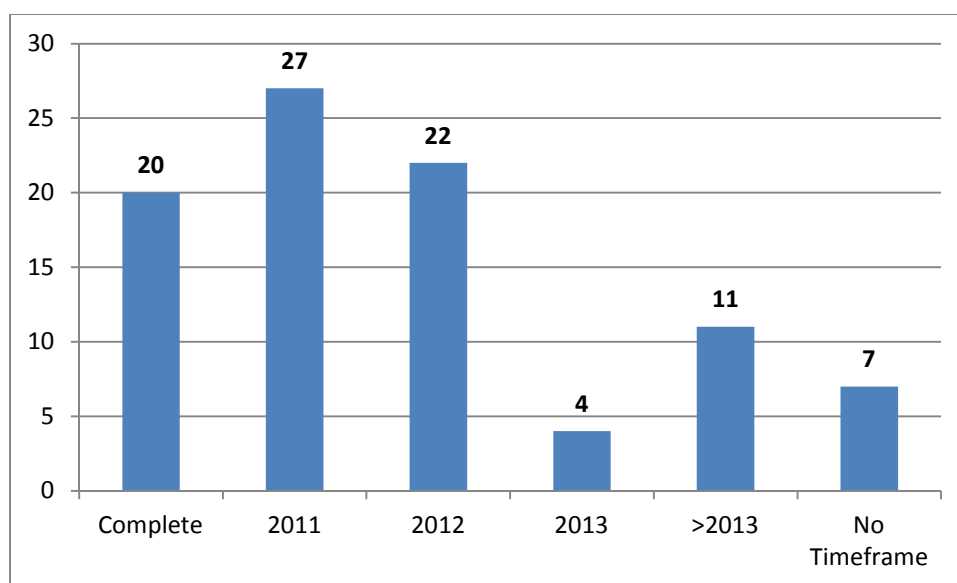


Figure 3-5. Timeframe for the Completion of Remedial Action Plans for Supplies on the RAL where THMs have been detected.

3.4.4 Nitrate Notifications

Elevated levels of nitrate above the parametric value of 50 mg/l was notified to the EPA in respect of 5 public water supplies in 2009 and 6 public water supplies in 2010. The 6 supplies in 2010 were located in Carlow (one supply) and Waterford (5 supplies). In all cases in 2010, elevated levels of nitrate were attributed to agricultural activities in the zone of contribution of the abstraction point (all were groundwater sources). Of the 5 supplies reporting elevated levels of nitrate in 2009, two have been resolved by blending or installation of nitrate removal with a further 2 reporting elevated levels of nitrate again in 2010. The remaining supply reported a marginal exceedance which was not repeated in the extensive monitoring carried out subsequent to the initial failure.

3.4.5 Lead Notifications

There has been a drop in the number of public water supplies where lead failures were notified to the EPA from 37 public water supplies in 2009 to 22 in 2010. It is likely that the higher number of supplies notifying the EPA of lead exceedances in 2009 was due to intensive lead monitoring programmes that were in place at the time in response to the EPA Advice Notes recommending that lead surveys be carried out by Water Services Authorities. In the majority of cases lead exceedances were due to either lead in the consumers plumbing or lead service pipes in the ownership of the

Water Services Authority in conjunction with lead in consumers plumbing. Only in one of the 22 public water supplies was the lead due to the presence of lead mains.

3.5 Directions and Prosecutions

Following an exceedance of a parametric value, the EPA may issue a Direction under the Drinking Water Regulations, if it is not satisfied that the actions taken by the Water Services Authority are adequate.

The EPA issued nine legally binding Directions to 8 Water Services Authorities during 2010, requiring specific actions to be undertaken to improve the security of the supply in question. A full list of all Directions issued by the EPA is included in Table 3-12 with details of the reason associated with each provided in Appendix I.

Table 3-11: Summary of EPA Enforcement Actions, 2010.

Action	Received / Issued under:	2010
Directions Issued:	Under Regulation 9:	2
	Under Regulation 10:	0
	Under Regulation 16 ¹⁵ :	7
Prosecutions:	Under the DW Regulations 2007:	0

Of the 9 Directions issued by the EPA during 2010, 4 have been complied with by the Water Services Authorities and these Directions were closed by the EPA. The remaining 5 are in the process of being complied with by the Water Services Authorities.

Table 3-12 provides a further breakdown on the Directions issued in 2010.

Table 3-12: Breakdown of Directions Issued to Water Services Authorities in 2010.

Water Services Authority	Supply	Reason for Direction	Date	Enforcement Status ¹⁶
Mayo	Westport PWS	Aluminium Exceedances	01-Mar-10	Open
Mayo	Louisburgh PWS	Aluminium Exceedances	01-Mar-10	Open
Meath	Mount Talbot PWS	<i>Cryptosporidium</i> in water supply	16-Apr-10	Open
Roscommon	Slane PWS	Inadequate Source Protection	26-May-10	Closed
Cork South	Ballyverane PWS	Inadequate Treatment	06-Aug-10	Closed
Cork	Cork County Council	Inadequate Chlorine Contact Time	31-Aug-10	Open
Kerry	Waterville PWS	Boil Water Notice	31-Aug-10	Closed
Monaghan	Carrickmacross PWS	Failure to Implement Audit Recommendations	28-Sep-10	Closed
Roscommon	Castlerea Urban PWS	<i>Cryptosporidium</i> in water supply	08-Nov-10	Open

¹⁵ Regulation 16 enables a supervisory authority to issue such binding directions as it considers appropriate for the purposes of fulfilling its functions.

¹⁶ The Enforcement Status is listed as Closed if the WSA has complied with the Direction. It is listed as Open if there are outstanding issues that must be actioned by the WSA.

3.5.1 Strategic Initiatives

The EPA has identified and pursued enforcement actions in key areas to drive improvement in drinking water quality. A summary of the areas targeted and actions being undertaken by the EPA is outlined in this section.

i. Supplies with no treatment barrier

There are 70 public water supplies on the Remedial Action List that have no treatment other than disinfection (a decrease from 73 in the previous reporting period).

All of these supplies are at high risk from the potential entry of *Cryptosporidium* into the supply if present in the source water. The EPA required Water Services Authorities to prepare and submit an action programme with timeframes for the installation of an appropriate barrier. Progress has been slow in putting appropriate barriers in place on these supplies. However, remedial works have been completed in 7 of these supplies (5 in Galway, 1 in Kerry and 1 in Roscommon). The effectiveness of the remedial works is being assessed by the relevant Water Services Authorities and such supplies will be considered for removal from the RAL (subject to adequate monitoring results by the end of 2011). Remedial works are scheduled for completion by the end of 2011 in a further 28 supplies. Assuming this work is completed as scheduled, half of the 70 supplies currently on the RAL for inadequate treatment for *Cryptosporidium* will have the necessary works complete by the end of 2011.

The supplies for which no completion date has been identified are Letterkenny (Donegal), Glenbeigh (Kerry) and Kilkerrin/Moylough (Galway). The EPA has initiated enforcement actions in respect of all three supplies.

Where barriers are installed, their adequacy and effective management is critical to their successful performance in preventing the entry of *Cryptosporidium* into the drinking water supply where it is present in the source water.

ii. Improvements to Disinfection Systems

To tackle the high instances of *E. coli* contamination of drinking water supplies identified in 2008, the Agency targeted adequate disinfection of all public water supplies. The Agency determined a weakness in that there was a lack of chlorine monitors and alarms.

The remedial actions required were identified and communicated to the City and County Managers Association. A Circular letter was issued to all Water Services Authorities in August 2008 requesting timeframes for addressing this issue. Water Services Authorities were requested to set up an adequate disinfection system and to prepare an action programme for the installation of chlorine monitors and alarms on all public water supplies. The Department of the Environment, Community and Local Government agreed to fund the initiative.

Significant investment has been made by all Water Services Authorities to complete this work, particularly where there were a large number of public water supplies or supplies in remote locations. Progress was tracked by the EPA through regular liaison with Water Services Authorities and through audits of drinking water treatment plants.

In January 2008, 31% of public water supplies had chlorine monitors and alarms in place. This had risen to 36% at the time the EPA circular was issued in August 2008. Good progress has been made in the installation of chlorine monitors and alarms following the issue of this circular with 81% of public

water supplies having installed them by December 2009. By the end of 2010 this had risen to 99% with the final few supplies installing chlorine monitors and alarms in the first half of 2011. Thus by July 2011 all public water supplies had chlorine monitors and alarms in place. However, out of hours response to these alarms is inadequate in some Water Services Authority areas due to Industrial Relations (IR) issues. It is anticipated that all such IR issues will be resolved shortly.

A key issue identified during EPA audits in 2010 is the adequacy of response to chlorine monitors alarms. Chlorine monitors will only provide extra security to drinking water supplies if they are responded to in an appropriate manner and actions are taken to resolve the cause of the alarms. In this regard, the development of documented protocols for responding to alarms is a necessary part of having in place a robust disinfection process. The EPA published recommended minimum criteria for the operation of chlorine based disinfection systems in 2009 in the EPA *Advice Note No.3 – E. coli in Drinking Water*. These criteria were:

1. A chlorine monitor and alarm must be in place.
2. There must be adequate chlorine contact time (15 mg.min/l) prior to the supply of any consumers.
3. Duty/standby dosing arrangements should be in place.
4. Chlorine dosing should be flow proportional or residual based.

iii. Lead in Drinking Water

To tackle the issue of lead in drinking water the EPA surveyed Water Services Authorities to identify any remaining lead distribution mains still in place. The results of this assessment indicate that 5,559 m of confirmed lead mains remains in place in 4 public water supplies. Further investigative work is ongoing to determine whether a further 819 m is lead mains. The full list and location of these mains is included in Table 3-13. It is possible that other lead mains are present but have not yet been identified (e.g. such mains may have been laid a long time ago and records may be inadequate to determine the exact location).

Table 3-13. Locations of Remaining Lead Distribution Mains.

Water Services Authority	Name of Water Supply	Length of Main(s)
Clare County Council	Ennis	330 m
Cork (North) County Council	Mallow	2036 m
Kerry County Council	Lough Guitane	2410 m
Longford County Council	Longford Central	783 m

The EPA has issued Directions to Clare County Council and Cork County Council in respect of the removal of lead mains in Ennis and Mallow, respectively. The action plans submitted by the two WSAs require that the lead mains are replaced by September 2011 in the case of Ennis and April 2012 in the case of Mallow.

In 2011, 3 further Directions were issued in respect of the Lough Guitane (Kerry), Longford Central and Granard (both Longford) supplies requiring the identification of all remaining lead mains and the submission of action programmes to ensure that all such lead mains are removed before 2013 (i.e. when the more stringent standard of 10 µg/l becomes effective).

While the replacement of lead mains in these areas will reduce lead concentrations that consumers are exposed to in these areas this alone will not deal with the main cause of lead exceedances nationally. A large number of properties built prior to 1970 have internal lead plumbing or a lead service connection pipe to the WSA distribution main. While the lead communication pipe may be in the ownership of the WSA, replacement of this part of the pipe in the absence of the replacement of

the property owners lead pipework will not reduce lead levels below safe levels. Thus, where the homeowner is willing to replace their lead pipework the WSA should replace their part of the lead communication pipe. However, the WSA must replace all lead communication pipes (as well as the internal plumbing) in local authority housing stock.

iv. Pesticides in Drinking Water

While the issue of pesticides in drinking water has not presented a risk to human health to date, occasional exceedances of the pesticides precautionary parametric value of 0.1 µg/l have occurred in a limited number of supplies. None of the exceedances of the 0.1 µg/l parametric value reported to the EPA to date have exceeded the World Health Organisation (WHO) Guideline Values for the individual pesticides concerned. The most common pesticides that have been detected to date and their associated WHO Guideline Value (where such a value has been set by the WHO) is outlined on Table 3-14. To tackle the issue of pesticides in drinking water the EPA is preparing an Advice Note on Pesticides in Drinking Water. In the first instance, the EPA advises that catchment surveys and catchment protection measures are initiated to eliminate or reduce the source of the pesticide. Where these measures do not work appropriate treatment will need to be installed to remove or break down the pesticide.

Table 3-14. Pesticides Notified to the EPA and Source.

Pesticide	Source of the Pesticide	WHO Guideline Value
2,4-D	Used to control broad leaved weeds including aquatic weeds	200 µg/l
Atrazine	Used to control annual broadleaf and grassy weeds	2 µg/l
Bromacil	Herbicide used for brush control on non cropland areas	N/A ¹⁷
Dichlorobenil	Herbicide used to control woody and broadleaf plants	N/A
Glyphosate	Broad spectrum herbicide used in both agriculture and forestry and for aquatic weed control	20 µg/l
Isoproturon	Used to control annual grasses and broad-leaved weeds in cereals	9 µg/l
MCPA	Used for the control of rushes in marshy areas	2 µg/l
Mecoprop	Used to control a variety of weeds mainly on turf, lawns and sports fields	10 µg/l
Metaldehyde	A pesticide used to kill slug, snail and other mollusca	N/A
Methoxychlor	Used as an insecticide on vegetables, fruit trees, fodder and farm animals	20 µg/l
Simazine	Pre-emergence herbicide used on a number of crops as well as in non-crop areas	2 µg/l
Triclopyr	Herbicide used to control woody and broadleaf plants on rights of way e.g. paths	N/A ¹⁸

¹⁷ The US EPA have set a Maximum Contaminant Level of 90 µg/l for bromacil

¹⁸ The US EPA have set a Maximum Contaminant Level of 500 µg/l for triclopyr

4.

Findings and Recommendations



4. FINDINGS AND RECOMMENDATIONS

The main recommendations presented in this chapter are based on an assessment of monitoring results for 2010 and EPA enforcement of the Drinking Water Regulations in 2010. While some of the recommendations are similar to previous years they are still considered relevant and in need of implementation by WSAs. New recommendations have been added where issues have been identified and remedial actions are needed. Recommendations are aimed at all Water Service Authorities and should be adopted for all public water supplies, public group water schemes, private group water schemes, and private supplies, as applicable.

Findings – Water Supply in Ireland

1. The majority of the population of Ireland (84.8%) is supplied with drinking water from one of the 945 Water Services Authority operated public water supplies. The remainder of the population is served by public group water schemes (671 supplies serving 2.6%), private group water schemes (497 supplies serving 5.2%), small private supplies (1,284 supplies serving 0.7%) and exempted supplies (single house private wells serving 6.7%).

Findings – Public Water Supplies

1. 166 (49%) of the original 339 public water supplies placed on the EPA Remedial Action List (RAL) have completed the necessary action programmes and have been either replaced, upgraded or have improved operations. Six Water Services Authorities did not provide an estimation of the timeframe for the completion of remedial actions for 15 supplies, 8 of which were in Donegal.
2. There are now 240 supplies on the EPA Remedial Action List. This figure is expected to reduce to 104 in 2012.
3. There are 70 public water supplies identified on the EPA Remedial Action List that have no treatment other than disinfection in place and where appropriate barriers to *Cryptosporidium* need to be installed. Remedial works have been completed in 7 of these supplies (monitoring to verify the effectiveness of the treatment is being undertaken) and a further 28 are scheduled for completion before the end of 2011.
4. *E. coli* was detected in 20 (2.2%) public water supplies during compliance monitoring in 2010 as compared to 27 (2.9%) supplies in 2009. The number has reduced from 87 in 2005 representing a 77% reduction in the past 5 years.
5. At the end of 2010, 99% of public water supply treatment plants had chlorine residual monitors and alarms in place, as compared to 81% in 2009. The remaining work was completed in 2011 and all public water supplies now have a chlorine monitor and alarm in place. However, systems for out-of-hours response to chlorine alarms had not been implemented by all Water Services Authorities at the end of 2010.
6. Public water supply compliance with the chemical standards was 99.2% in both 2009 and 2010.
7. The number of public water supplies failing to meet the trihalomethanes parametric value decreased from 16.1% in 2009 to 13.5% in 2010.

8. Compliance with the indicator parameters aluminium (97.7%) and turbidity (91.7% at the water treatment plant) remain areas for improvement. However, there has been a 50% reduction in the number of aluminium exceedances since 2005.
9. 43 new boil water notices (serving 66,077 persons) and 7 water restrictions (serving 310 persons) were put in place by 16 Water Services Authorities on 50 public water supplies in 2010.
10. While EPA audits in 2010 found a general improvement across the range of key areas examined, the adequacy of source protection remains an issue. Inadequate source protection measures were identified as an issue in 56% of supplies audited during 2010. The EPA has recently published an Advice Note on Source Protection and Catchment Management to Protect Groundwater Sources.
11. In September 2010, Galway City Council completed a pilot water safety plan for the Terryland Water Treatment Plant. This is the first Water Services Authority to establish such a comprehensive risk assessment and risk management system.
12. Just over half of the Water Services Authorities (19 of 33) are publishing some or all of the microbiological, chemical and indicator monitoring data required by the Ministerial Direction on the publication of drinking water results and those that are publishing this information are not publishing it within one month as required. However, Mayo and Kerry County Council were found to be in substantive compliance with the Ministerial direction.

Findings – Public Group Water Schemes, Private Group Water Schemes and Small Private Supplies

1. The microbiological quality of **public group water schemes** has marginally decreased in 2010 with 0.9% of supplies contaminated with *E. coli*, up from 0.5% in 2009.
2. The level of non-compliance with the trihalomethanes parametric value in **public group water schemes** improved from 31.6% in 2009 to 25.3% in 2010. The incidence of failure to meet the trihalomethanes parametric value was higher than the parent public water supplies (13.5%) from which the water is taken, indicating that management of the networks needs to be improved.
3. There has been an improvement in microbiological quality of the **private group water schemes** in 2010. Nonetheless, 56 schemes (11.6%) were found to be contaminated with *E. coli* at least once during 2010, down from 87 (17.0%) in 2009. The quality of drinking water in private group water schemes remains inferior to that in public water supplies.
4. There has been a slight improvement in microbiological quality in the **small private supplies** in 2010. Despite the positive trend, 72 supplies (7.4%) were found to be contaminated with *E. coli* at least once during 2010, down from 83 (8.6%) in 2009.
5. A total of 100 group water schemes completed the National Federation of Group Water Scheme's Quality Assurance course in 2010, bringing the total number that have completed the course at the end of 2010 to 302.

Recommendations - Public Water Supplies

1. Water Services Authorities should prioritise improvement works on supplies with a boil water or water restriction notice in place on all or part of the supply in order to have the required works completed as a matter of urgency. Following completion of the works, the Water Services Authority must liaise with the Health Service Executive in order to determine whether the completed works allow the removal of the boil water notice or restriction.
2. Water Services Authorities should ensure that all failures to meet the microbiological, chemical and indicator parametric values are investigated to ensure that the cause of the failure is identified and the appropriate corrective action is taken. Lessons learnt and corrective measures should be implemented in other supplies in the county.
3. Water Services Authorities should implement the World Health Organisation (WHO) Water Safety Plan approach to the management of water supplies. The EPA recommends that, in the first instance, Water Safety Plans should be prepared for the 8 largest public water supplies serving the large cities in Ireland. Water Services Authorities should also commence the preparation of Water Safety Plans selected small supplies.
4. Water Services Authorities should prioritise remedial works in supplies that are on the Remedial Action List of Public Water Supplies. The actions outlined to the EPA should be completed as soon as possible and within the timeframe specified to the EPA. Water Services Authorities responsible for one or more of the 15 supplies for which no timeframe has been submitted should prepare an action programme with associated timeframes and submit this plan to the EPA. Where the necessary works are complete the Water Services Authority should collate and submit monitoring data to verify the effectiveness of the remedial works to enable the supply to be removed from the RAL.
5. Water Services Authorities should review the management of chlorine monitors and alarms and ensure that such monitors are managed correctly (i.e. in the correct location and with an appropriate alarm setting) and that documented response protocols are in place for dealing with activations of the alarm. Where issues are outstanding in relation to the response to out of hours alarm remain these should be resolved without delay.
6. Water Services Authorities should ensure that all disinfection systems are operated in such a way that undisinfected water does not enter the distribution mains at any time. Water Services Authorities should have regard to EPA Advice Notes and the EPA Water Treatment Manual on Disinfection and should optimise the operation and management of the disinfection system to minimise trihalomethanes formation.
7. Water Services Authorities should ensure that sources of drinking water supplies are adequately protected against potential sources of contamination. Potential sources of pollution should be identified and managed so as to reduce risk of contamination in line with the Water Safety Plan approach.
8. Water Services Authorities should have in place operational Drinking Water Incident Response Plans (DWIRP) in accordance with the requirements of the Department of the Environment, Community and Local Government (DEHLG) Circular letter L4/09 issued in April 2009 (including for adverse weather conditions). An annual review and rehearsal of the DWIRP procedures should be carried out so that all personnel involved understand and are familiar with exactly what they have to do when an incident or emergency occurs.

9. Water Services Authorities with public water supplies without a *Cryptosporidium* treatment barrier in place and those that are using surface water or water influenced by surface water as their source, should implement an appropriate improvement plan without delay which may involve upgrading, replacing or closing the plant. *Cryptosporidium* risk assessments should be carried out on all supplies to assist in the identification of high risk supplies and the actions that are necessary to reduce this risk.
10. Water Services Authorities should examine the cause of trihalomethanes exceedances and should optimise catchment management, plant operation and management of the distribution network to reduce the levels of THMs in supply. However the efficiency of the disinfection system must never be compromised in an attempt to reduce THM levels.
11. Water Services Authorities should when conducting a lead survey, have regard to the current lead parametric value of 25 µg/l which will decrease to 10 µg/l from 2013 and to the EPA Advice Note No. 1: *Lead Compliance Monitoring and Surveys*.
12. Water Services Authorities should remove lead distribution mains as a priority in accordance with EPA Advice Note No. 2: *Action programmes to restore the quality of drinking water impacted by lead pipes and lead plumbing*. Such works should be completed no later than 25 December 2013 (i.e. when the more stringent parametric value of 10 µg/l becomes effective).
13. Water Services Authorities should review the type and format of information provided to the public and as a minimum should implement the requirements of Ministerial Direction WSP6/09.
14. All drinking water operators should undergo appropriate training in the provision of drinking water such as that delivered by the Water Services Training Group (www.wsntg.ie). As a minimum, each operator should be trained for each treatment process for which they are required to operate at the plant.

Recommendations - Public Group Water Schemes, Private Group Water Schemes and Small Private Supplies

1. Water Services Authorities should ensure that all failures to meet the microbiological, chemical and indicator parametric values in private water supplies are investigated to ensure that the cause of the failure is identified and the appropriate corrective action is taken. Water Services Authorities should take the appropriate enforcement action where there is evidence that such investigations and actions are not being undertaken.
2. Water Services Authorities should focus on the private group water schemes that are not being upgraded as part of a planned design build operate (DBO) bundle. Where a group water scheme has not prepared a corrective action programme in accordance with the requirements of Regulation 10 of the Regulations and where there is little evidence of action being taken to improve the quality of the water supply, the Water Services Authority should use enforcement powers under the 2007 Regulations to bring the supply into compliance.
3. Water Services Authorities should ensure that operators of public group water schemes clean and maintain the distribution networks regularly so that the quality of the water supplied by the Water Services Authority does not deteriorate in the group water schemes distribution network.

5.

Appendices



APPENDIX I - SUMMARY REPORTS FOR ALL LOCAL AUTHORITIES.

CARLOW COUNTY COUNCIL

Summary of Public Water Supply Quality in 2010

Carlow County Council is responsible for the operation of 14 Public Water Supplies (PWS) serving a population of 50,917.

Microbiological compliance levels in PWSs in Carlow increased from 99.7% in 2009 to 100% in 2010 whilst chemical compliance levels decreased from 99.9% in 2009 to 99.4% in 2010.

	Micro	Chemical
2010	100	99.4

Microbiological Parametric Values:

No non-compliances of the microbiological parametric values occurred during 2010.

Chemical Parametric Values:

A summary of the PWS with non-compliances of the chemical parametric values during 2010 is as follows:

Parameter	2010 Name of PWS
Nitrate	Ballinkillen (3)
Trihalomethanes	Carlow Central Regional (1)
Total No.:	4

The nitrate non-compliances were attributed to agricultural practices in the vicinity of the source whilst the trihalomethanes non-compliance was primarily due to the chlorination of water with elevated levels of organic matter present.

Boil Water Notices & Water Restrictions

No boil water notices or water restriction notices were issued to consumers during 2010 and none remained active during 2010 from previous years.

EPA Enforcement in 2010

Remedial Action List

No. of PWS on the RAL at the end of 2010:	2
No. of PWS added to RAL in 2010:	0
No. of PWS removed from RAL in 2010:	3

The RAL is a list of PWSs where remedial action is required to ensure compliance with the requirements of the Drinking Water Regulations. In 2010, the Borris, Carlow Town and Hacketstown public water supplies were removed from the RAL as remedial works had been completed to the satisfaction of the EPA.

Chlorine Monitors and Alarms

The installation of chlorine monitors and alarms is required to ensure that the supply is adequately disinfected at all times. Chlorine monitors and alarms are in place on all of Carlow County Council's public water supplies.

Audits of Drinking Water Treatment Plants

The EPA did not carry out any audits of drinking water treatment plants in Carlow during 2010.

CAVAN COUNTY COUNCIL

Summary of Public Water Supply Quality in 2010

Cavan County Council is responsible for the operation of 19 Public Water Supplies (PWS) serving a population of 25,340.

Microbiological compliance in Cavan PWSs decreased from 100% in 2009 to 96.6% in 2010 whilst chemical compliance levels have increased from 97.9% in 2009 to 99.0% in 2010.

	Micro	Chemical
2010	96.6	99.0

Microbiological Parametric Values:

A summary of the PWS with microbiological non-compliances during 2010 is as follows:

Parameter	2010	
	Name of PWS	
<i>E. coli</i>	Ballieborough Mountain line (2) Blacklion (1) Gowna (2)	
Total No.:	5	

Chemical Parametric Values:

A summary of the PWS with non-compliances of the chemical parametric values during 2010 is as follows:

Parameter	2010	
	Name of PWS	
Trihalomethanes	Arvagh (1) Ballyhaise (1) Killeshandra (1)	
Fluoride	Cavan RWSS (1) Kingscourt (1)	
Total No.:	5	

The trihalomethanes non-compliances were primarily due to the chlorination of water with elevated levels of organic matter present. The fluoride non-compliances were due to elevated levels of fluoride above the Irish standard. However, all samples were below the EU fluoride standard of 1.5 mg/l.

Boil Water Notices & Water Restrictions

A summary of water restriction (WR) notices issued to consumers or active during 2010 are detailed below (full details in Appendix II):

Date Issued	Date Lifted/ Active	BWN/ WR ¹	Name of PWS	Reason
Jan-10	Jan-10	BWN	Swanlinbar PWS	Enterococci
Jun-10	Jun-11	BWN	Ballieborough Mountain Line	<i>E. coli</i>
Aug-10	Sep-10	BWN	Gowna PWS	<i>E. coli</i>
Sep-10	Oct-10	BWN	Blacklion PWS	<i>E. coli</i>

At the end of 2010 there was one active boil water notice in place on the Ballieborough Mountain Line supply.

EPA Enforcement in 2010

Remedial Action List

No. of PWS on the RAL at the end of 2010:	7
No. of PWS added to RAL in 2010:	0
No. of PWS removed from RAL in 2010:	2

The RAL is a list of PWSs where remedial action is required to ensure compliance with the requirements of the Drinking Water Regulations. In 2010, Dowra and Killeshandra public water supplies in Cavan were removed from the RAL as remedial works had been completed to the satisfaction of the EPA.

Chlorine Monitors and Alarms

The installation of chlorine monitors and alarms is required to ensure that the supply is adequately disinfected at all times. Chlorine monitors and alarms are in place on all of Cavan County Council's public water supplies.

Audits of Drinking Water Treatment Plants

The following drinking water treatment plants were audited by the EPA during 2010:

Date Audited	PWS Audited
May- 10	Belturbet PWS
May-10	Cootehill PWS

¹ In some instances the boil notice or water restriction only applies to part of the supply.

CLARE COUNTY COUNCIL

Summary of Public Water Supply Quality in 2010

Clare County Council is responsible for the operation of 23 Public Water Supplies (PWS) serving a population of 80,313.

Microbiological compliance in Clare PWSs was 100% in both 2009 and 2010. Chemical compliance levels have increased from 99.0% in 2009 to 99.1% in 2010.

	Micro	Chemical
2010	100	99.1

Microbiological Parametric Values:

No non-compliances of the microbiological parametric values occurred during 2010.

Chemical Parametric Values:

A summary of the PWS with non-compliances of the chemical parametric values during 2010 is as follows:

Parameter	2010
	Name of PWS
Nickel	Scarriff (1)
Trihalomethanes	Flagmount* (6) W.Clare RWS Old (1)
Total No.:	8

*New source commissioned in Dec-2010.

The nickel non-compliance was caused by drinking water coming into contact with nickel plated tap fittings whilst the trihalomethanes non-compliances were primarily due to the chlorination of water with elevated levels of organic matter present.

Boil Water Notices & Water Restrictions

A summary of boil water notices (BWN) and water restriction (WR) notices active or issued to consumers by Clare County Council during 2010 is as follows (full details in Appendix II):

Date Issued	Date Lifted/ Active	BWN/ WR ²	Name of PWS	Reason
Oct-08	Active	WR	Ennis*	Lead
May-10	May-10	BWN	Ballyvaughan (Newtown Supply)	Taste
Sep-10	Oct-10	BWN	Ennis*	E. coli
Oct-10	Jun-11	BWN	Ballyvaughan (Newton Supply)	Odour

*BWN/WR affected part of the supply zone

One water restriction notice remained active during 2010 from previous years. At the end of 2010, one boil notice remained active on the Ballyvaughan PWS and one water restriction remained active on the Ennis PWS. Both the Ennis BWN and WR were in place for a part of the supply and affected 18 and 80 people respectively.

EPA Enforcement in 2010

Remedial Action List

No. of PWS on the RAL at the end of 2010:	3
No. of PWS added to RAL in 2010:	0
No. of PWS removed from RAL in 2010:	0

The RAL is a list of PWSs where remedial action is required to ensure compliance with the requirements of the Drinking Water Regulations. In 2010, no public water supplies were removed or added to the RAL in Clare.

Chlorine Monitors and Alarms

The installation of chlorine monitors and alarms is required to ensure that the supply is adequately disinfected at all times. Chlorine monitors and alarms were in place on all of Clare County Council's public water supplies by the end of 2010 with the exception of 1. This has subsequently been installed in 2011.

Audits of Drinking Water Treatment Plants

The EPA did not carry out any audits of drinking water treatment plants in Clare during 2010.

² In some instances the boil notice or water restriction only applies to part of the supply.

CORK CITY COUNCIL

Summary of Public Water Supply Quality in 2010

Cork City Council is responsible for the operation of 1 Public Water Supply (PWS) serving a population of 123,000.

Microbiological compliance levels in the Cork City PWS decreased from 100% in 2009 to 99.6% in 2010. Chemical compliance levels were 100% in both 2009 and 2010.

	Micro	Chemical
2010	99.6	100

Microbiological Parametric Values:

A summary of the PWS with microbiological non-compliances during 2010 is as follows:

Parameter	2010
	Name of PWS
<i>E. coli</i>	Cork City Water Supply (1)
Total No.:	1

Chemical Parametric Values:

No non-compliances of the chemical parametric values occurred during 2010.

Boil Water Notices & Water Restrictions

A summary of boil water notices (BWN) and water restriction (WR) notices issued to consumers by Cork City Council or active during 2010 is as follows (full details in Appendix II):

Date Issued	Date Lifted/Active	BWN/WR ³	Name of PWS	Reason
Jan-10	Jan-10	BWN	Cork City*	Inadequate Disinfection

*BWN affected part of the supply zone

1 new boil water notices was issued during 2010 which related to part of the supply and was not in place on the entire supply. At the end of 2010, no boil notices or water restrictions remained in place on Cork City Council's PWS.

EPA Enforcement in 2010

Remedial Action List

No. of PWS on the RAL at the end of 2010:	1
No. of PWS added to RAL in 2010:	0
No. of PWS removed from RAL in 2010:	0

The RAL is a list of PWSs where remedial action is required to ensure compliance with the requirements of the Drinking Water Regulations. Progress with the upgrade of Cork City's water supply has been slow and the supply is not likely to be upgraded until 2014.

Chlorine Monitors and Alarms

The installation of chlorine monitors and alarms is required to ensure that the supply is adequately disinfected at all times. A chlorine monitor and alarm is in place on Cork City Council's public water supply.

Audits of Drinking Water Treatment Plants

The following drinking water treatment plants were audited by the EPA during 2010:

Date Audited	PWS Audited
Jun-10	Lee Road Water Treatment Plant

³ In some instances the boil notice or water restriction only applies to part of the supply.

CORK COUNTY COUNCIL (NORTH)

Summary of Public Water Supply Quality in 2010

Cork County Council (North) is responsible for the operation of 75 Public Water Supplies (PWS) serving a population of 71,992.

Microbiological compliance in Cork (North) PWSs has decreased from 99.8% in 2009 to 99.1% in 2010 whilst chemical compliance levels have decreased from 100% in 2009 to 99.6% in 2010.

	Micro	Chemical
2010	99.1	99.6

Microbiological Parametric Values:

A summary of the PWS with microbiological non-compliances during 2010 is as follows:

Parameter	2010	
	Name of PWS	
<i>E.coli</i>	Kilcolman (1) Kildorrery Old (1) Laharn (1)	
<i>Enterococci</i>	Kilcolman (1)	
Total No.:	4	

Chemical Parametric Values:

A summary of the PWS with non-compliances of the chemical parametric values during 2010 is as follows:

Parameter	2010	
	Name of PWS	
Lead	Mallow (1)	
Fluoride	Allow Regional (1) Newmarket (2)	
Total No.:	4	

The lead non-compliance was attributed to the presence of lead mains in the distribution network. The fluoride non-compliances were due to elevated levels of fluoride above the Irish standard. However, all samples were below the EU fluoride standard of 1.5 mg/l.

Boil Water Notices & Water Restrictions

A summary of boil water notices (BWN) and water restriction (WR) notices issued to consumers or active during 2010 are detailed below (full details in Appendix II):

Date Issued	Date Lifted/ Active	BWN/ WR ⁴	Name of PWS	Reason
Oct-09	Mar-10	BWN	Lyreavucane*	<i>E. coli</i>

*Supply is now longer in operation, area is now supplied by the Millstreet PWS

1 boil water notice was in place during 2010 and no new water restriction notices were issued. The BWN issued in Lyreavucane affected just 6 people and related to the detection of *E. coli*. At the end of 2010, there were no active boil or water restriction notices in place.

EPA Enforcement in 2010

Remedial Action List

No. of PWS on the RAL at the end of 2010:	9
No. of PWS added to RAL in 2010:	2
No. of PWS removed from RAL in 2010:	1

The RAL is a list of PWSs where remedial action is required to ensure compliance with the requirements of the Drinking Water Regulations. In 2010, the Kilmagner public water supply was removed from the RAL, however the Kildorrery and Skahanagh public water supplies were added. Eight of the 9 public water supplies on the RAL in North Cork remained on the RAL as systems for out-of-hours response to chlorine alarms had not been implemented by Cork County Council (North) at the end of 2010.

Chlorine Monitors and Alarms

The installation of chlorine monitors and alarms is required to ensure that the supply is adequately disinfected at all times. Chlorine monitors and alarms are in place on all of Cork County Council's public water supplies in the northern division of the county. However, systems for out-of-hours response to chlorine alarms had not been implemented by Cork County Council (North) at the end of 2010.

Directions

The EPA issued 1 Direction to Cork County Council (North) during 2010. Details are as follows:

Name of PWS	Reason for Direction
All	Disinfection Contact Time

A Direction was issued to Cork County Council in relation to disinfection contact time at all public water supplies.

Audits of Drinking Water Treatment Plants

The following drinking water treatment plants were audited by the EPA during 2010:

Date Audited	PWS Audited
Oct-10	Charleville
Oct-10	Olivers Cross St Josephs Rd.
Aug-10	Millstreet
Oct-10	Kildorrery

⁴ In some instances the boil notice or water restriction only applies to part of the supply.

CORK COUNTY COUNCIL (SOUTH)

Summary of Public Water Supply Quality in 2010

Cork County Council (South) is responsible for the operation of 69 Public Water Supplies (PWS) serving a population of 201,511.

Microbiological compliance in Cork (South) PWSs has increased from 99.7% in 2009 to 99.8% in 2010 whilst chemical compliance levels decreased from 99.9% in 2009 to 99.1% in 2010.

	Micro	Chemical
2010	99.8	99.1

Microbiological Parametric Values:

A summary of the PWS with microbiological non-compliances during 2010 is as follows:

Parameter:	2010 Name of PWS
<i>E.coli</i>	Carrignadoura (1)
Total No.:	1

Chemical Parametric Values:

A summary of the PWS with non-compliances of the chemical parametric values during 2010 is as follows:

Parameter	2010 Name of PWS
Lead	Crookstown (1)
Trihalomethanes	Ballingeary (1)
Fluoride	Cobh Regional (2) Inniscarra (1) Innishannon (1) Midleton Urban (1)
Total No.:	7

The lead non-compliance was attributed to the presence of a lead communication pipe in the distribution network whilst the trihalomethane non-compliance was primarily due to the chlorination of water with elevated levels of organic matter present. The fluoride non-compliances were due to elevated levels of fluoride above the Irish standard. However, all samples, with the exception of one sample taken from the Cobh Regional PWS, were below the EU fluoride standard of 1.5 mg/l.

Boil Water Notices & Water Restrictions

A summary of boil water notices (BWN) and water restriction (WR) notices issued to consumers or active during 2010 are detailed below (full details in Appendix II):

Date Issued	Date Lifted/ Active	BWN/ WR ⁵	Name of PWS	Reason
Nov-08	Active	WR	Glashaboy*	Lead
Aug-09	Feb-11	WR	Newcestown*	<i>E. coli</i>
Jun-10	Sep-10	BWN	Kilnagorteen Macroom	<i>E. coli</i>
Jul-10	Active	WR	Glashaboy*	Lead
Sep-10	Feb-11	BWN	Carrignadoura	<i>E.coli</i>

*WR affected part of supply zone

Three new boil water notices were issued during 2010 and one new water restriction notice was issued. The WR's issued in Glashaboy affect 150 and 190 people and are related to lead piping.

At the end of 2010, 3 water restriction notices (2 in Glashaboy and Newcestown) remained in place. One boil water notice remained in place at end of 2010 in Carrignadoura.

⁵ In some instances the boil notice or water restriction only applies to part of the supply.

EPA Enforcement in 2010

Remedial Action List

No. of PWS on the RAL at the end of 2010:	10
No. of PWS added to RAL in 2010:	1
No. of PWS removed from RAL in 2010:	0

The RAL is a list of PWSs where remedial action is required to ensure compliance with the requirements of the Drinking Water Regulations. In 2010, the Carrignadoura public water supply was added to the RAL. Eight of the 10 public water supplies on the RAL in South Cork remained on the RAL as systems for out-of-hours response to chlorine alarms had not been implemented by Cork County Council (South) at the end of 2010.

Chlorine Monitors and Alarms

The installation of chlorine monitors and alarms is required to ensure that the supply is adequately disinfected at all times. Chlorine monitors and alarms are in place on all of Cork County Council's public water supplies in the northern division of the county. However, systems for out-of-hours response to chlorine alarms had not been implemented by Cork County Council (South) at the end of 2010.

Directions

The EPA issued 2 Directions to Cork County Council (South) during 2010. Details are as follows:

Name of PWS	Reason for Direction
Ballyverane	No Disinfection
All	Contact Time

A Direction was issued to Cork County Council in relation to disinfection contact time at all public water supplies. A second Direction was issued to install an appropriate disinfection system at Ballyverane.

Audits of Drinking Water Treatment Plants

The following drinking water treatment plants were audited by the EPA during 2010.

Date Audited	PWS Audited
Oct-10	Roberts Cove
Aug-10	Clondrohid
Oct-10	Cloyne

CORK COUNTY COUNCIL (WEST)

Summary of Public Water Supply Quality in 2010

Cork County Council (West) is responsible for the operation of 33 Public Water Supplies (PWS) serving a population of 33,970.

Microbiological compliance in Cork (West) PWSs has increased from 99.5% in 2009 to 100% in 2010 whilst chemical compliance levels have increased from 98.4% in 2009 to 98.7% in 2010.

	Micro	Chemical
2010	100	98.7

Microbiological Parametric Values:

No non-compliances of the microbiological parametric values occurred during 2010.

Chemical Parametric Values:

A summary of the PWS with non-compliances of the chemical parametric values during 2010 is as follows:

Parameter	2010
	Name of PWS
Trihalomethanes	Castletownbere (1) Drimoleague (1) Skibbereen (1)
Fluoride	Bantry Derryginagh (1) Clonakilty (1)
Total No.:	5

The trihalomethanes non-compliances were primarily due to the chlorination of water with elevated levels of organic matter present whilst the fluoride non-compliances were due to elevated levels of fluoride above the Irish standard. However, all samples were below the EU fluoride standard of 1.5 mg/l.

Boil Water Notices & Water Restrictions

A summary of boil water notices (BWN) and water restriction (WR) notices issued to consumers or active during 2010 are detailed below (full details in Appendix II):

Date Issued	Date Lifted/Active	BWN/WR ⁶	Name of PWS	Reason
Mar-07	Active	WR	Castletownkinnagh	Nitrate
Jun-08	Apr-10	BWN	Dursey Island	E. coli
Jul-08	Mar-10	BWN	Croterra	E. coli
Mar-09	Mar-10	BWN	Snave*	E. coli
Jun-09	Mar-10	BWN	Johnstown	Inadequate Disinfection

*Snave supply is no longer operating and was replaced with the Bantry Derryginagh supply in Feb-2010.

No new boil water notices were issued during 2010, four remained in place from previous years but were lifted in 2010. No new water restriction notices were issued but one remains in place (Castletownkinnagh) from a previous year.

EPA Enforcement in 2010

Remedial Action List

No. of PWS on the RAL at the end of 2010:	16
No. of PWS added to RAL in 2010:	0
No. of PWS removed from RAL in 2010:	2

The RAL is a list of PWSs where remedial action is required to ensure compliance with the requirements of the Drinking Water Regulations. In 2010, 2 PWS were removed from the RAL (Bantry (Old) and Snave) and none were added.

Chlorine Monitors and Alarms

The installation of chlorine monitors and alarms is required to ensure that the supply is adequately disinfected at all times. Chlorine monitors and alarms are in place on all of Cork County Council's public water supplies in the northern division of the county. However, systems for out-of-hours response to chlorine alarms had not been implemented by Cork County Council (West) at the end of 2010.

Directions

The EPA issued 1 Direction to Cork County Council (West) during 2010. Details are as follows:

Name of PWS	Reason for Direction
All	Disinfection Contact Time

A Direction was issued to Cork County Council in relation to disinfection contact time at all public water supplies.

Audits of Drinking Water Treatment Plants

The EPA did not carry out any audits of drinking water treatment plants in Cork (West) during 2010.

⁶ In some instances the boil notice or water restriction only applies to part of the supply.

DONEGAL COUNTY COUNCIL

Summary of Public Water Supply Quality in 2010

Donegal County Council is responsible for the operation of 34 Public Water Supplies (PWS) serving a population of 132,149.

Microbiological compliance levels in PWSs in Donegal were 99.8% in both 2009 and 2010. Chemical compliance levels were also unchanged, 99.4% compliance in 2009 and 2010.

	Micro	Chemical
2010	99.8	99.4

Microbiological Parametric Values:

A summary of the PWS with microbiological non-compliances during 2010 is as follows:

Parameter	2010	
	Name of PWS	
Enterococci	Pollan Dam (1)	
Total No.:		1

Chemical Parametric Values:

A summary of the PWS with non-compliances of the chemical parametric values during 2010 is as follows:

Parameter	2010	
	Name of PWS	
Lead	Bundoran Urban (2) Carrigart-Downings (1) Fintown (1)	
Trihalomethanes	Ballintra (1) Ballyshannon (2) Cashilard (1) Fintown (1) Glenties-Ardara (1) Greencastle (1) Letterkenny (3) Portnoo-Narin (1) Rathmullen (2)	
Copper	Letterkenny (1)	
Total No.:		18

The lead and copper non-compliances were due to the consumer's internal plumbing whilst the trihalomethanes non-compliances were primarily due to the chlorination of water with elevated levels of organic matter present.

Boil Water Notices & Water Restrictions

No boil water notices or water restriction notices were issued to consumers during 2010 and none remained active during 2010 from previous years.

EPA Enforcement in 2010

Remedial Action List

No. of PWS on the RAL at the end of 2010:	16
No. of PWS added to RAL in 2010:	3
No. of PWS removed from RAL in 2010:	4

The RAL is a list of PWSs where remedial action is required to ensure compliance with the requirements of the Drinking Water Regulations. In 2010, 4 public water supplies were removed from the RAL (Carrick-Teelin, Lifford (Old), Lough Mourne and Malinmore) but 3 were added (Donegal (River Eske), Fintown and Portnoo-Narin). Progress in completing the necessary remedial works in Donegal has been slow and no action plans had been prepared for several public water supplies at the end of 2010.

Chlorine Monitors and Alarms

The installation of chlorine monitors and alarms is required to ensure that the supply is adequately disinfected at all times. Chlorine monitors and alarms are now in place on all public water supplies in Donegal.

Audits of Drinking Water Treatment Plants

The following drinking water treatment plants were audited by the EPA during 2010:

Audit Date	PWS Audited
Jun-10	Ballyshannon PWS

DUBLIN CITY COUNCIL

Summary of Public Water Supply Quality in 2010

Dublin City Council is responsible for the operation of 6 Public Water Supplies (PWS) serving a population of 476,500.

Microbiological compliance in Dublin City PWSs increased from 99.9% in 2009 to 100% in 2010 whilst chemical compliance levels decreased from 99.8% in 2009 to 99.7% in 2010.

	Micro	Chemical
2010	100	99.7

Microbiological Parametric Values:

No non-compliances of the microbiological parametric values occurred during 2010.

Chemical Parametric Values:

A summary of the PWS with non-compliances of the chemical parametric values during 2010 is as follows:

Parameter	2010
	Name of PWS
Lead	Ballymore Eustace (1)
	Leixlip (1)
	Vartry-Ballymore Eustace (1)
Total No.:	3

The lead non-compliances were attributed to the presence of lead communication pipes in the distribution network.

Boil Water Notices & Water Restrictions

No boil water notices or water restriction notices were issued to consumers during 2010 and none remained active from previous years.

EPA Enforcement in 2010

Remedial Action List

No. of PWS on the RAL at the end of 2010:	3
No. of PWS added to RAL in 2010:	2
No. of PWS removed from RAL in 2010:	0

The RAL is a list of PWSs where remedial action is required to ensure compliance with the requirements of the Drinking Water Regulations. In 2010, 2 water supply zones in Dublin were added to the RAL. Both are mixed supplies that obtain water from the open storage reservoir at Stillorgan.

Chlorine Monitors and Alarms

The installation of chlorine monitors and alarms is required to ensure that the supply is adequately disinfected at all times. Chlorine monitors and alarms were in place on all Dublin City Council PWS by the end of 2010.

Audits of Drinking Water Treatment Plants

The following drinking water treatment plants were audited by the EPA during 2010:

Date Audited	PWS Audited
Feb-10	Vartry Reservoir
Nov-10	Ballyboden
Mar-10	Stillorgan Reservoir

DUN LAOGHAIRE RATHDOWN COUNTY COUNCIL

Summary of Public Water Supply Quality in 2010

Dun Laoghaire Rathdown County Council is responsible for the operation of 8 Public Water Supplies (PWS) serving a population of 220,670.

Microbiological compliance in Dun Laoghaire Rathdown PWSs has improved from 99.7% in 2009 to 100% in 2010 whilst chemical compliance levels have improved from 99.6% in 2009 to 99.9% in 2010.

	Micro	Chemical
2010	100	99.9

Microbiological Parametric Values:

No non-compliances of the microbiological parametric values occurred during 2010.

Chemical Parametric Values:

A summary of the PWS with non-compliances of the chemical parametric values during 2010 is as follows:

Parameter	2010	
	Name of PWS	
Benzene	Ballyboden	
Total No.:	1	

The benzene non-compliance was a once off anomalous occurrence. The sample was taken from a depot and all follow up samples were clear.

Boil Water Notices & Water Restrictions

No boil water notices or water restriction notices were issued to consumers during 2010 and none remained active from previous years.

EPA Enforcement in 2010

Remedial Action List

No. of PWS on the RAL at the end of 2010:	3
No. of PWS added to RAL in 2010:	3
No. of PWS removed from RAL in 2010:	0

The RAL is a list of PWSs where remedial action is required to ensure compliance with the requirements of the Drinking Water Regulations. In 2010, 3 water supply zones in Dun Laoghaire Rathdown were added to the RAL. Two of these supplies (Church Road and Stillorgan) are supplied directly from the open storage reservoir in Stillorgan while the other is served from the Vartry Reservoir (Roundwood) which was added due to the vulnerability of the Callow Hill tunnel.

Chlorine Monitors and Alarms

The installation of chlorine monitors and alarms is required to ensure that the supply is adequately disinfected at all times. Chlorine monitors and alarms were in place on all Dun Laoghaire Rathdown County Council PWS by the end of 2010.

Audits of Drinking Water Treatment Plants

The EPA did not carry out any audits of drinking water treatment plants in Dun Laoghaire Rathdown County Council during 2010.

FINGAL COUNTY COUNCIL

Summary of Public Water Supply Quality in 2010

Fingal County Council is responsible for the operation of 4 Public Water Supplies (PWS) serving a population of 252,000.

Microbiological compliance in Fingal PWSs has increased from 99.2% in 2009 to 100% in 2010 whilst chemical compliance levels have decreased from 100% in 2009 to 99.8% in 2010.

	Micro	Chemical
2010	100	99.8

Microbiological Parametric Values:

No non-compliances of the microbiological parametric values occurred during 2010.

Chemical Parametric Values:

A summary of the PWS with non-compliances of the chemical parametric values during 2010 is as follows:

Parameter	2009
	Name of PWS
Nickel	Bog of the Ring (1)
Total No.:	1

The nickel non-compliance was caused by drinking water coming into contact with nickel plated tap fittings.

Boil Water Notices & Water Restrictions

A summary of boil water notices (BWN) and water restriction (WR) notices issued to consumers or active during 2010 are detailed below (full details in Appendix II):

Date Issued	Date Lifted/Active	BWN/WR ⁷	Name of PWS	Reason
Aug-10	Sep-10	BWN	Leixlip*	<i>E. coli</i>
Sep-10	Sep-10	BWN	Leixlip*	<i>E. coli</i>

*BWN affected part of the supply zone

The two Leixlip boil water notices relate to the same area. There was a problem with a localised part of the private distribution network in an industrial park. At the end of 2010 no boil or water restriction notices remain in place.

EPA Enforcement in 2010

Remedial Action List

No. of PWS on the RAL at the end of 2010:	0
No. of PWS added to RAL in 2010:	1
No. of PWS removed from RAL in 2010:	1

The RAL is a list of PWSs where remedial action is required to ensure compliance with the requirements of the Drinking Water Regulations. In 2010, the Leixlip/Stillorgan water supply zone was added to the RAL as the supply was fed directly from the Vartry Reservoir (Roundwood) which was added due to the vulnerability of the Callow Hill tunnel. The Leixlip/Stillorgan water supply zone was subsequently removed from the RAL as the supply zones were reorganised so that it was no longer supplied by the Vartry Reservoir.

Chlorine Monitors and Alarms

The installation of chlorine monitors and alarms is required to ensure that the supply is adequately disinfected at all times. Chlorine monitors and alarms were in place on all Fingal County Council PWS by the end of 2010.

Audits of Drinking Water Treatment Plants

The EPA did not carry out any audits of drinking water treatment plants in Fingal County Council during 2010.

⁷ In some instances the boil notice or water restriction only applies to part of the supply.

GALWAY CITY COUNCIL

Summary of Public Water Supply Quality in 2010

Galway City Council is responsible for the operation of 1 Public Water Supply (PWS) serving a population of 75,606.

Microbiological compliance in the Galway City PWS decreased from 100% in 2009 to 99.7% in 2010 whilst chemical compliance decreased marginally from 100% in 2009 to 99.9% in 2010.

	Micro	Chemical
2010	99.7	99.9

Microbiological Parametric Values:

A summary of the PWS with microbiological non-compliances during 2010 is as follows:

Parameter	2010	
	Name of PWS	
<i>E. coli</i>	Galway City (1)	
Total No.:	1	

Chemical Parametric Values:

A summary of the PWS with non-compliances of the chemical parametric values during 2010 is as follows:

Parameter	2010	
	Name of PWS	
Fluoride	Galway City (1)	
Total No.:	1	

The fluoride non-compliance was due to elevated levels of fluoride above the Irish standard. However, all samples were below the EU fluoride standard of 1.5 mg/l.

Boil Water Notices & Water Restrictions

A summary of boil water notices (BWN) and water restriction (WR) notices issued to consumers or active during 2010 are detailed below (full details in Appendix II):

Date Issued	Date Lifted/ Active	BWN/ WR ⁸	Name of PWS	Reason
Dec-10	Dec-10	BWN	Galway City*	E. coli

*BWN affected part of the supply zone

One new boil water notice was issued to consumers by Galway City Council during 2010 relating to part of the supply at the Wellpark Grove Estate due to ingress into the distribution mains. No boil or water restrictions remained active from previous years.

⁸ In some instances the boil notice or water restriction only applies to part of the supply.

EPA Enforcement in 2010

Chlorine Monitors and Alarms

The installation of chlorine monitors and alarms is required to ensure that the supply is adequately disinfected at all times. A chlorine monitor and alarm is in place on Galway City Council's PWS.

Audits of Drinking Water Treatment Plants

The EPA did not carry out any audits of drinking water treatment plants in Galway City Council during 2010.

Galway City Council was the first Water Service Authority in Ireland to fully implement the Water Safety Plan approach to the management of the Galway City public water supply.

GALWAY COUNTY COUNCIL

Summary of Public Water Supply Quality in 2010

Galway County Council is responsible for the operation of 38 Public Water Supplies (PWS) serving a population of 133,310.

Microbiological compliance has increased in Galway PWSs from 98.8% in 2009 to 100% in 2010 whilst chemical compliance levels were 99.0% in both 2009 and 2010.

	Micro	Chemical
2010	100	99.0

Microbiological Parametric Values:

No non-compliances of the microbiological parametric values occurred during 2010.

Chemical Parametric Values:

A summary of the PWS with non-compliances of the chemical parametric values during 2010 is as follows:

Parameter	2010 Name of PWS
Selenium	Inishere (3)
Trihalomethanes	Ardan/Dooroy (1) Carraroe (2) Cleggan/Claddaghduff (1) Clifden (1) Dunmore/Glenamaddy (2) Inishere (1) Kinvara (2) Leenane (1) Letterfrack (1) Mid-Galway (1) Portumna (1) Rosmuc (1) Spiddal (1) Tully-Tullycross (1)
Fluoride	Clifden (1)
Total No.:	21

The selenium non-compliances were due to the ingress of saline water into the source water whilst the trihalomethanes non-compliances were primarily due to the chlorination of water with elevated levels of organic matter present. The fluoride non-compliance was due to elevated levels of fluoride above the Irish standard. However, levels were below the EU fluoride standard of 1.5 mg/l.

Boil Water Notices & Water Restrictions

A summary of boil water notices (BWN) and water restriction (WR) notices issued to consumers or active during 2010 are detailed below (full details in Appendix II):

Date Issued	Date Lifted/Active	BWN/WR ⁹	Name of PWS	Reason
Oct-08	Active	BWN	Letterfrack	<i>Cryptosporidium</i>
Oct-08	Active	BWN	Rosmuc	<i>Cryptosporidium</i>
Nov-09	Apr-10	BWN	Ballinasloe	Flooding
Nov-09	Aug-11	BWN	Mid-Galway	<i>E.coli</i>
Feb-10	Feb-10	BWN	Tuam	Burst Mains
Mar-10	Apr-10	BWN	Portumna	Upgrade Works
Mar-10	Dec-10	BWN	Gort	Upgrade Works
Jun-10	Jul-10	BWN	Inishmore	Precautionary
Aug-10	Active	BWN	Tully-Tullycross	<i>E. coli</i>
Sep-10	Sep-10	BWN	Galway City East and West*	Tanker Supply
Sep-10	Sep-10	BWN	Kilkerrin/Moylough	Turbidity

⁹ In some instances the boil notice or water restriction only applies to part of the supply.

Dec-10	Apr-11	BWN	Gort	Plant failure
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*BWN affected part of the supply zone

Eight new boil water notices in 7 supplies were issued during 2010 and four remained in place from previous years. Four of the boil water notices were put in place as a precaution during remedial works. No new water restriction notices were issued and none remained in place from a previous year.

At the end of 2010, four boil water notices remained active on the Letterfrack, Rosmuc, Tully-Tullycross and Gort PWS's.

EPA Enforcement in 2010

Remedial Action List

No. of PWS on the RAL at the end of 2010:	32
No. of PWS added to RAL in 2010:	2
No. of PWS removed from RAL in 2010:	4

The RAL is a list of PWSs where remedial action is required to ensure compliance with the requirements of the Drinking Water Regulations. In 2010, 4 PWSs were removed from the RAL (Cleggan/Claddaghduff, Derryinver, Derryrush and Loughrea) and 2 were added (Ardan/Dooney and Kilkerrin/Moylough).

Chlorine Monitors and Alarms

The installation of chlorine monitors and alarms is required to ensure that the supply is adequately disinfected at all times. Chlorine monitors and alarms were in place on all Galway County Council PWS by the end of 2010.

Audits of Drinking Water Treatment Plants

The following drinking water treatment plants were audited by the EPA during 2010:

Date Audited	PWS Audited
Feb-10	Ballinasloe
Oct-10	Dunmore/Glenamaddy
Sep-10	Kilkerrin/Moylough
Oct-10	Kinvara
Feb-10	Mid-Galway
Aug-10	Tully-Tullycross

KERRY COUNTY COUNCIL

Summary of Public Water Supply Quality in 2010

Kerry County Council is responsible for the operation of 78 Public Water Supplies (PWS) serving a population of 114,275.

Microbiological compliance in Kerry PWSs has decreased from 99.9% in 2009 to 99.7% in 2010 whilst chemical compliance levels have decreased from 99.0% in 2009 to 97.0% in 2010.

	Micro	Chemical
2010	99.7	97.0

Microbiological Parametric Values:

A summary of the PWS with microbiological non-compliances during 2010 is as follows:

Parameter	2010	
	Name of PWS	
<i>E. coli</i>	An Mhín Aird No. 2 (1) Ceann Trá (1) Fenit (1)	
Total No.:		3

Chemical Parametric Values:

A summary of the PWS with non-compliances of the chemical parametric values during 2010 is as follows:

Parameter	2010	
	Name of PWS	
Trihalomethanes	An Daingean (3) An Ghleann (1) Aughacasa (1) Castlecove (2) Castlegregory (1) Ceann Trá(3) Central Regional : Ballintobeenig (4) Ballymacadam (4) Killsarkin (1) Knocknageeha Gneeveguilla (1) Lisloose (8) Lissardboola (13) Sheheree (4) Lough Guitane (1) Scart (6) Dromin: Ballybunnon (1) Dromin: Tarmons (1) Kenmare (2) Kilgarvan (2) Shrone (1) Sneem (1) Templenoë (2) Waterville (1)	
Fluoride	An Daingean (1) Dromin : Listowel/Moyvane (1) Mid Kerry (2)	
Total No.:		68

The trihalomethanes non-compliances were primarily due to the chlorination of water with elevated levels of organic matter present. The fluoride non-compliances were due to elevated levels of fluoride above the Irish standard. However, all samples were below the EU fluoride standard of 1.5 mg/l.

Boil Water Notices & Water Restrictions

A summary of boil water notices (BWN) and water restriction (WR) notices issued to consumers or active during 2010 are detailed below (full details in Appendix II):

Date Issued	Date Lifted/Active	BWN/WR ¹⁰	Name of PWS	Reason
Feb-09	Active	BWN	Mid Kerry, Gearha*	<i>Cryptosporidium</i>
Jun-09	Active	BWN	Glenbeigh	<i>Inadequate Disinfection</i>
Jul-09	Active	WR	Kenmare*	<i>Inadequate</i>

¹⁰ In some instances the boil notice or water restriction only applies to part of the supply.

				Disinfection
Jul-09	Active	WR	Mountain Stage*	<i>Inadequate Disinfection</i>
Aug-09	Active	WR	Kilgarvan *	<i>Inadequate Disinfection</i>
Aug-09	Active	WR	An Mhuiríoch/ Baile Na nGall*	<i>Inadequate Disinfection</i>
Aug-09	Active	WR	An Baile Mór*	<i>Inadequate Disinfection</i>
Aug-09	Active	WR	An Mhín Aird No. 2*	<i>Inadequate Disinfection</i>
Aug-09	Active	WR	An Fheothanach*	<i>Inadequate Disinfection</i>
Aug-09	Active	WR	Baile an Lochaigh*	<i>Inadequate Disinfection</i>
Aug-09	Active	WR	Central Regional: Lough Guitane (H) *	<i>Inadequate Disinfection</i>
Feb-10	May-10	BWN	Breanlee	<i>Cryptosporidium</i>
May-10	Active	BWN	An Cheapaigh Thiar*	<i>Inadequate Disinfection</i>
Jul-10	Active	WR	Annascaul*	<i>Inadequate Disinfection</i>
Jul-10	Active	WR	An Clocháin*	<i>Inadequate Disinfection</i>
Jul-10	Active	WR	Cé Bhréannain*	<i>Inadequate Disinfection</i>

*BWN/WR affected part of the supply zone and in most cases only the first few houses

Two new boil water notices were issued during 2010 and two remain in place from previous years. Three new water restriction notices were issued and nine remain in place from previous years. At the end of 2010, three boil water notices remained in place and all thirteen water restriction notices remained active.

EPA Enforcement in 2010

Remedial Action List

No. of PWS on the RAL at the end of 2010:	53
No. of PWS added to RAL in 2010:	1
No. of PWS removed from RAL in 2010:	2

The RAL is a list of PWSs where remedial action is required to ensure compliance with the requirements of the Drinking Water Regulations. In 2010, 2 supplies were removed from the RAL (Lyre and Scartleigh) and one supply was added; (Lisloose).

Chlorine Monitors and Alarms

The installation of chlorine monitors and alarms is required to ensure that the supply is adequately disinfected at all times. Chlorine monitors and alarms are now in place on all Kerry County Council PWS.

Directions

The EPA issued one Direction to Kerry County Council during 2010. Details are as follows:

Year	Name of PWS	Reason for Direction
2010	Waterville	Turbidity

Audits of Drinking Water Treatment Plants

The following drinking water treatment plants were audited by the EPA during 2010:

Date Audited	PWS Audited
Oct-10	Ardfert North
Jul-10	Ardfert South
Jul-10	Fenit
Nov-10	Lyreacrompane
Nov-10	Brosna/Knocknagoshel
Jun-10	Lios Cearnaigh
Jun-10	An Baile Mór
Jun-10	An Fheothanach
Jun-10	An Mhín Aird No.2
Jan-10	Glenbiegh
Jun-10	Baile an Lochaigh
Jan-10	Breanlee
Oct-10	Galey
Oct-10	Glenderry
Jan-10	Central Regional: Lissardboola
Jan-10	Central Regional: Lisloose
Jun-10	An Mhín Aird No.3

KILDARE COUNTY COUNCIL

Summary of Public Water Supply Quality in 2010

Kildare County Council is responsible for the operation of 11 Public Water Supplies (PWS) serving a population of 161,458.

Microbiological compliance levels in Kildare PWSs were 100% in both 2009 and 2010 whilst chemical compliance levels have decreased from 100% in 2009 to 99.8% in 2010.

	Micro	Chemical
2010	100	99.8

Microbiological Parametric Values:

No non-compliance of the microbiological parametric values occurred during 2010.

Chemical Parametric Values:

A summary of the PWS with non-compliances of the chemical parametric values during 2010 is as follows:

Parameter	2010
	Name of PWS
Fluoride	Monasterevin(1) Rathangan (1)
Total No.:	2

The fluoride non-compliances were due to elevated levels of fluoride above the Irish standard. However, all samples were below the EU fluoride standard of 1.5 mg/l.

Boil Water Notices & Water Restrictions

No boil water notices or water restriction notices were issued to consumers and none remained active from previous years.

EPA Enforcement in 2010

Remedial Action List

There are no supplies in Kildare on the Remedial Action List.

Chlorine Monitors and Alarms

The installation of chlorine monitors and alarms is required to ensure that the supply is adequately disinfected at all times. Chlorine monitors and alarms were in place on all Kildare County Council PWSs by the end of 2010.

Audits of Drinking Water Treatment Plants

The following drinking water treatment plants were audited by the EPA during 2010:

Date Audited	PWS Audited
Dec-10	Monasterevin

KILKENNY COUNTY COUNCIL

Summary of Public Water Supply Quality in 2010

Kilkenny County Council is responsible for the operation of 20 Public Water Supplies (PWS) serving a population of 63,987.

Microbiological compliance in Kilkenny PWSs has increased from 99.7% in 2009 to 100% in 2010 whilst chemical compliance levels were 99.4% in 2009 and 2010.

	Micro	Chemical
2010	100	99.4

Microbiological Parametric Values:

No non-compliance of the microbiological parametric values occurred during 2010.

Chemical Parametric Values:

A summary of the PWS with non-compliances of the chemical parametric values during 2010 is as follows:

Parameter	2010
	Name of PWS
Bromate	Kilkenny City (Troyswood) (1)
Lead	Castlecomer (Old) (1)
	Kilkenny City (Radestown) (1)
Trihalomethanes	Inistioge (1)
	Kilkenny City (Radestown) (3)
Fluoride	Graiguenamanagh (1)
	Kilkenny City (Radestown) (2)
Total No.:	10

The bromate non-compliance was a once off occurrence and all follow up samples were clear. The trihalomethanes non-compliances were primarily due to the chlorination of water with elevated levels of organic matter present. The fluoride non-compliances were due to elevated levels of fluoride above the Irish standard. However, all samples were below the EU fluoride standard of 1.5 mg/l. The lead non-compliances were due to the consumer's internal plumbing and the presence of lead communication pipes in the supply.

Boil Water Notices & Water Restrictions

No boil water notices or water restriction notices were issued to consumers during 2010 and none remained active from previous years.

EPA Enforcement in 2010

Remedial Action List

No. of PWS on the RAL at the end of 2010:	8
No. of PWS added to RAL in 2010:	0
No. of PWS removed from RAL in 2010:	2

The RAL is a list of PWSs where remedial action is required to ensure compliance with the requirements of the Drinking Water Regulations. The Kilkenny City (Troyswood) and Urlingford/Johnstown PWSs were removed from the RAL during 2010 due to the completion of the necessary remedial works to the satisfaction of the EPA.

Chlorine Monitors and Alarms

The installation of chlorine monitors and alarms is required to ensure that the supply is adequately disinfected at all times. Chlorine monitors and alarms were in place on all Kilkenny County Council PWS by the end of 2010.

Audits of Drinking Water Treatment Plants

The following drinking water treatment plants were audited by the EPA during 2010:

Date Audited	PWS Audited
Jun-10	Kilkenny City (Troyswood)
Feb-10	Mooncoin Regional
Oct-10	Piltown-Fiddown

LAOIS COUNTY COUNCIL

Summary of Public Water Supply Quality in 2010

Laois County Council is responsible for the operation of 33 Public Water Supplies (PWS) serving a population of 63,308.

Microbiological compliance levels in PWSs in Laois decreased from 100% in 2009 to 99.7% in 2010 whilst chemical compliance levels have increased from 99.2% in 2009 to 99.8% in 2010.

	Micro	Chemical
2010	99.7	99.8

Microbiological Parametric Values:

A summary of the PWS with microbiological non-compliances during 2010 is as follows:

Parameter	2010	
	Name of PWS	
Enterococci	Rosenallis (1)	
Total No.:		1

Chemical Parametric Values:

A summary of the PWS with non-compliances of the chemical parametric values during 2010 is as follows:

Parameter	2010	
	Name of PWS	
Lead	Rathdowney (1)	
Trihalomethanes	Mountmellick (1)	
Nickel	Mountrath (1)	
Total No.:		3

The cause of the lead non-compliance was unknown but was likely due to the presence of lead in the pipework in the services pipe, communication pipe and/or customer plumbing. The trihalomethanes non-compliances were primarily due to the chlorination of water with elevated levels of organic matter present. The nickel non-compliance was caused by drinking water coming into contact with nickel plated tap fittings.

Boil Water Notices & Water Restrictions

No boil water notices or water restriction notices were issued to consumers during 2010 and none remained active from previous years.

EPA Enforcement in 2010

Remedial Action List

No. of PWS on the RAL at the end of 2010:	1
No. of PWS added to RAL in 2010:	0
No. of PWS removed from RAL in 2010:	0

The RAL is a list of PWSs where remedial action is required to ensure compliance with the requirements of the Drinking Water Regulations. In 2010, no supplies in Laois were added or removed from the RAL.

Chlorine Monitors and Alarms

The installation of chlorine monitors and alarms is required to ensure that the supply is adequately disinfected at all times. Chlorine monitors and alarms were in place on all Laois County Council PWS by the end of 2010.

Audits of Drinking Water Treatment Plants

The EPA did not carry out any audits of drinking water treatment plants in Laois during 2010.

LEITRIM COUNTY COUNCIL

Summary of Public Water Supply Quality in 2010

Leitrim County Council is responsible for the operation of 12 Public Water Supplies (PWS) serving a population of 19,057.

Microbiological compliance levels in PWSs in Leitrim increased from 99.1% in 2009 to 100% in 2010. Chemical compliance levels increased from 99.7% in 2009 to 100% in 2010.

	Micro	Chemical
2010	100	100

Microbiological Parametric Values:

No non-compliance of the microbiological parametric values occurred during 2010.

Chemical Parametric Values:

No non-compliance of the chemical parametric values occurred during 2010.

Boil Water Notices & Water Restrictions

No boil water notices or water restrictions notices were issued to consumers during 2010 and none remained active from previous years.

EPA Enforcement in 2010

Remedial Action List

No. of PWS on the RAL at the end of 2010:	2
No. of PWS added to RAL in 2010:	0
No. of PWS removed from RAL in 2010:	0

The RAL is a list of PWSs where remedial action is required to ensure compliance with the requirements of the Drinking Water Regulations. In 2010, no PWS were added to or removed from the RAL.

Chlorine Monitors and Alarms

The installation of chlorine monitors and alarms is required to ensure that the supply is adequately disinfected at all times. Chlorine monitors and alarms were in place on all Leitrim County Council PWS by the end of 2010.

Audits of Drinking Water Treatment Plants

The following drinking water treatment plants were audited by the EPA during 2010:

Date Audited	PWS Audited
Mar-10	South Leitrim Regional

LIMERICK CITY COUNCIL

Summary of Public Water Supply Quality in 2010

Limerick City Council is responsible for the operation of 1 Public Water Supply (PWS) serving a population of 55,000.

Microbiological compliance levels in the Limerick City PWS were 100% in both 2009 and 2010 whilst chemical compliance levels have increased from 99.7% in 2009 to 99.8% in 2010.

	Micro	Chemical
2010	100	99.8

Microbiological Parametric Values:

No non-compliance of the microbiological parametric values occurred during 2010.

Chemical Parametric Values:

A summary of PWS with non-compliances of the chemical parametric values during 2010 is as follows:

Parameter	2010
	Name of PWS
Fluoride	Limerick City (2)
Total No.:	2

The fluoride non-compliances were due to elevated levels of fluoride above the Irish standard. However, all samples were below the EU fluoride standard of 1.5 mg/l.

Boil Water Notices & Water Restrictions

No boil water or water restrictions notices were issued to consumers during 2010 and none remained active from previous years.

EPA Enforcement in 2010

Remedial Action List

No. of PWS on the RAL at the end of 2010:	0
No. of PWS added to RAL in 2010:	0
No. of PWS removed from RAL in 2010:	1

The RAL is a list of PWSs where remedial action is required to ensure compliance with the requirements of the Drinking Water Regulations. The remedial works in the Clareville water treatment plant were completed to the satisfaction of the EPA in 2010 and therefore the Limerick City supply was removed from the RAL.

Chlorine Monitors and Alarms

The installation of chlorine monitors and alarms is required to ensure that the supply is adequately disinfected at all times. A chlorine monitor and alarm is in place on Limerick City Council's PWS.

Audits of Drinking Water Treatment Plants

The following drinking water treatment plants were audited by the EPA during 2010:

Date Audited	PWS Audited
Nov-11	Limerick City PWS (Clareville)

LIMERICK COUNTY COUNCIL

Summary of Public Water Supply Quality in 2010

Limerick County Council is responsible for the operation of 51 Public Water Supplies (PWS) serving a population of 67,946.

Microbiological compliance has increased in PWSs in Limerick from 99.3% in 2009 to 100% in 2010. Chemical compliance levels have increased from 99.7% in 2009 to 100% in 2010.

	Micro	Chemical
2010	100	100

Microbiological Parametric Values:

No non-compliance of the microbiological parametric values occurred during 2010.

Chemical Parametric Values:

A summary of the PWS with non-compliances of the chemical parametric values during 2010 is as follows:

Parameter	2010
	Name of PWS
Trihalomethanes	Limerick City Environs (1)
Total No.:	1

The trihalomethanes non-compliance was primarily due to the chlorination of water with elevated levels of organic matter present.

Boil Water Notices & Water Restrictions

A summary of boil water notices (BWN) and water restriction (WR) notices issued to consumers or active during 2010 are detailed below (full details in Appendix II):

Date Issued	Date Lifted/Active	BWN/WR ¹¹	Name of PWS	Reason
Apr-10	May-10	BWN	Jamestown/Effin*	<i>Inadequate Disinfection</i>
Nov-10	Active	BWN	Pallaskenry/Kildimo*	<i>Total Chlorine</i>
Dec-10	Jan-11	BWN	Abbeyfeale	<i>Aluminium</i>
Dec-10	Jan-11	BWN	Kilmallock	<i>E. coli</i>
Dec-10	Jan-11	BWN	Newcastle West	<i>Turbidity</i>

*BWN affected part of the supply zone

Five new boil water notices were issued during 2010 and none remain in place from previous years. No new water restriction notices were issued and none remain in place from previous years. At the end of 2010, four boil water notices remained in place.

EPA Enforcement in 2010

Remedial Action List

No. of PWS on the RAL at the end of 2010:	6
No. of PWS added to RAL in 2010:	0
No. of PWS removed from RAL in 2010:	9

The RAL is a list of PWSs where remedial action is required to ensure compliance with the requirements of the Drinking Water Regulations. In 2010, no PWSs were added to the RAL and 9 were removed as the necessary remedial works were completed to the satisfaction of the EPA. These supplies were: Ballingarry, Ballyhahill, Caherdavid, Castleconnell, Castletroy, Foynes/Shannon Estuary, Kilbehenny, Mungret/Clarina and Raheen/Lisnalty.

Chlorine Monitors and Alarms

The installation of chlorine monitors and alarms is required to ensure that the supply is adequately disinfected at all times. Chlorine monitors and alarms were in place on all Limerick County Council PWS by the end of 2010.

Audits of Drinking Water Treatment Plants

The following drinking water treatment plants were audited by the EPA during 2010:

Date Audited	PWS Audited
Apr-10	Adare
Oct-10	Glin
Oct-10	Galbally

¹¹ In some instances the boil notice or water restriction only applies to part of the supply.

LONGFORD COUNTY COUNCIL

Summary of Public Water Supply Quality in 2010

Longford County Council is responsible for the operation of 7 Public Water Supplies (PWS) serving a population of 15,393.

Microbiological compliance levels in PWSs in Longford have increased from 98.2% in 2009 to 98.7% in 2010 whilst chemical compliance levels have decreased from 99.7% in 2009 to 98.9% in 2010.

	Micro	Chemical
2010	98.7	98.9

Microbiological Parametric Values:

A summary of the PWS with microbiological non-compliances during 2010 is as follows:

Parameter	2010	
	Name of PWS	
Enterococci	Newtowncashel (1)	
Total No.:	1	

Chemical Parametric Values:

A summary of the PWS with non-compliances of the chemical parametric values during 2010 is as follows:

Parameter	2010	
	Name of PWS	
Fluoride	Gowna (1) Granard (1) Longford Central (1)	
Total No.:	3	

The fluoride non-compliances were due to elevated levels of fluoride above the Irish standard. However, all samples were below the EU fluoride standard of 1.5 mg/l.

Boil Water Notices & Water Restrictions

A summary of boil water notices (BWN) and water restriction (WR) notices issued to consumers or active during 2010 are detailed below (full details in Appendix II):

Date Issued	Date Lifted/Active	BWN/WR ¹²	Name of PWS	Reason
Sep-10	Oct-10	BWN	Newtowncashel	Enterococci
Sep-10	Oct-10	BWN	Kenagh	Coliform Bacteria

Two new boil water notices were issued during 2010 and none remain in place from previous years. No new water restriction notices were issued and none remain in place from previous years. At the end of 2010, no boil water notices or water restriction notices remained in place on Longford County Council's PWSs.

EPA Enforcement in 2010

Remedial Action List

No. of PWS on the RAL at the end of 2010:	3
No. of PWS added to RAL in 2010:	1
No. of PWS removed from RAL in 2010:	0

The RAL is a list of PWSs where remedial action is required to ensure compliance with the requirements of the Drinking Water Regulations. In 2010, the one supply (Newtowncashel) was added to the RAL and none were removed.

Chlorine Monitors and Alarms

The installation of chlorine monitors and alarms is required to ensure that the supply is adequately disinfected at all times. Chlorine monitors and alarms were in place on all Longford County Council PWS by the end of 2010.

Audits of Drinking Water Treatment Plants

The following drinking water treatment plants were audited by the EPA during 2010:

Date Audited	PWS Audited
May-10	Granard
Sep-10	Newtowncashel
Sep-10	Kenagh

¹² In some instances the boil notice or water restriction only applies to part of the supply.

LOUTH COUNTY COUNCIL

Summary of Public Water Supply Quality in 2010

Louth County Council is responsible for the operation of 16 Public Water Supplies (PWS) serving a population of 99,825.

Microbiological compliance levels in PWSs in Louth have decreased from 100% in 2009 to 99.3% in 2010 whilst chemical compliance levels have increased from 97.6% in 2009 to 99.1% in 2010.

	Micro	Chemical
2010	99.3	99.1

Microbiological Parametric Values:

A summary of the PWS with microbiological non-compliances during 2010 is as follows:

Parameter	2010
	Name of PWS
<i>E.coli</i>	Omeath (1) Rosehall (1)
Total No.:	2

Chemical Parametric Values:

A summary of the PWS with non-compliances of the chemical parametric values during 2010 is as follows:

Parameter	2010
	Name of PWS
Trihalomethanes	Cavanhill (2) Clogherhead (1) Staleen (2)
Fluoride	Cavanhill (3) Rosehall (1)
Total No.:	9

The trihalomethanes non-compliances were primarily due to the chlorination of water with elevated levels of organic matter present. The fluoride non-compliances were due to elevated levels of fluoride above the Irish standard. However, all samples were below the EU fluoride standard of 1.5 mg/l.

Boil Water Notices & Water Restrictions

No boil water or water restrictions notices were issued to consumers during 2010 and none remained active from previous years.

EPA Enforcement in 2010

Remedial Action List

No. of PWS on the RAL at the end of 2010:	3
No. of PWS added to RAL in 2010:	0
No. of PWS removed from RAL in 2010:	0

The RAL is a list of PWSs where remedial action is required to ensure compliance with the requirements of the Drinking Water Regulations. In 2010, no Louth County Council PWS was added to or removed from the RAL.

Chlorine Monitors and Alarms

The installation of chlorine monitors and alarms is required to ensure that the supply is adequately disinfected at all times. Chlorine monitors and alarms were in place on all Louth County Council PWS by the end of 2010.

Audits of Drinking Water Treatment Plants

The following drinking water treatment plants were audited by the EPA during 2010:

Date Audited	PWS Audited
Aug-10	Ardee
Aug-10	Collon
Oct-10	Greenmount
Oct-10	Staleen

MAYO COUNTY COUNCIL

Summary of Public Water Supply Quality in 2010

Mayo County Council is responsible for the operation of 24 Public Water Supplies (PWS) serving a population of 78,509.

Microbiological compliance levels in PWSs in Mayo were 100% in both 2009 and 2010 whilst chemical compliance levels have increased from 98.7% in 2009 to 98.9% in 2010.

	Micro	Chemical
2010	100	98.9

Microbiological Parametric Values:

No non-compliance of the microbiological parametric values occurred during 2010.

Chemical Parametric Values:

A summary of the PWS with non-compliances of the chemical parametric values during 2010 is as follows:

Parameter	2010
	Name of PWS
Lead	Ballycastle (1)
Trihalomethanes	Ballina (1)
	Bonniconlon (1)
	Cong (1)
	Foxford (1)
	Lough Mask (3)
	Swinford (1)
Total No.:	9

While the cause of the lead failure was unknown it was likely due to the presence of lead in the communication pipe, service pipe and/or customers plumbing.

The trihalomethanes non-compliances were primarily due to the chlorination of water with elevated levels of organic matter present.

Boil Water Notices & Water Restrictions

No boil water or water restrictions notices were issued to consumers during 2010 and none remained active from previous years.

EPA Enforcement in 2010

Remedial Action List

No. of PWS on the RAL at the end of 2010:	12
No. of PWS added to RAL in 2010:	1
No. of PWS removed from RAL in 2010:	2

The RAL is a list of PWSs where remedial action is required to ensure compliance with the requirements of the Drinking Water Regulations. In 2010, the Ballyhaunis and Inishturk public water supplies were removed from the RAL and Clare Island supply was added from the RAL.

Chlorine Monitors and Alarms

The installation of chlorine monitors and alarms is required to ensure that the supply is adequately disinfected at all times. Chlorine monitors and alarms were in place on all Mayo County Council PWS by the end of 2010.

Directions

The EPA issued two Directions to Mayo County Council during 2010. Details are as follows:

Name of PWS	Reason for Direction
Westport	Aluminium
Louisburgh	Aluminium

The two Directions were issued in respect of the Westport and Louisburgh plants both of which were experiencing aluminium exceedances due to both plants being run above design capacity.

Audits of Drinking Water Treatment Plants

The following drinking water treatment plants were audited by the EPA during 2010:

Date Audited	PWS Audited
Oct-10	Bonniconlon
Oct-10	Kilkelly
Mar-10	Louisburgh
Mar-10	Westport
Oct-10	Knock Airport

MEATH COUNTY COUNCIL

Summary of Public Water Supply Quality in 2010

Meath County Council is responsible for the operation of 33 Public Water Supplies (PWS) serving a population of 104,436.

Microbiological compliance levels in PWSs in Meath were 100% in both 2009 and 2010 whilst chemical compliance levels have improved from 99.2% in 2009 to 99.7% in 2010.

	Micro	Chemical
2010	100	99.7

Microbiological Parametric Values:

No non-compliance of the microbiological parametric values occurred during 2010.

Chemical Parametric Values:

A summary of the PWS with non-compliances of the chemical parametric values during 2010 is as follows:

Parameter	2010
	Name of PWS
Trihalomethanes	East Meath (1)
	Trim (1)
Fluoride	Navan-Mid Meath (2)
Total No.:	4

The trihalomethanes non-compliances were primarily due to the chlorination of water with elevated levels of organic matter present. The fluoride non-compliances were due to elevated levels of fluoride above the Irish standard. However, all samples were below the EU fluoride standard of 1.5 mg/l.

Boil Water Notices & Water Restrictions

No boil water or water restrictions notices were issued to consumers during 2010 and none remained active from previous years.

EPA Enforcement in 2010

Remedial Action List

No. of PWS on the RAL at the end of 2010:	7
No. of PWS added to RAL in 2010:	0
No. of PWS removed from RAL in 2010:	3

The RAL is a list of PWSs where remedial action is required to ensure compliance with the requirements of the Drinking Water Regulations. In 2010, 3 PWS were removed from the RAL (Carrickleck, Lobinstown and Castletown) due to the completion of the necessary remedial works (installation of disinfection systems) and none were added.

Chlorine Monitors and Alarms

The installation of chlorine monitors and alarms is required to ensure that the supply is adequately disinfected at all times. Chlorine monitors and alarms were in place on all Meath County Council PWS by the end of 2010.

Directions

The EPA issued one Direction to Meath County Council during 2010. Details are as follows:

Name of PWS	Reason for Direction
Slane	Poor source protection

The EPA issued a Direction in respect of the Slane PWS due to flooding of the borehole caused by a combination of flooding of the River Boyne and inadequate protection of the source.

Audits of Drinking Water Treatment Plants

The following drinking water treatment plants were audited by the EPA during 2010:

Date Audited	PWS Audited
Oct-10	Navan-Mid Meath

MONAGHAN COUNTY COUNCIL

Summary of Public Water Supply Quality in 2010

Monaghan County Council is responsible for the operation of 10 Public Water Supplies (PWS) serving a population of 39,726.

Microbiological compliance levels in PWSs in Monaghan have increased from 99.4% in 2009 to 100% in 2010 whilst chemical compliance levels have decreased from 99.4% in 2009 to 98.9% in 2010.

	Micro	Chemical
2010	100	98.9

Microbiological Parametric Values:

No non-compliance of the microbiological parametric values occurred during 2010.

Chemical Parametric Values:

A summary of the PWS with non-compliances of the chemical parametric values during 2010 is as follows:

Parameter	2010
	Name of PWS
Trihalomethanes	Clones (1) LERWSS (3)
Fluoride	Clones (3) Monaghan (1)
Total No.:	8

The trihalomethanes non-compliances were primarily due to the chlorination of water with elevated levels of organic matter present. The fluoride non-compliances were due to elevated levels of fluoride above the Irish standard. However, all samples were below the EU fluoride standard of 1.5 mg/l.

Boil Water Notices & Water Restrictions

No boil water notices or water restrictions notices were issued to consumers during 2010 and none remained active during 2010 from previous years.

EPA Enforcement in 2010

Remedial Action List

No. of PWS on the RAL at the end of 2010:	3
No. of PWS added to RAL in 2010:	0
No. of PWS removed from RAL in 2010:	0

The RAL is a list of PWSs where remedial action is required to ensure compliance with the requirements of the Drinking Water Regulations. In 2010, no supplies were removed from the RAL and none were added.

Chlorine Monitors and Alarms

The installation of chlorine monitors and alarms is required to ensure that the supply is adequately disinfected at all times. Chlorine monitors and alarms were in place on all Monaghan County Council PWS by the end of 2010.

Directions

The EPA issued one Direction to Monaghan County Council during 2010. Details are as follows:

Name of PWS	Reason for Direction
Carrickmacross	Failure to implement audit recommendations

Audits of Drinking Water Treatment Plants

The following drinking water treatment plants were audited by the EPA during 2010:

No. of PWS	PWS Audited
Jun-10	Lough Egish Regional
Jun-10	Newbliss
Oct-10	Clones

NORTH TIPPERARY COUNTY COUNCIL

Summary of Public Water Supply Quality in 2010

North Tipperary County Council is responsible for the operation of 31 Public Water Supplies (PWS) serving a population of 43,144.

Microbiological compliance levels in PWSs in North Tipperary were 100% in both 2009 and 2010. Chemical compliance levels increased from 99.7% in 2009 to 99.9% in 2010.

	Micro	Chemical
2010	100	99.9

Microbiological Parametric Values:

No non-compliance of the microbiological parametric values occurred during 2010.

Chemical Parametric Values:

A summary of the PWS with non-compliances of the chemical parametric values during 2010 is as follows:

Parameter	2010	
	Name of PWS	
Fluoride	Borrisokane (1)	
Total No.:	1	

The fluoride non-compliance was due to elevated levels of fluoride above the Irish standard. However, levels were below the EU fluoride standard of 1.5 mg/l

Boil Water Notices & Water Restrictions

One new boil water notices (BWN) was issued to consumers during 2010 and none remained active during 2010 from previous years. Details are as follows (full details in Appendix II):

Date Issued	Date Lifted/ Active	BWN/ WR ¹³	Name of PWS	Reason
Oct-08	Sep-11	WR	Thurles (Zone 1)*	Lead
Sep-10	Oct-10	BWN	Lorrha/Rathcabbin (Zone 1)*	Other

*WR affected part of the Thurles supply zone

*Lorrha/Rathcabbin source replaced in Oct-2010

At the end of 2010, one water restriction remained in place on the Thurles PWS which affected 30 people on the supply.

EPA Enforcement in 2010

Remedial Action List

No. of PWS on the RAL at the end of 2010:	3
No. of PWS added to RAL in 2010:	0
No. of PWS removed from RAL in 2010:	1

The RAL is a list of PWSs where remedial action is required to ensure compliance with the requirements of the Drinking Water Regulations. In 2010, the Nenagh PWS was removed from the RAL due to the completion of the necessary remedial works to the satisfaction of the EPA.

Chlorine Monitors and Alarms

The installation of chlorine monitors and alarms is required to ensure that the supply is adequately disinfected at all times. Chlorine monitors and alarms were in place on all North Tipperary County Council PWS by the end of 2010.

Audits of Drinking Water Treatment Plants

The EPA did not carry out any audits of drinking water treatment plants in North Tipperary Council during 2010.

¹³ In some instances the boil notice or water restriction only applies to part of the supply.

OFFALY COUNTY COUNCIL

Summary of Public Water Supply Quality in 2010

Offaly County Council is responsible for the operation of 23 Public Water Supplies (PWS) serving a population of 44,267.

Microbiological compliance levels in PWSs in Offaly have decreased from 100% in 2009 to 98.8% in 2010 whilst chemical compliance levels have increased from 99.3% in 2009 to 100% in 2010.

	Micro	Chemical
2010	98.8	100

Microbiological Parametric Values:

A summary of the PWS with microbiological non-compliances during 2010 is as follows:

Parameter	2010
	Name of PWS
<i>E.coli</i>	Dunkerrin (1)
<i>Enterococci</i>	Geashill (1)
Total No.:	

Chemical Parametric Values:

No non-compliance of the chemical parametric values occurred during 2010.

Boil Water Notices & Water Restrictions

No boil water notices or water restriction notices were issued to consumers during 2010 and none remained active from previous years.

EPA Enforcement in 2010

Remedial Action List

No. of PWS on the RAL at the end of 2010:	0
No. of PWS added to RAL in 2010:	0
No. of PWS removed from RAL in 2010:	3

The RAL is a list of PWSs where remedial action is required to ensure compliance with the requirements of the Drinking Water Regulations. In 2010, 3 PWS were removed from the RAL (Birr, Clara/Ferbane and Dungar) due to the completion of the necessary remedial works to the satisfaction of the EPA and none were added.

Chlorine Monitors and Alarms

The installation of chlorine monitors and alarms is required to ensure that the supply is adequately disinfected at all times. Chlorine monitors and alarms were in place on all Offaly County Council PWS by the end of 2010.

Audits of Drinking Water Treatment Plants

The following drinking water treatment plants were audited by the EPA during 2008 and 2010:

Date Audited	PWS Audited
Aug-10	Clara/Ferbane

ROSCOMMON COUNTY COUNCIL

Summary of Public Water Supply Quality in 2010

Roscommon County Council is responsible for the operation of 21 Public Water Supplies (PWS) serving a population of 48,807.

Microbiological compliance levels in PWSs in Roscommon have increased from 96.9% in 2009 to 99.6% in 2010 whilst chemical compliance levels have increased from 98.7% in 2009 to 99.3% in 2010.

	Micro	Chemical
2010	99.6	99.3

Microbiological Parametric Values:

A summary of the PWS with microbiological non-compliances during 2010 is as follows:

Parameter	2010
	Name of PWS
<i>E.coli</i>	Ballinlough/Loughglynn (1)
Total No.:	1

Chemical Parametric Values:

A summary of the PWS with non-compliances of the chemical parametric values during 2010 is as follows:

Parameter	2010
	Name of PWS
Trihalomethanes	NERWSS – Rooskey (1) NERWSS - Strokestown/Elphin (1) NERWSS – Tarmonbarry (1) North Roscommon (1)
Nitrites (at WTW)	Ballinlough/Loughglynn (1)
Fluoride	Castlerea Urban (1)
Total No.:	6

The trihalomethanes non-compliances were primarily due to the chlorination of water with elevated levels of organic matter present whilst the nitrites (at WTP) non-compliance was a once off occurrence and all follow up samples were clear. The fluoride non-compliance was due to elevated levels of fluoride above the Irish standard. However, levels were below the EU fluoride standard of 1.5 mg/l.

Boil Water Notices & Water Restrictions

A summary of boil water notices (BWN) and water restriction (WR) notices active or issued to consumers during 2010 is as follows (full details in Appendix II):

Date Issued	Date Lifted/Active	BWN/WR ¹⁴	Name of PWS	Reason
Nov-09	Feb-10	BWN	Castlerea Regional	<i>Cryptosporidium</i>
Feb-10	Active	BWN	Castlerea Regional	<i>Cryptosporidium</i>
Jul-10	Aug-10	BWN	Ballinlough/Loughglynn	<i>E. coli</i>
Jul-10	Aug-10	BWN	Knockcroghery/Lecarrow	<i>E. coli</i>

Three new boil notices were issued to consumers by Roscommon County Council during 2010 and one boil notice remained active from 2009. At the end of 2010, one boil notice remained in place on the Castlerea Regional PWS.

EPA Enforcement in 2010

Remedial Action List

No. of PWS on the RAL at the end of 2010:	13
No. of PWS added to RAL in 2010:	0
No. of PWS removed from RAL in 2010:	0

The RAL is a list of PWSs where remedial action is required to ensure compliance with the requirements of the Drinking Water Regulations. Progress in the completion of the necessary remedial works in Roscommon has been poor and in 2010, none were removed from the RAL.

Chlorine Monitors and Alarms

The installation of chlorine monitors and alarms is required to ensure that the supply is adequately disinfected at all times. Chlorine monitors and alarms were in place on all Roscommon County Council PWS by the end of 2010.

Directions

The EPA issued two Directions to Roscommon County Council during 2010. Details are as follows:

Name of PWS	Reason for Direction
Mount Talbot	<i>Cryptosporidium</i>
Castlerea Urban	<i>Cryptosporidium</i>

Both Directions were issued in response to the detection of *Cryptosporidium* in supplies where no treatment barrier exists capable of removing *Cryptosporidium*.

Audits of Drinking Water Treatment Plants

The following drinking water treatment plants were audited by the EPA during 2010:

Date Audited	PWS Audited
Aug-10	Ballyfarnan
Aug-10	Castlerea Urban
Oct-10	Ballinlough/Loughglynn
Oct-10	Leacarrow

¹⁴ In some instances the boil notice or water restriction only applies to part of the supply.

SLIGO COUNTY COUNCIL

Summary of Public Water Supply Quality in 2010

Sligo County Council is responsible for the operation of 14 Public Water Supplies (PWS) serving a population of 35,148.

Microbiological compliance levels in PWSs in Sligo decreased from 100% in 2009 to 99.6% in 2010 whilst chemical compliance levels have marginally decreased from 97.0% in 2009 to 96.9% in 2010.

	Micro	Chemical
2010	99.6	96.9

Microbiological Parametric Values:

A summary of the PWS with microbiological non-compliances during 2010 is as follows:

Parameter	2010 Name of PWS
<i>E.coli</i>	Lough Gill Regional(1)
Total No.:	1

Chemical Parametric Values:

A summary of the PWS with non-compliances of the chemical parametric values during 2010 is as follows:

Parameter	2010 Name of PWS
Lead	Foxes Den (5) Kilsellagh (Direct) (1) Kilsellagh (Farnacardy) (1) Kilsellagh (Rosses Point) (2) Lough Easkey (1) Lough Gill Regional(1) South Sligo (1)
Trihalomethanes	Kilsellagh (Farnacardy) (2) Kilsellagh (Rosses Point) (1) Lough Gill (Cairns Hill) (2) Lough Gill Regional (3) Lough Talt (6)
Fluoride	Foxes Den (1) Lough Easkey (1)
Total No.:	28

The lead non compliances were due to the presence of lead in the communication pipe, service pipe and/or internal plumbing of consumer's premises. The trihalomethanes non-compliances were primarily due to the chlorination of water with elevated levels of organic matter present. The fluoride non-compliances were due to elevated levels of fluoride above the Irish standard. However, all samples were below the EU fluoride standard of 1.5 mg/l.

Boil Water Notices & Water Restrictions

A summary of boil water notices (BWN) and water restriction (WR) notices active or issued to consumers during 2010 is as follows (full details in Appendix II):

Date Issued	Date Lifted/ Active	BWN/ WR ¹⁵	Name of PWS	Reason
Jun-10	Jul-10	BWN	Lough Gill (Cairns Hill)*	<i>E.coli</i>

*BWN affected part of the supply zone

One new boil notice was issued to consumers by Sligo County Council during 2010 in a small part of the Lough Gill (Cairns Hill) PWS and none remained active from previous years. No water restrictions were issued in 2010 and none remained active from previous years. At the end of 2010, no boil or restriction notices remained in place.

¹⁵ In some instances the boil notice or water restriction only applies to part of the supply.

EPA Enforcement in 2010

Remedial Action List

No. of PWS on the RAL at the end of 2010:	5
No. of PWS added to RAL in 2010:	0
No. of PWS removed from RAL in 2010:	1

The RAL is a list of PWSs where remedial action is required to ensure compliance with the requirements of the Drinking Water Regulations. In 2010, the Lough Easkey Water Supply was removed from the RAL due to the completion of the necessary remedial works and none were added.

Chlorine Monitors and Alarms

The installation of chlorine monitors and alarms is required to ensure that the supply is adequately disinfected at all times. Chlorine monitors and alarms were in place on all Sligo County Council PWS by the end of 2010.

Audits of Drinking Water Treatment Plants

The following drinking water treatment plants were audited by the EPA during 2010:

No. of PWS	PWS Audited
Aug-10	North Sligo Regional Water Supply
Aug-10	Lough Gill (Cairns Hill) Water Supply

SOUTH DUBLIN COUNTY COUNCIL

Summary of Public Water Supply Quality in 2010

South Dublin County Council is responsible for the operation of 4 Public Water Supplies (PWS) serving a population of 247,180.

Microbiological and chemical compliance levels in PWSs in South Dublin were 100% in both 2009 and 2010.

	Micro	Chemical
2010	100	100

Microbiological Parametric Values:

No non-compliance of the microbiological parametric values occurred during 2010.

Chemical Parametric Values:

No non-compliance of the chemical parametric values occurred during 2010.

Boil Water Notices & Water Restrictions

No boil water notices were issued during 2010 and none remain in place from previous years.

EPA Enforcement in 2010

Chlorine Monitors and Alarms

The installation of chlorine monitors and alarms is required to ensure that the supply is adequately disinfected at all times. Chlorine monitors and alarms were in place on all South Dublin County Council PWS by the end of 2010.

Audits of Drinking Water Treatment Plants

None of South Dublin County Council's drinking water treatment plants were audited by the EPA during 2010.

SOUTH TIPPERARY COUNTY COUNCIL

Summary of Public Water Supply Quality in 2010

South Tipperary County Council is responsible for the operation of 26 Public Water Supplies (PWS) serving a population of 73,300.

Microbiological compliance levels have increased in PWSs in South Tipperary from 98.9% in 2009 to 99.8% in 2010 whilst chemical compliance levels have decreased from 99.3% in 2009 to 99.1% in 2010.

	Micro	Chemical
2010	99.8	99.1

Microbiological Parametric Values:

A summary of the PWS with microbiological non-compliances during 2010 is as follows:

Parameter	2010	
	Name of PWS	
<i>E.coli</i>	Hollyford (1)	
Total No.:		1

Chemical Parametric Values:

A summary of the PWS with non-compliances of the chemical parametric values during 2010 is as follows:

Parameter	2010	
	Name of PWS	
Trihalomethanes	Burncourt (1)	
Fluoride	Ardfinnan (2)	
	Cahir Reservoir (2)	
	Clonmel Poulavanogue (2)	
	Dundrum (2)	
	Galtee (1)	
	Glenary (1)	
	Tipperary UDC (2)	
Total No.:		13

The trihalomethanes non-compliance was primarily due to the chlorination of water with elevated levels of organic matter present. The fluoride non-compliances were due to elevated levels of fluoride above the Irish standard. However, all samples were below the EU fluoride standard of 1.5 mg/l.

Boil Water Notices & Water Restrictions

A summary of boil water notices (BWN) and water restriction (WR) notices active or issued to consumers during 2010 is as follows (full details in Appendix II):

Date Issued	Date Lifted/ Active	BWN/ WR ¹⁶	Name of PWS	Reason
Oct-08	Active	BWN	Cloran Regional*	<i>E.coli</i>
Oct-08	Active	BWN	Gortnapisha Regional*	<i>E.coli</i>
Sep-09	Active	BWN	Burncourt Regional*	<i>Cryptosporidium</i>
Aug-10	Aug-10	BWN	Cloran Regional*	<i>E. coli</i>

*BWN affected part of the supply zone

One new boil water notice was issued during 2010 and three remained active from previous years. At the end of 2010, three boil notices remained in place. All boil water notices in South Tipperary were issued in respect of part of the supply due to the supply of undisinfected water and are not in place for the majority of consumers.

¹⁶ In some instances the boil notice or water restriction only applies to part of the supply.

EPA Enforcement in 2010

Remedial Action List

No. of PWS on the RAL at the end of 2010:	13
No. of PWS added to RAL in 2010:	0
No. of PWS removed from RAL in 2010:	1

The RAL is a list of PWSs where remedial action is required to ensure compliance with the requirements of the Drinking Water Regulations. In 2010, one supply was removed from the RAL due to the completion of the necessary remedial works to the satisfaction of the EPA and no PWS were added.

Chlorine Monitors and Alarms

The installation of chlorine monitors and alarms is required to ensure that the supply is adequately disinfected at all times. By the end of 2010 chlorine monitors and alarms were in place on all of South Tipperary County Council's PWS.

Audits of Drinking Water Treatment Plants

The following drinking water treatment plants were audited by the EPA during 2010:

Date Audited	PWS Audited
Feb-10	Tullohea
Nov-10	Clonmel Poulavanogue
Nov-10	Carrick on Suir – River Lingaun

WATERFORD CITY COUNCIL

Summary of Public Water Supply Quality in 2010

Waterford City Council is responsible for 1 Public Water Supply (PWS) serving a population of 45,748.

Microbiological compliance in the Waterford City PWS was 100% in both 2009 and 2010 whilst chemical compliance levels increased from 98.0% in 2009 to 99.1% in 2010.

	Micro	Chemical
2010	100	99.1

Microbiological Parametric Values:

No non-compliance of the microbiological parametric values occurred during 2010.

Chemical Parametric Values:

A summary of the PWS with non-compliances of the chemical parametric values during 2010 is as follows:

Parameter	2010
	Name of PWS
Fluoride	Waterford City (2)
Total No.:	2

The fluoride non-compliances were due to elevated levels of fluoride above the Irish standard. However, all samples were below the EU fluoride standard of 1.5 mg/l.

Boil Water Notices & Water Restrictions

No boil water notices or water restriction notices were issued to consumers during 2010 and none remained in place from previous years.

EPA Enforcement in 2010

Remedial Action List

No. of PWS on the RAL at the end of 2010:	0
No. of PWS added to RAL in 2010:	0
No. of PWS removed from RAL in 2010:	1

The RAL is a list of PWSs where remedial action is required to ensure compliance with the requirements of the Drinking Water Regulations. In 2010, the Waterford City Council PWS was removed from the RAL due to the completion of the necessary remedial works by Waterford County Council at the Adamstown drinking water treatment plant.

Chlorine Monitors and Alarms

The installation of chlorine monitors and alarms is required to ensure that the supply is adequately disinfected at all times. A chlorine monitor and alarms is in place on Waterford City Council's PWS.

Audits of Drinking Water Treatment Plants

The EPA did not carry out any audits of drinking water treatment plants in Waterford City during 2010.

WATERFORD COUNTY COUNCIL

Summary of Public Water Supply Quality in 2010

Waterford County Council is responsible for the operation of 106 Public Water Supplies (PWS) serving a population of 35,414.

Microbiological compliance levels in PWSs in Waterford decreased from 100% in 2009 to 99.7% in 2010 whilst chemical compliance levels decreased from 98.5% in 2009 to 98.1% in 2010.

	Micro	Chemical
2010	99.7	98.1

Microbiological Parametric Values:

A summary of the PWS with microbiological non-compliances during 2010 is as follows:

Parameter	2010 Name of PWS
<i>E. coli</i>	Inchinleamy (1)
Total No.:	1

Chemical Parametric Values:

A summary of the PWS with non-compliances of the chemical parametric values during 2010 is as follows:

Parameter	2010 Name of PWS
Nitrate	Ballyduff/Ballylemon (1) Glenawillin (2) Kealfoun (1) Kereen (1) LCB Ballyhane (3) LCB Cappoquin (1)
Trihalomethanes	Tramore/Carrigavantry (1)
Lead	Geoish (1) LCB Lismore (1) Tallow (1)
Arsenic	Ballygarty (1)
Fluoride	East Waterford (1) LCB Ballyduff (3) Portlaw (1) Ring/Helvick/Seaview (1) Tramore/Carrigavantry (2)
Total No.:	22

The nitrate non-compliances were attributed to agricultural practices in the vicinity of the source whilst the trihalomethanes non-compliances were primarily due to the chlorination of water with elevated levels of organic matter present. The arsenic exceedance was due to elevated levels of arsenic in the source water. The Water Services Authority currently have a filter in place to remove the arsenic from the raw water. The fluoride non-compliances were due to elevated levels of fluoride above the Irish standard. However, all samples were below the EU fluoride standard of 1.5 mg/l. The lead non-compliances were due to the presence of lead communication pipes and internal lead plumbing.

Boil Water Notices & Water Restrictions

A summary of boil water notices (BWN) and water restriction (WR) notices issued to consumers or active during 2010 are detailed below (full details in Appendix II):

Date Issued	Date Lifted/Active	BWN/WR ¹⁷	Name of PWS	Reason
Apr-09	Mar-10	WR	Dungarvan*	Lead
May-10	Active	WR	Glenawillin	Nitrate
Jul-10	Aug-10	BWN	Grianan	Ammonium
Oct-10	Dec-10	BWN	Ballynoe - Mellary	Turbidity (at WTW)
Dec-10	Active end '10	BWN	Kill/Ballylaneen	Turbidity (at WTW)

*WR affected part of the supply zone

Three new boil water notices and one new water restriction notice were issued to consumers by Waterford County Council during 2010. One water restriction remained active from previous years at Dungarvan which relates to a small part of the supply and does not apply to the majority of consumers. At the end of 2010, one water restriction notice and one boil notice remained in place.

EPA Enforcement in 2010

Remedial Action List

No. of PWS on the RAL at the end of 2010:	14
No. of PWS added to RAL in 2010:	1
No. of PWS removed from RAL in 2010:	8

The RAL is a list of PWSs where remedial action is required to ensure compliance with the requirements of the Drinking Water Regulations. In 2010, 8 PWS were removed from the RAL (Ardmore, Castlereagh, Graiguenageeha, Kilmore-Kilbeg, Kilnafrehan, Stradbally, Ticknock/Tinnabinn and Tallow Hill) due to the completion of the necessary remedial works to the satisfaction of the EPA and 1 PWS (Glenawillin) was added to the RAL.

Chlorine Monitors and Alarms

The installation of chlorine monitors and alarms is required to ensure that the supply is adequately disinfected at all times. Chlorine monitors are now in place in all public water supplies in Waterford County Council. However, systems for out-of-hours response to chlorine alarms had not been implemented by Waterford County Council in all supplies at the end of 2010.

Audits of Drinking Water Treatment Plants

The following drinking water treatment plants were audited by the EPA during 2010:

Date Audited	PWS Audited
Feb-10	Colligan
Oct-10	Deelish/Ballinacourty
Oct-10	Dungarvan
Oct-10	LCB Ballyhane

¹⁷ In some instances the boil notice or water restriction only applies to part of the supply.

WESTMEATH COUNTY COUNCIL

Summary of Public Water Supply Quality in 2010

Westmeath County Council is responsible for the operation of 14 Public Water Supplies (PWS) serving a population of 62,225.

Microbiological compliance levels in PWSs in Westmeath were 100% in both 2009 and 2010 whilst chemical compliance levels have increased from 98.4% in 2009 to 98.8% in 2010.

	Micro	Chemical
2010	100	98.8

Microbiological Parametric Values:

No non-compliance of the microbiological parametric values occurred during 2010.

Chemical Parametric Values:

A summary of the PWS with non-compliances of the chemical parametric values during 2010 is as follows:

Parameter	2010
	Name of PWS
Nitrate	Athlone (1)
Lead	Kilbeggan Water Tower (2)
Fluoride	Ballany High Level Reservoir (2) Ballany Low Level Reservoir (2) Delvin (1)
Total No.:	8

The nitrate non-compliance was attributed to agricultural practices in the vicinity of the source whilst the lead non-compliances were due to the presence of lead communication pipes in the distribution network. The fluoride non-compliances were due to elevated levels of fluoride above the Irish standard. However, all samples were below the EU fluoride standard of 1.5 mg/l.

Boil Water Notices & Water Restrictions

A summary of boil water notices (BWN) and water restriction (WR) notices issued to consumers or active during 2010 are detailed below (full details in Appendix II):

Date Issued	Date Lifted/ Active	BWN/ WR ¹⁸	Name of PWS	Reason
Aug-09	Oct-10	WR	Mullingar*	Lead

*WR affected part of the supply zone

No boil water notices were issued to consumers by Westmeath County Council during 2010 and none remained active from previous years. The WR issued for part of the Mullingar PWS affected 345 people and related to lead piping.

EPA Enforcement in 2010

Remedial Action List

No. of PWS on the RAL at the end of 2010:	0
No. of PWS added to RAL in 2010:	0
No. of PWS removed from RAL in 2010:	0

The RAL is a list of PWSs where remedial action is required to ensure compliance with the requirements of the Drinking Water Regulations. There were no supplies in Westmeath on the RAL during 2010.

Chlorine Monitors and Alarms

The installation of chlorine monitors and alarms is required to ensure that the supply is adequately disinfected at all times. Chlorine monitors and alarms were in place on all Westmeath County Council PWS by the end of 2010.

Audits of Drinking Water Treatment Plants

The following drinking water treatment plants were audited by the EPA during 2008 and 2009:

No. of PWS	PWS Audited
May-10	Mullingar (Portloman)

¹⁸ In some instances the boil notice or water restriction only applies to part of the supply.

WEXFORD COUNTY COUNCIL

Summary of Public Water Supply Quality in 2010

Wexford County Council is responsible for the operation of 30 Public Water Supplies (PWS) serving a population of 105,010.

Microbiological compliance levels have increased in PWSs in Wexford from 99.2% in 2009 to 99.6% in 2010 whilst chemical compliance levels have increased from 99.6% in 2009 to 99.8% in 2010.

	Micro	Chemical
2010	99.6	99.8

Microbiological Parametric Values:

A summary of the PWS with microbiological non-compliances during 2010 is as follows:

Parameter	2010 Name of PWS
<i>E.coli</i>	Wexford Town (1)
Total No.:	1

Chemical Parametric Values:

A summary of the PWS with non-compliances of the chemical parametric values during 2010 is as follows:

Parameter	2010 Name of PWS
Trihalomethanes	New Ross (2)
Total No.:	2

The trihalomethanes non-compliances were primarily due to the chlorination of water with elevated levels of organic matter present.

Boil Water Notices & Water Restrictions

No boil water notices or water restriction notices were issued to consumers during 2010 and none remained in place from previous years.

EPA Enforcement in 2010

Remedial Action List

No. of PWS on the RAL at the end of 2010:	2
No. of PWS added to RAL in 2010:	0
No. of PWS removed from RAL in 2010:	1

The RAL is a list of PWSs where remedial action is required to ensure compliance with the requirements of the Drinking Water Regulations. In 2010, one PWS was removed from the RAL (Taghmon) due to the completion of the necessary remedial works to the satisfaction of the EPA and none were added.

Chlorine Monitors and Alarms

The installation of chlorine monitors and alarms is required to ensure that the supply is adequately disinfected at all times. Chlorine monitors and alarms are now in place in all public water supplies in Wexford.

Audits of Drinking Water Treatment Plants

The following drinking water treatment plants were audited by the EPA during 2010:

No. of PWS	PWS Audited
Nov-10	South Regional
Nov-10	Wexford Town

WICKLOW COUNTY COUNCIL

Summary of Public Water Supply Quality in 2010

Wicklow County Council is responsible for the operation of 56 Public Water Supplies (PWS) serving a population of 92,338.

Microbiological compliance in Wicklow PWSs has increased from 98.9% in 2009 to 100% in 2010 whilst chemical compliance levels have increased from 98.1% in 2009 to 99.1% in 2010.

	Micro	Chemical
2010	100	99.1

Microbiological Parametric Values:

No non-compliance of the microbiological parametric values occurred during 2010.

Chemical Parametric Values:

A summary of the PWS with non-compliances of the chemical parametric values during 2010 is as follows:

Parameter	2010 Name of PWS
Trihalomethanes	Aughrim Annacurra (2) Blessington (1) Wicklow (3)
Nickel	Hollywood Donard (1)
Fluoride	Arklow (3) Tinahely (2)
Total No.:	12

The trihalomethanes non-compliances were primarily due to the chlorination of water with elevated levels of organic matter present whilst the nickel non-compliance was caused by drinking water coming into contact with nickel plated tap fittings. The fluoride non-compliances were due to elevated levels of fluoride above the Irish standard. However, all samples were below the EU fluoride standard of 1.5 mg/l.

Boil Water Notices & Water Restrictions

A summary of boil water notices (BWN) and water restriction (WR) notices issued to consumers or active during 2010 are detailed below (full details in Appendix II):

Date Issued	Date Lifted/Active	BWN/ WR ¹⁹	Name of PWS	Reason
Sep-09	Aug-10	BWN	Rathdrum*	Inadequate disinfection
Nov-09	Jun-10	BWN	Raheen Baltinglass	E. coli
Jan-10	Jan-10	BWN	Kirikee	Flooding of plant
Apr-10	Apr-10	BWN	Raheengraney	Inadequate disinfection
Apr -10	Feb-11	BWN	Ballymorris	E. coli
Jun-10	Jul-10	BWN	Raheengraney	Inadequate disinfection
Sep-10	Sep-10	BWN	Kirikee	Flooding of the plant

*BWN affected part of the supply zone

Five new boil water notices were issued to consumers by Wicklow County Council during 2010 and two remained active from previous years. The boil water notice in Rathdrum related only to a small part of the supply and was not in place for the entire supply. At the end of 2010, one boil notice remained in place on the Ballymorris PWS.

¹⁹ In some instances the boil notice or water restriction only applies to part of the supply.

EPA Enforcement in 2010

Remedial Action List

No. of PWS on the RAL at the end of 2010:	14
No. of PWS added to RAL in 2010:	6
No. of PWS removed from RAL in 2010:	3

The RAL is a list of PWSs where remedial action is required to ensure compliance with the requirements of the Drinking Water Regulations. In 2010, 6 PWS were added to the RAL and 3 were removed (Ballymorris, Blessington and Stratford). All six supplies (Bray Direct, Bray Reservoir, Greystones, Kilcoole, Kilmacanogue and Newtownmountkenedy/Newcastle) originate from the Vartry Reservoir treatment plant operated by Dublin City Council and were added to the RAL due to the vulnerability of the Callow Hill tunnel.

Chlorine Monitors and Alarms

The installation of chlorine monitors and alarms is required to ensure that the supply is adequately disinfected at all times. Chlorine monitors and alarms were in place on all Wicklow County Council PWS by the end of 2010.

Audits of Drinking Water Treatment Plants

The following drinking water treatment plants were audited by the EPA during 2010:

Date Audited	PWS Audited
Aug-10	Aughrim
Aug-10	Baltinglass
Dec-10	Stratford

APPENDIX II - LIST OF ALL BWNS OR WRs PLACED OR ACTIVE ON PUBLIC WATER SUPPLIES DURING 2010.

Water Services Authority	Name of Public Water Supply	Reason	Boil Water Notice (BWN) or Water Restriction (WR)	Population Affected	Affecting Full Supply or Part of Supply?	Date Notice Imposed	Date Notice Lifted
Cork County Council Western Division	Castletownkinnagh	Nitrate	WR	33	Full	01/03/2007	
Cork County Council Western Division	Dursey Island	<i>E. coli</i>	BN	10	Full	06/06/2008	30/04/2010
Cork County Council Western Division	Croterra	<i>E. coli</i>	BN	50	Full	09/07/2008	12/03/2010
Clare County Council	Ennis PWS	Lead	WR	80	Part	07/10/2008	
North Tipperary County Council	Thurles (ZONE 1)	Lead	WR	30	Part	08/10/2008	08/09/2011
Galway County Council	Letterfrack PWS(Dawros)	<i>Cryptosporidium</i>	BN	300	Full	10/10/2008	
Galway County Council	Rosmuc P.S	<i>Cryptosporidium</i>	BN	1,090	Full	10/10/2008	
South Tipperary County Council	Cloran Regional	<i>E. coli</i>	BN	9	Part	22/10/2008	
South Tipperary County Council	Gortnapisha Regional	<i>E. coli</i>	BN	9	Part	22/10/2008	
Cork County Council Southern Division	Glashaboy	Lead	WR	150	Part	11/11/2008	
Kerry County Council	Mid Kerry : Gearha (H) 300A	<i>Cryptosporidium</i>	BN	25	Part	11/02/2009	
Cork County Council Western Division	Snave	<i>E. coli</i>	BN	180	Full	19/03/2009	22/03/2010
Waterford County Council	Dungarvan	Lead	WR	5	Part	07/04/2009	26/03/2010
Cork County Council Western Division	Johnstown	Inadequate Disinfection	BN	15	Full	23/06/2009	22/03/2010
Kerry County Council	Kenmare PWSS 045A	Inadequate Disinfection	WR	20	Part	28/07/2009	
Kerry County Council	Mountain Stage PWSS 062A	Inadequate Disinfection	WR	3	Part	28/07/2009	
Westmeath County Council	Mullingar	Lead	WR	345	Part	04/08/2009	29/10/2010
Kerry County Council	Kilgarvan PWSS 046A	Inadequate Disinfection	WR	5	Part	05/08/2009	
Kerry County Council	An Mhuiríoch/ Baile Na nGall PWSS 063D	Inadequate Disinfection	WR	3	Part	05/08/2009	
Kerry County Council	An Baile Mór PWSS 012D	Inadequate Disinfection	WR	150	Part	05/08/2009	
Kerry County Council	An Mhín Aird No. 2 PWSS 061D	Inadequate Disinfection	WR	30	Part	05/08/2009	
Kerry County Council	An Fheothanach PWSS	Inadequate Disinfection	WR	50	Part	05/08/2009	
Kerry County Council	Baile an Lochaigh PWSS 007D	Inadequate Disinfection	WR	50	Part	05/08/2009	
Kerry County Council	Central Regional: Lough Guitane (H) 400F	Inadequate Disinfection	WR	30	Part	05/08/2009	
South Tipperary County Council	Burncourt Regional	<i>Cryptosporidium</i>	BN	178	Part	01/09/2009	
Wicklow County Council	Rathdrum	Inadequate Disinfection	BN	45	Part	25/09/2009	09/08/2010
Cork County Council Northern Division	Lyreavucane	<i>E. coli</i>	BN	6	Full	13/10/2009	15/03/2010
Wicklow County Council	Raheen Baltinglass	<i>E. coli</i>	BN	30	Full	18/11/2009	09/06/2010
Galway County Council	Ballinasloe Public Supply	Other	BN	10,300	Full	19/11/2009	09/04/2010
Roscommon County Council	Castlerea Regional	<i>Cryptosporidium</i>	BN	2,600	Full	23/11/2009	12/02/2010
Galway County Council	Mid-Galway	<i>E. coli</i>	BN	3,917	Full	30/11/2009	04/08/2011
Cavan County Council	Swanlinbar P.W.S.	<i>Enterococci</i>	BN	400	Full	06/01/2010	19/01/2010
Cork City Council	Cork City Water Supply	Inadequate Disinfection	BN	12,319	Part	13/01/2010	15/01/2010

Water Services Authority	Name of Public Water Supply	Reason	Boil Water Notice (BWN) or Water Restriction (WR)	Population Affected	Affecting Full Supply or Part of Supply?	Date Notice Imposed	Date Notice Lifted
Wicklow County Council	Kirikee Public Supply	Flooding	BN	142	Full	20/01/2010	28/01/2010
Galway County Council	Tuam RWSS	Remedial Works	BN	5,270	Full	10/02/2010	17/02/2010
Kerry County Council	Breanlee PWSS 088A	<i>Cryptosporidium</i>	BN	800	Full	13/02/2010	28/05/2010
Roscommon County Council	Castlerea Regional	<i>Cryptosporidium</i>	BN	2,600	Full	26/02/2010	
Galway County Council	Portumna PS	Remedial Works	BN	1,228	Full	02/03/2010	01/04/2010
Galway County Council	Gort	Other	BN	8,000	Full	08/03/2010	17/12/2010
Wicklow County Council	Raheenraney	Inadequate Disinfection	BN	9	Full	08/04/2010	27/04/2010
Wicklow County Council	Ballymorris	<i>E. coli</i>	BN	9	Full	09/04/2010	10/02/2011
Limerick County Council	Jamestown/Effin	Inadequate Disinfection	BN	21	Part	27/04/2010	07/05/2010
Cork County Council Southern Division	Newcestown	<i>E. coli</i>	WR	9	Part	20/08/2010	21/02/2011
Kerry County Council	An Ceapaigh Thiar PWSS 021D	Inadequate Disinfection	WR	9	Part	06/05/2010	
Waterford County Council	Glenawillin	Nitrate	WR	60	Full	24/05/2010	
Sligo County Council	Lough Gill (Cairns Hill) Borough	<i>E. coli</i>	BN	105	Part	17/06/2010	23/07/2010
Cavan County Council	Bailieborough Mountain Line	<i>E. coli</i>	BN	15	Full	17/06/2010	20/06/2011
Clare County Council	Ballyvaughan (Newtown Supply)	Taste	BN	1,000	Full	18/06/2010	24/06/2010
Galway County Council	Inishmore	Other	BN	2,725	Full	24/06/2010	23/07/2010
Cork County Council Southern Division	Kilnagurteen (Macroom)	<i>E. coli</i>	BN	30	Full	26/06/2010	28/09/2010
Wicklow County Council	Raheenraney	Inadequate Disinfection	BN	9	Full	28/06/2010	07/07/2010
Kerry County Council	An Clochán PWSS 028D	Other	WR	9	Part	16/07/2010	
Kerry County Council	Annascaul PWSS 002D	Other	WR	3	Part	16/07/2010	
Kerry County Council	Cé Bhréannain PWSS 015D	Inadequate Disinfection	WR	6	Part	16/07/2010	
Roscommon County Council	Ballinlough/Loughglynn	<i>E. coli</i>	BN	2,500	Full	28/07/2010	03/08/2010
Waterford County Council	Grianan	Ammonium	BN	435	Full	28/07/2010	03/08/2010
Cork County Council Southern Division	Glashaboy	Lead	WR	190	Part	28/07/2010	
Roscommon County Council	Lecarrow	<i>E. coli</i>	BN	450	Full	30/07/2010	04/08/2010
Cavan County Council	Gowna	<i>E. coli</i>	BN	350	Full	06/08/2010	06/09/2010
Galway County Council	Tully-Tullycross	Coliform Bacteria	BN	325	Full	13/08/2010	
Fingal County Council	Leixlip	<i>E. coli</i>	BN	10	Part	26/08/2010	06/09/2010
South Tipperary County Council	Cloran Regional	<i>E. coli</i>	BN	30	Part	26/08/2010	31/08/2010
Galway County Council	Galway City East & West RWSS	Other	BN	500	Part	02/09/2010	09/09/2010
Galway County Council	Kilkerrin/Moylough	Turbidity (at WTW)	BN	1,800	Full	03/09/2010	27/09/2010
Wicklow County Council	Kirikee Public Supply	Flooding	BN	92	Full	07/09/2010	16/09/2010
North Tipperary County Council	Lorrha/Rathcabbin (Zone 1 - Riverstown)	Other	BN	627	Full	10/09/2010	28/10/2010

Water Services Authority	Name of Public Water Supply	Reason	Boil Water Notice (BWN) or Water Restriction (WR)	Population Affected	Affecting Full Supply or Part of Supply?	Date Notice Imposed	Date Notice Lifted
Fingal County Council	Leixlip	Coliform Bacteria	BN	10	Part	10/09/2010	24/09/2010
Longford County Council	Newtowncashel	<i>Enterococci</i>	BN	516	Full	20/09/2010	05/10/2010
Longford County Council	Kenagh	Coliform Bacteria	BN	541	Full	20/09/2010	05/10/2010
Clare County Council	Ennis PWS	<i>E. coli</i>	BN	18	Part	22/09/2010	22/10/2010
Cavan County Council	Blacklion P.W.S.	<i>E. coli</i>	BN	180	Full	23/09/2010	01/10/2010
Cork County Council Southern Division	Carrignadourna	<i>E. coli</i>	BN	100	Full	27/09/2010	24/02/2011
Clare County Council	Ballyvaughan (Newton Supply)	Odour	BN	1,000	Full	05/10/2010	14/06/2011
Waterford County Council	Ballynoe/Melleray	Turbidity (at WTW)	BN	125	Full	29/10/2010	23/12/2010
Limerick County Council	Pallaskenry/Kildimo PWS	Total Chlorine	BN	24	Part	11/11/2010	
Galway City Council	Galway City Council Public Water S.S.	<i>E. coli</i>	BN	450	Part	20/12/2010	23/12/2010
Limerick County Council	Abbeyfeale	Aluminium	BN	3,029	Full	21/12/2010	13/01/2011
Galway County Council	Gort	Freezing Weather	BN	8,000	Full	21/12/2010	18/04/2011
Limerick County Council	Kilmallock	<i>E. coli</i>	BN	2,338	Full	22/12/2010	10/01/2011
Limerick County Council	Newcastlewest	Freezing Weather	BN	7,469	Full	23/12/2010	11/01/2011
Waterford County Council	Kill/Ballylaneen	Turbidity (at WTW)	BN	500	Full	28/12/2010	11/03/2011

Note: Some notices indicated to be active at the end of 2010, above, may have been rescinded between the end of 2010 and the date of publication of this report.

APPENDIX III - SUMMARY OF MONITORING CARRIED OUT IN 2010

Table 1. Total Number of Water Supply Zones (WSZs) Monitored and Samples Analysed for All Parameters in Public Water Supplies in 2010.

Parameter	No. of WSZs Monitored	No. of WSZs with Exceedances	% of WSZs Complying	No. of Samples Analysed	No. of Samples Exceeding	% of Samples Complying
Microbiological Parameters						
<i>E. coli</i>	929	20	97.8	10415	22	99.8
<i>Enterococci</i>	683	5	99.3	2373	5	99.8
Chemical Parameters						
1,2-dichloroethane	623	0	100	1255	0	100
Antimony	561	0	100	1138	0	100
Arsenic	625	1	99.8	1304	1	99.9
Benzene	626	1	99.8	1273	1	99.9
Benzo(a)pyrene	589	0	100	1071	0	100
Boron	581	0	100	1230	0	100
Bromate	636	1	99.8	1193	1	99.9
Cadmium	645	0	100	1358	0	100
Chromium	625	0	100	1305	0	100
Copper	661	1	99.8	1534	1	99.9
Cyanide	540	0	100	1011	0	100
Fluoride	693	51	92.6	3398	74	97.8
Lead	751	23	96.9	2597	30	98.8
Mercury	621	0	100	1253	0	100
Nickel	655	4	99.4	1362	4	99.7
Nitrate	780	8	99.0	4516	15	99.7
Nitrite (at tap)	698	0	100	4926	0	100
Nitrites (at WTW)	102	1	99.0	753	1	99.9
PAH	588	0	100	1059	0	100
Pesticides - Total	565	0	100	1030	0	100
Selenium	562	1	99.8	1178	3	99.7
Tetrachloroethene & Trichloroethene	628	0	100	1258	0	100
Trihalomethanes(Total)	652	88	86.5	1514	162	89.3
Indicator Parameters						
Aluminium	718	77	89.3	7563	174	97.7
Ammonium	928	6	99.4	10333	6	99.9
Chloride	649	1	99.8	1385	2	99.9
<i>Clostridium perfringens</i>	706	46	93.5	8300	55	99.3
Coliform Bacteria	929	150	83.9	10418	213	98.0
Colony Count @ 22 °C	498	21	95.8	1275	24	98.1
Colour	928	93	90.0	10398	228	97.8
Conductivity	917	0	100	10846	0	100
Iron	782	68	91.3	6647	144	97.8
Manganese	673	32	95.2	2849	49	98.3
Odour	886	56	93.7	9774	123	98.7
Oxidisability	1	0	100	1	0	100
pH	928	221	76.2	10499	494	95.3
Sodium	656	5	99.2	1355	6	99.6
Sulphate	594	0	100	1204	0	100
Taste	749	14	98.1	7591	24	99.7
Total Organic Carbon	580	14	97.6	1172	15	98.7
Turbidity (at tap)	928	32	96.6	10360	37	99.6
Turbidity (at WTW)	175	52	70.3	1526	126	91.7
Radioactivity						
Tritium	27	0	100	57	0	100
Total Indicative Dose	31	0	100	62	0	100

Table 2. Total Number of Water Supply Zones (WSZs) Monitored and Samples Analysed for All Parameters in Public Group Water Schemes in 2010.

Parameter	No. of WSZs Monitored	No. of WSZs with Exceedances	% of WSZs Complying	No. of Samples Analysed	No. of Samples Exceeding	% of Samples Complying
Microbiological Parameters						
<i>E. coli</i>	656	6	99.1	1543	8	99.5
<i>Enterococci</i>	134	3	97.8	229	3	98.7
Chemical Parameters						
1,2-dichloroethane	55	0	100	56	0	100
Antimony	57	0	100	61	0	100
Arsenic	70	0	100	75	0	100
Benzene	58	0	100	59	0	100
Benzo(a)pyrene	79	0	100	84	0	100
Boron	58	0	100	62	0	100
Bromate	116	0	100	143	0	100
Cadmium	71	0	100	76	0	100
Chromium	63	0	100	67	0	100
Copper	95	0	100	101	0	100
Cyanide	56	0	100	60	0	100
Fluoride	209	11	94.7	386	11	97.2
Lead	120	0	100	151	0	100
Mercury	69	0	100	74	0	100
Nickel	95	2	97.9	100	2	98.0
Nitrate	334	0	100	693	0	100
Nitrite (at tap)	389	0	100	808	0	100
Nitrites (at WTW)	7	0	100	32	0	100
PAH	80	0	100	82	0	100
Pesticides - Total	47	0	100	48	0	100
Selenium	49	0	100	51	0	100
Tetrachloroethene & Trichloroethene	56	0	100	57	0	100
Trihalomethanes(Total)	95	24	74.7	105	25	76.2
Indicator Parameters						
Aluminium	521	33	93.7	1156	37	96.8
Ammonium	655	5	99.2	1530	5	99.7
Chloride	71	0	100	76	0	100
<i>Clostridium perfringens</i>	587	11	98.1	1337	11	99.2
Coliform Bacteria	656	40	93.9	1540	43	97.2
Colony Count @ 22 °C	64	2	96.9	69	2	97.1
Colour	655	24	96.2	1533	28	98.1
Conductivity	632	0	100	1474	0	100
Iron	436	35	92.0	933	37	99.6
Manganese	289	8	97.2	572	11	98.1
Odour	612	28	95.4	1425	30	97.9
Oxidisability	0	0		0	0	
pH	656	10	98.5	1536	13	99.2
Sodium	94	0	100	99	0	100
Sulphate	57	0	100	61	0	100
Taste	329	5	98.5	756	5	99.3
Total Organic Carbon	63	0	100	74	0	100
Turbidity (at tap)	655	9	98.6	1534	10	99.3
Turbidity (at WTW)	8	1	87.5	33	2	93.9
Radioactivity						
Tritium	0	0			0	
Total Indicative Dose	0	0			0	

Table 3. Total Number of Water Supply Zones (WSZs) Monitored and Samples Analysed for All Parameters in Private Group Water Schemes in 2010.

Parameter	No. of WSZs Monitored	No. of WSZs with Exceedances	% of WSZs Complying	No. of Samples Analysed	No. of Samples Exceeding	% of Samples Complying
Microbiological Parameters						
<i>E. coli</i>	484	56	88.4	1777	72	95.9
<i>Enterococci</i>	261	8	96.9	340	8	97.6
Chemical Parameters						
1,2-dichloroethane	243	0	100	265	0	100
Antimony	243	0	100	269	0	100
Arsenic	252	0	100	281	0	100
Benzene	244	0	100	268	0	100
Benzo(a)pyrene	236	0	100	257	0	100
Boron	242	0	100	270	0	100
Bromate	242	1	99.6	270	1	99.6
Cadmium	250	0	100	278	0	100
Chromium	248	0	100	275	0	100
Copper	251	1	99.6	301	1	99.7
Cyanide	238	0	100	260	0	100
Fluoride	246	2	99.2	282	2	99.3
Lead	259	0	100	448	0	100
Mercury	248	0	100	275	0	100
Nickel	250	0	100	280	0	100
Nitrate	380	3	99.2	1146	3	99.7
Nitrite (at tap)	365	0	100	1088	0	100
Nitrites (at WTW)	3	0	100	35	0	100
PAH	233	0	100	254	0	100
Pesticides - Total	226	1	99.6	245	1	99.6
Selenium	244	0	100	271	0	100
Tetrachloroethene & Trichloroethene	234	0	100	257	0	100
Trihalomethanes(Total)	248	17	93.1	296	43	85.5
Indicator Parameters						
Aluminium	363	14	96.1	1222	17	98.6
Ammonium	484	1	99.8	1726	2	99.9
Chloride	251	0	100	290	0	100
<i>Clostridium perfringens</i>	388	58	85.1	1327	72	94.6
Coliform Bacteria	484	149	69.2	1768	217	87.7
Colony Count @ 22 °C	149	12	91.9	176	14	92.0
Colour	484	60	87.6	1769	95	94.6
Conductivity	484	0	100	1708	0	100
Iron	371	26	93.0	1204	41	96.6
Manganese	324	21	93.5	919	29	96.8
Odour	444	17	96.2	1586	23	98.5
Oxidisability	3	0	100	3	0	100
pH	484	45	90.7	1745	72	95.9
Sodium	250	0	100	292	0	100
Sulphate	240	1	99.6	267	1	99.6
Taste	343	2	99.4	863	2	99.8
Total Organic Carbon	241	5	97.9	311	5	98.4
Turbidity (at tap)	484	12	97.5	1777	13	99.3
Turbidity (at WTW)	19	2	89.5	59	2	96.6
Radioactivity						
Tritium	15	0	100	16	0	100
Total Indicative Dose	10	0	100	11	0	100

Table 4. Total Number of Water Supply Zones (WSZs) Monitored and Samples Analysed for All Parameters in Small Private Supplies in 2010.

Parameter	No. of WSZs Monitored	No. of WSZs with Exceedances	% of WSZs Complying	No. of Samples Analysed	No. of Samples Exceeding	% of Samples Complying
Microbiological Parameters						
<i>E. coli</i>	972	72	92.6	1575	80	94.9
<i>Enterococci</i>	467	45	90.4	678	47	93.1
Chemical Parameters						
1,2-dichloroethane	10	0	100	15	0	100
Antimony	21	0	100	26	0	100
Arsenic	113	3	97.3	147	3	98.0
Benzene	10	0	100	15	0	100
Benzo(a)pyrene	8	0	100	12	0	100
Boron	68	0	100	99	0	100
Bromate	9	0	100	14	0	100
Cadmium	159	0	100	199	0	100
Chromium	159	0	100	198	0	100
Copper	322	4	98.8	397	4	99.0
Cyanide	9	0	100	14	0	100
Fluoride	37	0	100	50	0	100
Lead	409	0	100	528	0	100
Mercury	11	0	100	17	0	100
Nickel	163	0	100	203	0	100
Nitrate	644	8	98.8	889	8	99.1
Nitrite (at tap)	768	1	99.9	1167	1	99.9
Nitrites (at WTW)	0	0		0	0	
PAH	8	0	100	11	0	100
Pesticides - Total	8	0	100	12	0	100
Selenium	80	0	100	112	0	100
Tetrachloroethene & Trichloroethene	10	0	100	15	0	100
Trihalomethanes(Total)	11	1	90.9	23	4	82.6
Indicator Parameters						
Aluminium	496	6	98.8	760	6	99.2
Ammonium	948	16	98.3	1443	23	98.4
Chloride	156	1	99.4	193	1	99.5
<i>Clostridium perfringens</i>	427	23	94.6	626	28	95.5
Coliform Bacteria	974	312	68.0	1578	381	75.9
Colony Count @ 22 °C	10	2	80.0	19	3	84.2
Colour	956	40	95.8	1466	53	96.4
Conductivity	938	4	99.6	1428	4	99.7
Iron	701	59	91.6	1054	68	93.5
Manganese	437	61	86.0	580	75	87.1
Odour	852	9	98.9	1281	10	99.2
Oxidisability	0	0		0	0	
pH	964	174	82.0	1480	214	85.5
Sodium	114	15	86.8	130	15	88.5
Sulphate	11	0	100	16	0	100
Taste	211	0	100	338	0	100
Total Organic Carbon	9	0	100	11	0	100
Turbidity (at tap)	963	35	96.4	1480	39	97.4
Turbidity (at WTP)	0	0		0	0	
Radioactivity						
Tritium	6	0	100	6	0	100
Total Indicative Dose	0	0		0	0	

APPENDIX IV - MICRO, CHEMICAL AND INDICATOR PARAMETERS IN THE
2007 DRINKING WATER REGULATIONS.

MICROBIOLOGICAL, CHEMICAL AND INDICATOR PARAMETRIC VALUES

	Parameter	Parametric Value	Unit	Comments	Notes
Microbiological Parameters					
1	<i>Escherichia coli</i> (<i>E. coli</i>)	0	No./100ml	The <i>E. coli</i> bacteria is present in very high numbers in human or animal faeces and is rarely found in the absence of faecal pollution. As such, its presence in drinking water is a good indication that either the source of the water has become contaminated or that the treatment process at the water treatment plant is not operating adequately.	
2	<i>Enterococci</i>	0	No./100ml	<i>Enterococci</i> originate in human or animal waste and thus their presence provides an indication that the water supply has been contaminated with faeces	
Chemical Parameters					
3	Acrylamide	0.10	µg/l	Acrylamide can be present in water supplies from the use of polyacrylamides as coagulant aids in water treatment. It is classified by the International Agency for Research on Cancer (IARC) in Group 2A (i.e., probably carcinogenic to humans).	Note 1
4	Antimony	5.0	µg/l	Antimony is a naturally occurring trace element used in the metal industry and in flame retardant materials. It can also occur naturally from weathering of rocks. The toxicity of antimony depends on the form it occurs in (naturally occurring antimony is likely to be in the less toxic form) and while there is some evidence for the carcinogenicity of certain antimony compounds by inhalation, there is no data to indicate carcinogenicity by the oral route.	
5	Arsenic	10	µg/l	Arsenic is widely distributed through-out the Earth's crust and is used in certain industrial applications (primarily as alloying agents in the manufacture of transistors, lasers and semi-conductors) and has been used in the past as a component of the wood preservative CCA (Copper-Chromium-Arsenic) though it is no longer in use. However, the primary source of arsenic in drinking water is from its dissolution into groundwater from naturally occurring ores and minerals. Arsenic has been shown to have significant health effects in some parts of the world (e.g. Bangladesh). Arsenic is one of the few substances shown to cause cancer in humans through consumption of drinking water and there is overwhelming evidence that consumption of arsenic through drinking water is causally related to the development of cancer in several different locations in the body.	
6	Benzene	1.0	µg/l	The principle source of benzene is from vehicle emissions which may find their way into water. Benzene is carcinogenic to humans.	
7	Benzo(a)pyrene	0.010	µg/l	Benzo(a)pyrene was formerly included in the group of chemicals called PAHs (Polycyclic Aromatic Hydrocarbons) which are generally undesirable in water. The absolute undesirability of benzo(a)pyrene in drinking water has been emphasised by its inclusion as a separate parameter. It is carcinogenic.	

	Parameter	Parametric Value	Unit	Comments	Notes
8	Boron	1.0	mg/l	Boron is a naturally occurring element and can occur naturally in groundwater. It is also used in the manufacture of glass, soap, and detergents and as flame retardants. Development toxicity has been demonstrated in laboratory animals at levels in excess of the parametric value.	
9	Bromate	10	µg/l	Bromate is classified by the International Agency for Research on Cancer (IARC) in Group 2B (i.e., possibly carcinogenic to humans). Bromate is not normally found in water but may be formed during ozonation when the bromide ion is present in water. Under certain conditions, bromate may also be formed in concentrated hypochlorite solutions used to disinfect water (WHO, 2004).	Note 2
10	Cadmium	5.0	µg/l	Cadmium is used in the steel and plastics industry and is a common component of batteries. It may also enter water from trace impurities in the zinc of galvanised pipes and solders and some metal fittings. Cadmium can accumulate in the kidneys.	
11	Chromium	50	µg/l	Chromium is commonly found in the Earth's crust, though can be present in water from contamination from timber treatment chemicals (Copper-Chromium-Arsenic). The toxicity of chromium depends on the form in which it is found, with hexavalent chromium classified as a human carcinogen.	
12	Copper	2.0	mg/l	Copper is a nutrient essential for health, though at elevated levels can become a contaminant (elevated levels can cause acute gastrointestinal effects). The primary source of copper in drinking water is from corrosion of internal copper plumbing. The levels of copper in drinking water depend on the length of time the water has been stagnant in the copper piping and thus fully flushed water generally has low levels of copper.	Note 3
13	Cyanide	50	µg/l	Cyanide is a reactive, highly toxic entity, which, in excessive amounts, will cause mortality to humans. It is a common constituent of industrial wastes, especially from metal plating processes and electronic components manufacture.	
14	1,2-dichloroethane	3.0	µg/l	1,2-dichloroethane is a synthetic intermediate and organic solvent used in the manufacture of chemicals. It can enter water from discharges from facilities using the chemical. It is a toxic substance which can cause a variety of ill-effects including eye damage, dermatitis and narcotic effects. It has also been classified by the IARC in Group 2 (possible human carcinogen).	
15	Epichlorohydrin	0.10	µg/l	Epichlorohydrin can be present in water supplies from the use of polyamines as coagulant aids in water treatment and from epoxy resin linings of water mains and water retaining structures. It is classified by the International Agency for Research on Cancer (IARC) in Group 2A (i.e., probably carcinogenic to humans).	Note 1
16	Fluoride	0.8	mg/l	Fluoride arises almost exclusively from fluoridation of public water supplies and from industrial discharges, although it occurs naturally in quite rare instances. Past health studies have shown that the addition of fluoride to water supplies at levels above 0.6mg/l F ⁻ leads to a reduction in tooth decay in growing children and that the optimum beneficial effects were thought to occur around 1.0 mg/l. However, in light of recent international and Irish research which shows an increasing occurrence of dental fluorosis, the Forum on Fluoridation (2002) recommended the lowering of the fluoride levels in drinking water to a range of 0.6 to 0.8 mg/l, with a target of 0.7 mg/l.	Note 11

	Parameter	Parametric Value	Unit	Comments	Notes
17	Lead	10	µg/l	Lead is present in drinking water primarily from its dissolution from lead pipes or lead-containing solder and thus the concentration of lead in drinking water depends on a number of factors including pH, temperature, water hardness and standing time of the water. Consequently, the method of sampling for lead is critical and depending on the method used results can vary significantly. According to the World Health Organisation (WHO, 2004) lead is a general toxicant that accumulates in bone. Infants, children up to 6 years of age and pregnant women are the most susceptible to its health effects. It is toxic to both the central and peripheral nervous systems.	Notes 3 and 4
18	Mercury	1.0	µg/l	Mercury is a very toxic metal that primarily affects the kidney. It has been used in electrical appliances, batteries, plastics and in dental amalgams, though many of these uses are no longer applicable.	
19	Nickel	20	µg/l	Nickel is a metal used in the production of stainless steels and alloys and thus may be present in drinking water from water that comes into contact with nickel or chromium plated taps particularly where the water has been stagnant prior to consumption. Nickel compounds are carcinogenic and metallic nickel is possibly carcinogenic.	Note 3
20	Nitrate	50	mg/l	Nitrate in the environment originates mostly from organic and inorganic sources such as waste discharges, animal slurries and artificial fertiliser. High levels of nitrate in drinking water may induce "blue baby" syndrome (methaemoglobinemia). The nitrate converts to nitrite which reacts with blood haemoglobin thus reducing the availability of the blood to hold oxygen.	Note 5
21	Nitrite	0.50	mg/l	Nitrites exist in very low levels principally because the nitrogen will tend to exist in other forms (such as ammonia). Nitrite is an intermediate in the oxidation of ammonia to nitrate. Nitrite is associated with methaemoglobinemia as previously discussed.	Note 5
22	Pesticides	0.10	µg/l	Pesticides refer to a wide range of chemicals used for the control of pests. The parametric value is set on a precautionary basis. Where pesticides are detected the individual pesticide detected must be considered and its toxicology.	Notes 6 and 7
23	Pesticides – Total	0.50	µg/l	Pesticides refer to a wide range of chemicals used for the control of pests. The parametric value is set on a precautionary basis. Where pesticides are detected the individual pesticide detected must be considered and its toxicology.	Note 6 and 8
24	Polycyclic aromatic hydrocarbons (PAH)	0.10*	µg/l	Polycyclic Aromatic Hydrocarbons (PAHs) are a group of organic compounds containing 2 or more fused aromatic rings of carbon and hydrogen atoms. Although there are many compounds in this group, for the purposes of determining compliance with the Drinking Water Regulations only four are considered – benzo(b)fluoranthene, benzo(k)fluoranthene, benzo(ghi)perylene and indeno(1,2,3-cd)pyrene. They originate from many sources including coal-tar coating of drinking water pipes, soot, vehicle emissions and as combustion products of hydrocarbon fuels. This group of compounds are widely regarded as carcinogens, though the potency of the different PAHs varies.	Note 9
25	Selenium	10	µg/l	Selenium originates from the weathering of rocks and soils but is also used in industry as a chemical catalyst. It is an essential biological requirement though only very small concentrations of	

	Parameter	Parametric Value	Unit	Comments	Notes
				selenium are required, above which it is toxic and can cause a variety of illnesses.	
26	Tetrachloroethene/Trichloroethene	10*	µg/l	Tetrachloroethene and trichloroethene are synthetic solvents used in the dry-cleaning industry and other various industrial and manufacturing processes as well as being used as a degreaser. It may be carcinogenic but otherwise can have a variety of ill effects.	
27	Trihalomethanes – Total	100*	µg/l	<p>Trihalomethanes (THMs) are derivatives of the simplest organic compound - methane, CH₄ - in which 3 of the hydrogen atoms are substituted by halogen atoms. The principal halogens are fluorine (F₂), chlorine (Cl₂), bromine (Br₂) and iodine (I₂), but while many combinations are theoretically possible, the term trihalomethanes is applied to four specific compounds containing only chlorine and/or bromine as the halogen elements. The four compounds are <i>chloroform</i> (CHCl₃), <i>bromodichloromethane</i> (CHBrCl₂), <i>dibromochloromethane</i> (CHBr₂Cl) and <i>bromoform</i> (CHBr₃).</p> <p>As a powerful oxidising agent, chlorine also breaks down the complex and inert organic molecules which are the colouring agents of the water, forming smaller, reactive entities. These entities react with chlorine (and with bromine derived from the oxidation by chlorine of bromide naturally present) to form the THM compounds, the most abundant of which is chloroform (CHCl₃). There is thus a fairly straightforward relationship between the degree of colour in the water prior to chlorination and the quantities of THMs present following chlorination. If colour is present at the point of chlorination, THMs are likely to be formed.</p> <p>THM compounds are undesirable in drinking water for two reasons. Firstly, the actual compounds themselves may pose a hazard to the health of the consumer if present in excessive amounts. Chloroform is classified by IARC as a possible carcinogen although the Committee on Toxicology has concluded "<i>Problems remain in the interpretation of published studies. These include the small relative risks recorded, the possibility of residual confounding, and the problems with exposure assessment. They concluded that the evidence for a causal association between cancer and exposure to chlorination by-products is limited and any such association is unlikely to be strong</i>". Secondly, the presence of the THM group may be an indicator of the possible presence of other organic by-products of chlorination in trace amounts. The WHO advises that "<i>In controlling trihalomethanes, a multistep treatment system should be used to reduce organic trihalomethane precursors, and primary consideration should be given to ensuring that disinfection is never compromised</i>".</p>	Note 10
28	Vinyl chloride	0.50	µg/l	Vinyl chloride can be present in water supplies from the use of unplasticised polyvinyl chloride (uPVC) pipes in water distribution systems. It is carcinogenic.	Note 1

	Parameter	Parametric value	Unit	Comments	Notes
Indicator Parameters					
29	Aluminium	200	µg/l	Aluminium is <u>present</u> in drinking water as a result of its use as aluminium sulphate (a coagulant) in the water treatment process, though can be naturally present in some waters. Historically, there has been some concern about possible links between aluminium in drinking water and Alzheimer's disease. However, the WHO states that: <i>"On the whole, the positive relationship between aluminium in drinking water and Alzheimer's disease which was demonstrated in several epidemiological studies, cannot be totally discounted. However, strong reservations about inferring a causal relationship are warranted in view of the failure of these studies to account for demonstrated confounding factors and for the total aluminium intake from all sources".</i>	
30	Ammonium	0.30	mg/l	Ammonium in water supplies originates from agricultural and industrial processes, as well as from disinfection with chloramines (a method of disinfection not in use in Ireland). Elevated levels of ammonium may arise from intensive agriculture in the catchment of the water source. Ammonium is therefore an indicator of possible bacterial, sewage and animal waste pollution. Ammonium in itself is not a health risk but the parametric value serves as a valuable indicator of source pollution.	
31	Chloride	250	mg/l	Chloride can originate from natural sources such as saltwater intrusion in coastal sources but can be present in sewage and industrial effluents and thus can be an indicator of pollution from these sources.	Note 12
32	<i>Clostridium perfringens</i> (incl spores)	0	No/100 ml	<i>Clostridium perfringens</i> is a member of the bacterial intestinal flora of humans and therefore serves as an indicator of faecal pollution. The spores of <i>Clostridium perfringens</i> are particularly resistant to unfavourable conditions in the environment and thus they survive for long periods. As such they can be useful indicators of water that is intermittently polluted.	Note 13
33	Colour	Acceptable to consumers and no abnormal change		Colour in water is usually due to the presence of complex organic molecules derived from vegetable (humic) matter such as peat, leaves, branches etc. While colour, in itself is primarily as aesthetic parameter it may indicate other problems with the water supply particularly where the water is chlorinated. In such cases the formation of trihalomethanes may occur.	
34	Conductivity	2500	µS cm ⁻¹ at 20 °C	Conductivity is a measure of the ability of water to conduct an electrical current, therefore conductivity is related to the ionic content of the water.	Note 12
35	Hydrogen ion concentration	≥ 6.5 and ≤9.5	pH units	pH is a measure of whether a liquid is acid or alkaline. The pH scale ranges from 0 (very acid) to 14 (very alkaline). The range of natural pH in freshwaters extends from around 4.5 for acid peaty upland waters to over 10 in waters where there is intense photosynthetic activity by algae. However, the most frequently encountered range is 6.5 to 8.0. The control of pH is a critical component of water treatment and distribution, influencing the effectiveness of coagulation, disinfection and the concentration of plumbing materials (such as lead, copper and nickel) in the final product.	Note 12

	Parameter	Parametric value	Unit	Comments	Notes
36	Iron	200	µg/l	Iron is an abundant metal found in the Earth's crust. It is naturally present in water but can also be present in drinking water from the use of iron coagulants or the corrosion of steel and cast iron pipes during water distribution. Iron is an essential element in human nutrition. The WHO (WHO, 2004) states that values of up to 2 mg/l (10 times the parametric value) do not present a hazard to health. However, at levels less than 2 mg/l but above the parametric value, the colour of water may turn brown, become turbid or may deposit solids on clothes washed in the water or food cooked using water.	
37	Manganese	50	µg/l	Manganese is an element abundant in the Earth's crust and is commonly found in groundwater. In common with iron, the problems associated with levels of manganese above the parametric value are primarily aesthetic, as manganese can cause staining problems. High levels of manganese also cause objectionable tastes in the water but there are no particular toxicological connotations. The WHO recommend a guideline value of 0.4 mg/l, which is twice the parametric value in the Regulations.	
38	Odour	Acceptable to consumers and no abnormal change			
39	Oxidisability	5.0	mg/l O ₂	Oxidisability is a measure of the organic (and other oxidisable) matter present in a water.	Note 14
40	Sulphate	250	mg/l	Sulphate is naturally occurring and is present in numerous minerals. The WHO review (WHO, 2004) did not identify a level of sulphate in water that is likely to cause adverse health effects but studies did indicate a laxative effect at concentrations of 1,000 to 1,200 mg/l (i.e., several times higher than the parametric value).	Note 12
41	Sodium	200	mg/l	Sodium is an abundant natural constituent of rocks and soils and is always present in natural waters. Excessive intake can cause hypertension but the primary mode of intake is via food.	
42	Taste	Acceptable to consumers and no abnormal change			
43	Colony count 22 ^o C	No abnormal change		This is the number of organisms per millilitre when the water is stored at 22 ^o C. The usefulness of this parameter is that sudden or significant changes in the levels of organisms can indicate problems with the water supply.	
44	Coliform bacteria	0	No./100 ml	The coliform bacteria (previously know as Total Coliforms) are a group of organisms that can survive and grow in water. They are a useful indicator of treatment efficiency and the cleanliness of the distribution mains. Coliform bacteria can occur in sewage and in natural waters. Coliform bacteria should not be present in water that is disinfected and their presence indicates that either disinfection has not been complete, that there is ingress into the water mains in the distribution network or that the sample point is contaminated.	
45	Total Organic Carbon (TOC)	No abnormal		This is a measure of the organic carbon in water. Sudden or significant changes in the level of	Note 15

	Parameter	Parametric value	Unit	Comments	Notes
		change		TOC in the treated water can indicate problems with the water supply.	
46	Turbidity	Acceptable to consumers and no abnormal change		The control of turbidity is one of the indicators of the efficiency of treatment at the plant. Elevated levels of turbidity in the treated water indicate that the treatment process is not operating adequately. It also provides a good indication of whether the treatment plant is capable of removing <i>Cryptosporidium</i> oocysts. While the parametric value for turbidity (at the tap) is that the water must be "acceptable to consumers and [there must be] no abnormal change" there is a parametric value for turbidity (for water leaving the treatment plant) of 1.0 NTU. However, it must be stressed that this value is for visual acceptability of the water. In practice turbidity levels need to be much lower and should not exceed 0.2 NTU and preferably be below 0.1 NTU to be protective against <i>Cryptosporidium</i> breakthrough in the treatment plant.	Note 16
47	Tritium	100	Bq/l	Tritium, as a form of Hydrogen, is found naturally in air and water. It is produced naturally in the upper atmosphere when cosmic rays strike nitrogen molecules in the air. Tritium is also produced commercially in reactors. It is used in various self-luminescent devices, such as exit signs in buildings, aircraft dials, gauges, luminous paints, wristwatches and in life science research. The main human health hazard associated with Tritium relates to its ingestion or inhalation which, if in high levels, can lead to the generation of low energy radioactive decay products in the body.	Notes 17 and 19
48	Total indicative dose	0.10	mSv/year		Notes 18 and 19

* sum of concentrations of specified compounds

Notes

- Note 1:** The parametric value refers to the residual monomer concentration in the water as calculated according to specifications of the maximum release from the corresponding polymer in contact with the water.
- Note 2:** For the water referred to in sub-articles 6 (a), (b) and (c) the parametric value to be met by 1 January, 2004 is 25 µg/l. A value of 10 µg/l must be met by 25 December, 2008.
- Note 3:** The value applies to a sample of water intended for human consumption obtained by an adequate sampling method* at the tap and taken so as to be representative of a weekly average value ingested by consumers and that takes account of the occurrence of peak levels that may cause adverse effects on human health.
- *The Copper, Lead and Nickel parameters shall be monitored in such a manner as the Minister shall determine from time to time.
- Note 4:** For water referred to in sub-articles 6 (a), (b) and (c), the parametric value to be met by 1, January 2004 is 25 µg/l. A value of 10 µg/l must be met by 25 December, 2013.
- All appropriate measures shall be taken to reduce the concentration of lead in water intended for human consumption as much as possible during the period needed to achieve compliance with the parametric value.
- When implementing the measures priority shall be progressively given to achieve compliance with that value where lead concentrations in water intended for human consumption are highest.
- Note 5:** Compliance must be ensured with the conditions that $[\text{nitrate}]/50 + [\text{nitrite}]/3 < 1$, the square brackets signifying the concentrations in mg/l for nitrate (NO₃) and nitrite (NO₂) and the value of 0.10mg/l for nitrites ex water treatment works.
- Note 6:** Only those pesticides which are likely to be present in a given supply require to be monitored.
- “Pesticides” means:
- organic insecticides,
 - organic herbicides,
 - organic fungicides,
 - organic nematocides,
 - organic acaricides,
 - organic algicides,
 - organic rodenticides,
 - organic slimicides,
 - related products (inter alia, growth regulators)
- and their relevant metabolites, degradation and reaction products.
- Note 7:** The parametric value applies to each individual pesticide. In the case of aldrin, dieldrin, heptachlor and heptachlor epoxide the parametric value is 0.030 µg/l.
- Note 8:** “Pesticides – Total” means the sum of all individual pesticides detected and quantified in the course of the monitoring procedure.
- Note 9:** The specified compounds are:
- benzo(b)fluoranthene
 - benzo(k)fluoranthene
 - benzo(ghi)perylene
 - indeno(1,2,3-cd)pyrene.
- Note 10:** The specified compounds are: chloroform, bromoform, dibromochloromethane and bromodichloromethane.
- For the water referred to in sub-articles 6 (a), (b) and (c), the parametric value to be met by 1 January, 2004 is 150 µg/l. A value of 100 µg/l must be met by 25 December, 2008.

All appropriate measures must be taken to reduce the concentration of THMs in water intended for human consumption as much as possible during the period needed to achieve compliance with the parametric value.

When implementing the measures to achieve this value, priority must progressively be given to those areas where THM concentrations in water intended for human consumption are highest.

Note 11: The parametric value is 1.0mg/l for fluoridated supplies. In the case of supplies with naturally occurring fluoride the parametric value is 1.5mg/l.

Note 12: The water should not be aggressive

Note 13: This parameter need not be measured unless the water originates from or is influenced by surface water. In the event of non-compliance with this parametric value, the supply shall be investigated to ensure that there is no potential danger to human health arising from the presence of pathogenic micro-organisms, e.g. *cryptosporidium*.

Note 14: This parameter need not be measured if the parameter TOC is analysed.

Note 15: This parameter need not be measured for supplies of less than 10,000m³ a day.

Note 16: In the case of surface water treatment, a parametric value not exceeding 1.0 NTU (nephelometric turbidity units) in the water ex treatment works must be strived for.

Note 17: Monitoring frequencies to be set at a later date in Part 2 of the Schedule.

Note 18: Excluding tritium, potassium –40, radon and radon decay products; monitoring frequencies, monitoring methods and the most relevant locations for monitoring points to be set at a later date in Part 2 of the Schedule.

Note 19: **A.** The proposals required by Note 6 on monitoring frequencies, and Note 7 on monitoring frequencies, monitoring methods and the most relevant locations for monitoring points in Part 2 of the Schedule shall be adopted in accordance with the Committee procedure laid down in Article 12 of Council Directive 98/83/EEC.

B. Drinking water need not be monitored for tritium or radioactivity to establish total indicative dose where, on the basis of other monitoring carried out, the levels of tritium of the calculated total indicative dose are well below the parametric value.

APPENDIX V - FURTHER INFORMATION AND GUIDANCE BY THE EPA.

Further Information and Guidance by the EPA

Access to Information on Drinking Water Quality

Background

Ready access by consumers to up-to-date data on drinking water quality empowers them to engage actively with the water supplier to seek information or reassurance in relation to their drinking water supply.

Monitoring of drinking water quality in Ireland is undertaken by Water Services Authorities (local authorities) for all public water supplies. For private supplies (other than supplies exempted under the Drinking Water Regulations) local authorities have a supervisory role and must ensure compliance with standards by these private suppliers.

The 2007 Drinking Water Regulations set out the chemical and micro-biological standards against which drinking water should be monitored and require that Water Services Authorities maintain up-to-date records of results for their own public supplies and for all other supplies for which they have supervisory responsibility. These records are required to be available to the general public for inspection. The Drinking Water Regulations require that the EPA collects and verifies monitoring results for all of the above supplies, i.e. all public and private supplies other than supplies exempted under the regulations.



The EPA's "*The Provision and Quality of Drinking Water in Ireland*" report which is published annually provides an assessment of the quality of drinking water based on the information submitted. This is available on the Agency's website to download free of charge (www.epa.ie).

The 2007 Drinking Water Regulations enable the Minister for the Environment, Community and Local Government to issue guidelines on the maintenance of records in electronic format to facilitate public access to drinking water data. The Minister for the Environment, Community and Local Government is also authorised under Section 30 of the Water Services Act 2007 Act to issue a Direction on the provision of public information and advice by water services providers (local authorities) on the format and content of records and reports.

Requirements for Local Authorities (Water Services Authorities)

On 20 July 2009, the Minister for the Environment, Community and Local Government issued instructions³⁸ to local authorities (Water Services Authorities) to commence publishing the results of their drinking water sampling programmes on their websites. The Minister directed that all Water Services Authorities should publish the results of their water sampling and that access to the data should be made available from a prominent position on each Water Services Authorities website homepage. The Minister³⁹ has also asked each Water Services Authority to establish a contact telephone hotline for responding to queries regarding drinking water quality.

³⁸ Circular Letter (WSP 6/09) on the *Publication of Drinking Water Quality Monitoring Results*.

³⁹ Press Release from the Department of the Environment, Community and Local Government dated 07/11/2008

The Minister's instruction also requires local authorities, as a minimum, to publish on their websites results in respect of the following parameters:

<u>Microbiological and Chemical Parameters</u>	<u>Indicator and Other Parameters</u>
<ul style="list-style-type: none"> ▪ <i>E. coli</i>, ▪ <i>Enterococci</i>, ▪ lead, ▪ nitrate, ▪ trihalomethane. 	<ul style="list-style-type: none"> ▪ aluminium, ▪ turbidity, ▪ <i>cryptosporidium</i> (if tested for)

It also recommends that Water Services Authorities publish on their websites:

- a. Details of any notifications sent to the EPA under Regulations 9 and 10 of the *European Communities (Drinking Water)(No. 2) Regulations 2007*;
- b. The relevant Water Services Authority drinking water summary report from the most recently published EPA Drinking Water Report;
- c. Drinking Water Audit Reports conducted by the EPA;
- d. The Remedial Action List (RAL) of supplies in each Water Services Authority's functional area. (This should include summary details of the action programmes implemented to improve the supplies and a timeframe for completion of the necessary works).

Members of the general public looking for information on their drinking water quality should contact their Water Services Authority or refer to their local authorities' website. The contact details for all local authorities (County Councils and City Councils) are included in Appendix VI of this report.

Guidance, Advice Notes and Circular Letters by the EPA

The Environmental Protection Agency Act, 1992 empowers the EPA to publish criteria and procedures in relation to the management, maintenance, supervision, operation or use of drinking water treatment plants. Water Services Authorities are obliged to have regard to such criteria and procedures in the performance of their functions.

The European Communities (Drinking Water) (No.2) Regulations, 2007 also authorises the EPA to prepare binding guidance for local authorities in several specific areas.

Within this remit, the EPA has published a range of materials in relation to drinking water that can be broadly categorised as:

1. Drinking Water Guidance
2. Drinking Water Treatment Manuals
3. Drinking Water Advice Notes
4. Drinking Water Guidance Circulars

Drinking Water Guidance



(1) European Communities (Drinking Water) (No.2) Regulations 2007: A Handbook on Implementation of the Regulations for Water Service Authorities for **Public** Water Supplies.

(2) European Communities (Drinking Water) (No.2) Regulations 2007: A Handbook on Implementation of the Regulations for Water Service Authorities for **Private** Water Supplies.

Issued 2010.

The EPA has published a detailed Handbook for Water Services Authorities to assist in the implementation of the provisions of the 2007 Drinking Water Regulations.

The handbooks are published in a format that allows any future revisions or new sections to be easily incorporated. Water Services Authorities will be notified of any revisions that occur and for reference purposes the most up-to-date version of the handbooks and the individual sections will be available on the EPA's website (www.epa.ie).

The revised Drinking Water Handbook amalgamates all relevant content from the previous handbook on the 2000 Regulations, and incorporates recently published EPA guidance booklets Numbers 1-4, as follows:

- Guidance Booklet No.1: On Regulation 9 and 10 of the Regulations.
- Guidance Booklet No. 2: On Annual Reporting of Monitoring Results.
- Guidance Booklet No. 3: On the Remedial Action List (RAL).
- Guidance Booklet No. 4: *Cryptosporidium* Risk Assessment.

The handbook gives an overview of the Regulations including guidance on monitoring, sampling, analysis, procedures for dealing with non-compliances, complaints, incidents and emergencies, reporting, drinking water safety plans and audits, as well as some general guidance on water treatment and distribution matters.


Guidance is provided for local authorities on the format and manner in which monitoring results are to be submitted to the Agency each year, including instructions on the uploading of data into the EDEN system.


The revised Drinking Water Handbook includes an outline of actions required by Water Services Authorities for the removal and addition of public water supplies from the Remedial Action List (RAL).


Guidance is also provided for Water Services Authorities on the risk screening methodology for *Cryptosporidium*, to assist in prioritising supplies that are at a high risk of contamination with *Cryptosporidium*. It also identifies high risk factors that can be mitigated to reduce the risk associated with the supply.

<http://www.epa.ie/downloads/pubs/water/drinking/DW%20Regs%20Handbook1.pdf>


Drinking Water Treatment Manuals

	<p>(1) Water Treatment Manuals – Coagulation, Flocculation & Clarification.</p> <p>Version 1. Issued 2002.</p> <p>This Coagulation, Flocculation & Clarification manual sets out the general principles and practices that should be followed by those involved in the production of drinking water.</p> <p>It serves as practical guidance for those involved in the operation, use, management, maintenance and supervision of drinking water supplies.</p> <p>It includes recommendations for operating procedures, monitoring regimes, process actions and start-up and shutdown procedures at a drinking water treatment plant.</p> <p>Guidance for undertaking jar tests and tests how to determine the optimum chemical coagulant dose and the pH for water treatment are also provided.</p>
<p>http://www.epa.ie/downloads/advice/water/drinkingwater/EPA_water_treatment_mgt_coag_flocc_clar2.pdf</p>	


	<p>(2) Water Treatment Manuals – Disinfection.</p> <p>Version 1. Issued 1998. (Version 2 – in print)</p> <p>This Disinfection manual includes information on many aspects of disinfection for those involved in the operation, use, management, maintenance and supervision of drinking water supplies. The manual is currently being revised and the new version will include the following:</p> <ul style="list-style-type: none">▪ The World Health Organisations Drinking Water Safety Plan (DWSP) approach and the identification, risk-ranking and development of appropriate control measures for typical hazardous events linked to disinfection;▪ Standard forms and checklists for use by Water Services Authority staff managing the operation of treatment plants where the DWSP approach is used;▪ A tool for the calculation of contact time;▪ Best practice to minimise disinfection by-products (for reference alongside EPA Advice Note No. 4, below);▪ Practical guidance for operators to ensure the security of supplies using ultra violet, membrane, ozone, chloramination and chlorine dioxide treatment technologies.
<p>http://www.epa.ie/downloads/advice/water/drinkingwater/EPA_water_treatment_manual_disinfection1.pdf</p>	

	<p>(3) Water Treatment Manuals – Filtration.</p> <p>Version 1. Issued 1995.</p> <p>This Filtration manual contains practical and technical guidance for those involved in the operation, use, management, maintenance and supervision of drinking water supplies.</p> <p>The manual includes information on many aspects of the filtration process across the different filter types in use. Significant emphasis is placed on operating procedures for normal and abnormal operating conditions, start-up and shutdown situations and on the operation and maintenance of filters.</p>
<p>http://www.epa.ie/downloads/advice/water/drinkingwater/EPA_water_treatment_manual_%20filtration1.pdf</p>	


Drinking Water Advice Notes

	<p>(1) EPA Drinking Water Advice Note No. 1: Lead Compliance Monitoring & Surveys. Version 1. Issued: 21 April 2009.</p> <p>This Advice Note provides information to Water Services Authorities on lead compliance monitoring and surveys in the context of compliance with the current lead parametric value of 25µg/l and with the parametric value of 10µg/l which will be effective from 2013.</p> <p>It also provides information on how local authorities should conduct lead surveys and how monitoring should be targeted to ascertain the extent of a potential problem.</p>
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<http://www.epa.ie/downloads/pubs/water/drinking/Advice%20Note%20No1.pdf>


	<p>(2) EPA Drinking Water Advice Note No. 2: Action Programmes to restore the Quality of Drinking Water impacted by Lead Pipes and Lead Plumbing. Version 1. Issued: 21 April 2009.</p> <p>This Advice Note provides information to Water Services Authorities on action programmes aimed at restoring the quality of drinking water impacted by lead pipes and plumbing.</p> <p>It outlines the types of water distribution pipes, demarcates Water Services Authority and householder's responsibilities and provides options for dealing with lead piping.</p>
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<http://www.epa.ie/downloads/pubs/water/drinking/Advice%20Note%20No2.pdf>


	<p>(3) EPA Drinking Water Advice Note No. 3: <i>E. coli</i> in Drinking Water. Version 1. Issued: 2 November 2009.</p> <p>This Advice Note sets out the actions required to be undertaken following the detection of <i>E. coli</i>. This includes consultation with the HSE and also the preventative measures that should be taken to improve the security of the supply to prevent a reoccurrence. It is provided in the context of the EPA recommended approach to managing a drinking water supply i.e. the Drinking Water Safety Plan Approach.</p> <p>The presence of <i>E. coli</i> in drinking water is an indication that other more harmful micro-organisms may be present and that action is urgently required to identify the cause of the failure and to ensure that treatment is improved to adequately disinfect the water.</p>
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<http://www.epa.ie/downloads/pubs/water/drinking/Advice%20Note%20No3.pdf>

	<p>(4) EPA Drinking Water Advice Note No 4: Disinfection By-Products in Drinking Water.</p> <p>Version 1. Issued: 2 November 2009.</p> <p>This Advice Note provides guidance to operators on how the level of disinfection by-products in water (such as trihalomethanes and bromate) can be kept as low as possible without compromising disinfection. The only disinfection by-products for which the 2007 Drinking Water Regulations set parametric values for are trihalomethanes (100 µg/l) and bromate (10 µg/l).</p>
<p>http://www.epa.ie/downloads/pubs/water/drinking/Advice%20Note%20No4.pdf</p>	

	<p>(5) EPA Drinking Water Advice Note. Advice Note No. 5: Turbidity in Drinking Water.</p> <p>Version 1. Issued: 2 November 2009.</p> <p>This Advice Note outlines the actions required to be undertaken at water treatment plants where elevated levels of turbidity are detected. High levels of turbidity in final water can impair the effects of disinfection on micro-organisms and may also indicate that <i>Cryptosporidium</i> can break through the treatment process and enter the water supply.</p>
<p>http://www.epa.ie/downloads/pubs/water/drinking/Advice%20Note%20No5.pdf</p>	

	<p>(6) EPA Drinking Water Advice Note No. 6: Restoring Public Water Supplies Affected by Flooding.</p> <p>Version 1. Issued 27 November 2009.</p> <p>This Advice Note provides guidance to Water Services Authorities on restoring a water supply affected by flooding. It relates primarily to monitoring of a public water supply prior to its reinstatement. The main water treatment plant and distribution system elements to be inspected, repaired and sampled prior to returning into service are identified. A three-phase monitoring plan is recommended and parameters for which tests should be considered are provided.</p>
<p>http://www.epa.ie/downloads/pubs/water/drinking/DWS_Restoration.pdf</p>	

	<p>(7) EPA Drinking Water Advice Note No. 7: Source Protection and Catchment Management to Protect Groundwater Supplies</p> <p>Version 1. Issued 2 August 2011.</p> <p>This Advice Note provides guidance to Water Services Authorities on groundwater protection policies, guidance and related legislation that WSAs should have regard to when developing measures to protect groundwater. It covers the preparation of groundwater protection plans including zones of contribution, source protection zones, groundwater protection zones and setback distances.</p>
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<http://www.epa.ie/downloads/advice/water/drinkingwater/name,31385,en.html>



(8) EPA Drinking Water Advice Note No. 8: Developing Drinking Water Safety Plans

Version 1. Issued 2 August 2011.

This Advice Note provides guidance to Water Services Authorities on the steps involved in constructing a water safety plan and an outline of what it should contain in the Irish context. It contains guidance on hazard identification, risk assessment and the preparation of action plans for the hazards identified.

<http://www.epa.ie/downloads/advice/water/drinkingwater/name,31386,en.html>



(9) EPA Drinking Water Advice Note No. 9: *Cryptosporidium* Sampling and Monitoring

Version 1. Issued 26 September 2011.

This Advice Note provides guidance to Water Services Authorities on sampling and monitoring for *Cryptosporidium*. It includes a report on an international review of *Cryptosporidium* monitoring practices.

<http://www.epa.ie/downloads/advice/water/drinkingwater/name,31465,en.html>



(10) EPA Drinking Water Advice Note No. 10: Service Reservoir Inspection, Cleaning and Maintenance

Version 1. Issued 26 September 2011.

This Advice Note provides guidance to Water Services Authorities for the regular inspection, cleaning and maintenance that should be carried out on service reservoirs. It covers the actions to be taken by operators including practical advice on how inspections and cleaning of reservoirs should be carried out.

<http://www.epa.ie/downloads/advice/water/drinkingwater/name,31466,en.html>



(11) EPA Drinking Water Advice Note No. 11: Prior Investigations and Technical Assessments

Version 1. Issued 26 September 2011.

This Advice Note provides guidance to Water Services Authorities on the steps involved in carrying out a Technical Assessment or Prior Investigation as required under the *European Communities (Good Agricultural Practice for Protection of Waters) Regulations S.I. No. 610 of 2010*.

http://www.epa.ie/downloads/advice/water/drinkingwater/name.31467_en.html

Drinking Water Guidance Circulars

(Note: Guidance Circulars issued by the DEHLG are listed in the Further Information section of this report)

(1) EPA Drinking Water Guidance Circular DW01/08 – *Disinfection of Public Water Supplies*.

Issued: 2008.

This Guidance Circular instructed Water Services Authorities to prepare an action programme for the installation of chlorine monitors and alarms in all public water supply treatment plants and re-chlorination stations. It stated that chlorine monitors with alarms and recording devices should be installed and that this work should be prioritised in supplies where there was a history of *E. coli* contamination.

This Guidance Circular provided guidelines on where chlorine monitors should be located, alarm settings and response procedures.

(2) EPA Drinking Water Guidance Circular Letter Re: *Guidance for Local Authorities on developing Drinking Water Safety Plans*.

Issued: 2009.

The EPA has recommended that all Water Services Authorities adopt the Water Safety Plan approach in the management of their drinking water supplies. This approach was developed by the World Health Organisation (WHO). If implemented by local authorities, it should lead to risk reduction, safer water, better targeted resources and reduced costs.

The Water Safety Plan manual describes how to develop and implement a Water Safety Plan in clear and practical terms. It is freely available on the WHO website at:

http://www.who.int/water_sanitation_health/publication_9789241562638/en/index.html

(3) [EPA Drinking Water Circular Letter DW01/09: *Sampling of Drinking Water for Radioactivity.*](#)

Issued: 2009.

This Guidance Circular outlined to Water Services Authorities the emergency procedures for the sampling and analysis of drinking water samples in the event of a nuclear accident.

The EPA is the designated point of contact for the co-ordination of the collection of drinking water samples for analysis by the Radiological Protection Institute of Ireland (RPII) in the event of a nuclear accident. Water Services Authorities were advised in this Circular letter that the EPA will contact the appropriate Water Services Authorities as part of an exercise to test the emergency sampling of drinking water each year.

References

Drinking Water Related Topics

a) *Cryptosporidium*

1. **Carlow County Council (2006)**. *Report on Cryptosporidiosis Outbreak in Carlow Town and Environs 2005*.
2. **Drinking Water Inspectorate of England and Wales (2001)**. *Cryptosporidium in Water Supplies*.
3. **Health Protection Surveillance Centre (2009)**. *Annual Reports on Cryptosporidiosis in Ireland*.
4. **Institute of Public Administration (2009)**. *Review of the Management of the Outbreak of Cryptosporidiosis and E. coli in Galway City during 2007*.
5. **National Disease Surveillance Centre (2004)**. *Report of Waterborne Cryptosporidiosis Subcommittee of the Scientific Advisory Committee*. Available at <http://www.hpsc.ie/hpsc/A-Z/Gastroenteric/Cryptosporidiosis/Publications/WaterborneCryptosporidiosisSub-CommitteeReport/File.898.en.pdf>
6. **National Health Services for Wales (2006)**. *Outbreak of Cryptosporidiosis in North West Wales, 2005*. Available at <http://www.anglesey.gov.uk/upload/public/attachments/51/cryptosporidiumenglish.pdf>
7. **World Health Organisation (2009)**. *Risk Assessment of Cryptosporidium in Drinking Water*. Available at http://whqlibdoc.who.int/hq/2009/WHO_HSE_WSH_09.04_eng.pdf

b) Lead

8. **Environmental Protection Agency (2009)**. *Advice Note No. 1: Lead Compliance Monitoring and Surveys*. Available at <http://www.epa.ie/downloads/pubs/water/drinking/Advice%20Note%20No1.pdf>
9. **Environmental Protection Agency (2009)**. *Advice Note No. 2: Action programmes to restore the quality of drinking water impacted by lead pipes and lead plumbing*. Available at <http://www.epa.ie/downloads/pubs/water/drinking/Advice%20Note%20No2.pdf>
10. **Health Service Executive (2008)**. *HSE Statement: Lead in drinking water*. Available at http://www.hse.ie/eng/services/Publications/HealthProtection/HSE_Statement_on_Lead_in_Drinking_Water.pdf

c) Drinking Water Safety Plans

11. **Drinking Water Inspectorate of England and Wales (2005)**. *A Brief Guide to Drinking Water Safety Plans*.
12. **World Health Organisation (2009)**. *WHO Water Safety (WS) Portal*. <http://www.who.int/wsportal/en/>
13. **World Health Organisation (2009)**. *Water Safety Plan Manual: Step-by-step risk management for drinking-water suppliers*. Available at http://whqlibdoc.who.int/publications/2009/9789241562638_eng_print.pdf
14. **World Health Organisation (2005)**. *Water Safety Plans: Managing drinking-water quality from catchment to consumer*. Available at http://www.who.int/water_sanitation_health/dwq/wsp170805.pdf

Drinking Water Legislation, Circular Letters and Guidance

a) Legislation

15. **Council Directive 98/83/EC** of 3 November 1998 on the Quality of Water Intended for Human Consumption. Available at <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:1998:330:0032:0054:EN:PDF>
16. **Environmental Protection Agency Act, 1992** (No. 7 of 1992). Available at <http://www.irishstatutebook.ie/1992/en/act/pub/0007/index.html>
17. **European Communities (Drinking Water) Regulations (No.2), 2007** (S.I. No. 278 of 2007). Available at <http://www.irishstatutebook.ie/2007/en/si/0278.html>
18. **Health (Fluoridation of Water Supplies) Act, 1960** (No. 46 of 1960). Available at <http://www.irishstatutebook.ie/1960/en/act/pub/0046/index.html>
19. **Water Services Act, 2007 (No. 30 of 2007)**. Available at <http://www.irishstatutebook.ie/2007/en/act/pub/0030/index.html>

b) Circular Letters on Drinking Water issues - Department of the Environment, Community and Local Government (DECLG)

(Available at <http://www.wsntg.ie/circulars.asp> and at <https://www.enforcementnetwork.ie/>)

20. **DECLG (2010)**. *Circular Letter: L3/10. Water Services Training Grant Allocation 2010.*
21. **DECLG (2010)**. *Circular Letter: L5/10. Rural water programme: Applications for Funding by Local Authorities in Respect of Water Supplies Included in EPA Remedial Action List.*
22. **DECLG (2009)**. *Circular Letter: L4/09. Drinking Water Incident Response Plans.*
23. **DECLG (2009)**. *Circular Letter: WSP6/09 Publication of Drinking Water Quality Results.*
24. **DECLG (2007)**. *Circular Letter: WSP6/07. European Communities (Drinking Water) (No. 2) Regulations 2007. (S.I. No. 278 of 2007).*
25. **DECLG (2007)**. *Circular Letter: WSP 7/07. European Communities (Drinking Water) (No. 2) Regulations 2007.*
26. **DECLG (2007)**. *Circular Letter: WSP 8/07. Implementation of the European Communities (Drinking Water) (No. 2) Regulations 2007.*
27. **DECLG (2006)**. *Circular Letter: L6/06 Protection of Drinking Water Supplies.*
28. **DECLG (2005)** *Circular Letter: WSP3/05. Drinking Water National Monitoring Programme.*
29. **DECLG (2005)**. *Circular Letter: WSP1/05. Management of Water Treatment Sludges.*
30. **DECLG (2005)**. *Circular Letter: WSP2/05. ECJ Drinking Water Monitoring Report 2004.*
31. **DECLG (2003)**. *Circular Letter: L1/03 (WSP) Drinking Water National Monitoring Programme.*
32. **DECLG (1998)**. *Circular Letter: L7/98. Protection of Water Supplies: Guidelines for Local Authorities on minimising the risk of Cryptosporidium in water supplies.*

c) Guidance & Codes of Practice - Non-EPA

32. **Health Service Executive (2008)**. *Drinking Water and Health: A Review and Guide for Population Health.* Available at http://www.hse.ie/eng/services/Publications/services/Environmentalhealth/HSE_Drinking_Water_and_Health_Review_and_Guide_2008.pdf
33. **Irish Expert Body on Fluorides and Health (2007)**. *Code of Practice on the Fluoridation of Drinking Water 2007.* Available at http://www.dohc.ie/publications/fluoridation_2007.html
34. **Environmental Enforcement Network (Suir Surface Water Working Group) (2009)**. *Guidance for the farming community on protection of water resources and habitat quality from impacts due to livestock access to waters.* Available at <http://www.epa.ie/downloads/advice/water/drinkingwater/Farming%20Community%20Doc.pdf>

35. **World Health Organisation (2008).** *WHO - Guidelines for Drinking-water Quality – third edition incorporating the first and second addenda, Volume 1, Recommendations.* Available at http://www.who.int/water_sanitation_health/dwq/fulltext.pdf

Other Drinking Water Reports

a) Previous EPA Annual Drinking Water Reports

36. **Environmental Protection Agency (2009).** *The Provision and Quality of Drinking Water in Ireland - A Report for the Years 2007-2008.* Available at [http://www.epa.ie/downloads/pubs/water/drinking/Final%20DW%20Report%202007%20\(2\)2.pdf](http://www.epa.ie/downloads/pubs/water/drinking/Final%20DW%20Report%202007%20(2)2.pdf)
37. **Environmental Protection Agency (2008).** *The Provision and Quality of Drinking Water in Ireland - A Report for the Years 2006-2007.* Available at <http://www.epa.ie/downloads/pubs/water/drinking/DW%20Report%2020062.pdf>
38. **Environmental Protection Agency (2007).** *The Quality of Drinking Water in Ireland - A Report for the Year 2005.* Available at <http://www.epa.ie/downloads/pubs/water/drinking/DW%20Report%202005%20Final%20Jan%2007.pdf>

b) Other Reports – Other Member States' Regulatory Agency

39. **Drinking Water Inspectorate of England and Wales (2011).** *Drinking Water Inspectorate Annual Report - Drinking Water 2010.*
40. **European Microbiological Advisory Group (2003).** *Clostridium perfringens as a Drinking Water Quality Parameter: A Summary Review Prepared by David Sartory on behalf of the European Microbiological Advisory Group (EMAG) for the Article 12 Technical Committee as a Contribution to the Rolling Revision of the Drinking Water Directive 1998*

b) Other Reports - Ireland

41. **National Federation of Group Water Schemes (2011).** *Annual Report 2010.* Available at <http://www.nfgws.ie/fckeditor/File/Annual%20Report%2009.pdf>
42. **Health Service Executive (2007)** *Report on a contaminated drinking water incident in Counties Cavan and Monaghan.* Available at http://www.hse.ie/eng/services/Publications/HealthProtection/Public_Health_/Report_on_a_contaminated_drinking_water_incident_in_Co_Cavan_and_Co_Monaghan.pdf

Relevant Websites / Useful Contacts



Environmental Protection Agency (EPA)

The EPA is required to collect and verify monitoring results for all water supplies in Ireland covered by the European Communities (Drinking Water) No. 2, Regulations, 2007. The EPA must ensure Water Services Authorities are taking the appropriate action to ensure that public water supplies comply with the relevant quality standards.

Website: <http://www.epa.ie>

Tel: LoCall 1890 33 55 99 or 053-9160600

E-mail: info@epa.ie / drinkingwater@epa.ie



Comhaltas, Pobal agus Rialtas Áitiúil
Environment, Community and Local Government

Department of Environment, Community & Local Government (DECLG)

The Department of the Environment, Community and Local Government is responsible for developing and implementing government policy in relation to drinking water, making sure that the necessary funding is made available to finance capital and operational programmes and for monitoring physical and financial progress on schemes.

Website: <http://www.environ.ie/en/Environment/Water/>

Tel: LoCall 1890 202021 or 01-888 2000



Geological Survey of Ireland (GSI)

The Geological Survey of Ireland (GSI) is responsible for providing geological advice and information, and for the acquisition of data for this purpose. The Groundwater Programme of GSI has completed groundwater protection schemes for 14 Water Services Authorities.

Website: <http://www.gsi.ie>

Tel: LoCall 1890 449900 or 01-678 2000

E-mail: gsisales@gsi.ie



Health Service Executive (HSE)

A Water Services Authority is obliged to consult the HSE where a drinking water sample fails to meet a parametric value in the Drinking Water Regulation to determine whether the non-compliance presents a potential danger to human health.

Website: <http://www.hse.ie/eng/>



National Federation of Group Water Schemes (NFGWS)

The primary role of the NFGWS is to assist the management committees/boards of group water schemes in meeting their legal responsibilities as potable water suppliers. The Federation helps schemes meet the standards set out in the Drinking Water Regulations by providing training and developmental support. The NFGWS has introduced, in conjunction with the National Rural Water monitoring Committee, a Quality Assurance System specially designed for group water schemes.

Website: <http://www.nfgws.ie>

Tel: 047-72766

E-mail: jean@nfgws.ie



Water Services National Training Group (WSNTG)

The WSNTG provides a range of training programmes through its five regional training centres for all grades of staff operating in the water/waste water sections of the local authorities and for personnel working with Group Water Schemes.

Website: <http://www.wsntg.ie/index.asp>

Tel: 0505-24688

E-mail: wsntg@eircom.net



Drinking Water Inspectorate (DWI) England and Wales

The Drinking Water Inspectorate (DWI) regulates public water supplies in England and Wales. It is responsible for assessing the quality of drinking water, taking enforcement action if standards are not being met and appropriate action when water is unfit for human consumption.

Website: <http://www.dwi.gov.uk>

Drinking Water Inspectorate for Northern Ireland (DWI NI)

The Drinking Water Inspectorate for Northern Ireland is a unit within the Northern Ireland Environment Agency. The Drinking Water Inspectorate regulates drinking water quality for public and private supplies, develops policy on drinking water issues and deals with incidents that do or could affect drinking water quality.

Website: http://www.ni-environment.gov.uk/water-home/drinking_water.htm.

APPENDIX VII - WATER SERVICES AUTHORITY CONTACT DETAILS.

CITY COUNCILS

Cork City Council	City Hall, Cork.	Ph: (021) 4966222 Fax: (021) 4314238	http://www.corkcity.ie/
Dublin City Council	Civic Offices, Wood Quay, Dublin 8.	Ph: (01) 6722222 Fax: (01) 6773612	http://www.dublincity.ie/
Galway City Council	City Hall, College Road, Galway.	Ph: (091) 536400 Fax: (091) 567493	http://www.galwaycity.ie/
Limerick City Council	City Hall, Limerick.	Ph: (061) 415799 Fax: (061) 415266	http://www.limerickcity.ie/
Waterford City Council	City Hall, The Mall, Waterford.	Ph: (051) 309900 Fax: (051) 879124	http://www.waterfordcity.ie/

COUNTY COUNCILS

Carlow County Council	County Offices, Athy Rd, Carlow.	Ph: +353 59 9170300 Fax: +353 59 9141503	http://www.carlow.ie/
Cavan County Council	Courthouse, Cavan.	Ph: +353 49 4331799 Fax: +353 49 4361565	http://www.cavancoco.ie/
Clare County Council	New Rd, Ennis, Co. Clare.	Ph: + 353 65 6821616 Fax: +353 65 6828233	http://www.clarecoco.ie/
Cork County Council	County Hall, Cork.	Ph: +353 21 4276891 Fax: +353 21 4276321	http://www.corkcoco.ie/
Donegal County Council,	County House, Lifford, Co. Donegal.	Ph: +353 74 9172222 Fax: +353 74 9141205	http://www.donegal.ie/
Dun Laoghaire / Rathdown County Council	Town Hall, Marine Rd, Dun Laoghaire.	Ph: +353 1 2054700 Fax: +353 1 2806969	http://www.dlrcoco.ie/
Fingal County Council	Main St, Swords, Co. Dublin.	Ph: +353 1 8905000 Fax: +353 1 8725782	http://www.fingalcoco.ie/
Galway County Council	County Hall, Prospect Hill, Galway.	Ph: +353 91 509000 Fax: +353 91 509010	http://www.galway.ie/
Kerry County Council	Aras an Chontae, Tralee, Co. Kerry.	Ph: +353 66 7121111, Fax: +353 66 7122466	http://www.kerrycoco.ie/
Kildare County Council	Áras Chill Dara, Devoy Park, Naas, Co. Kildare.	Ph: +353 45 980200 Fax: +353 45 876875	http://www.kildare.ie/
Kilkenny County Council,	County Hall, John St, Kilkenny.	Ph: +353 56 7721076 Fax: +353 56 7794004	http://www.kilkennycoco.ie/
Laois County Council	County Hall, Portlaoise, Co Laois.	Ph: +353 57 8664000 Fax: +353 502 22313	http://www.laois.ie/

Leitrim County Council	Governor House, Carrick-on - Shannon, Co. Leitrim.	Ph: +353 71 9620005, Fax: +353 71 9622205	http://www.leitrimcoco.ie/
Limerick County Council	County Hall, Dooradoyle, Limerick.	Ph: +353 61 496000 Fax: +353 61 318478	http://www.limerickcoco.ie/
Longford County Council	Aras an Chontae, Great Water St, Longford.	Ph: +353 43 3346231 Fax: +353 43 41233	http://www.longfordcoco.ie/
Louth County Council,	County Office, Dundalk, Co Louth.	Ph: +353 42 933545 Fax: +353 42 9334549	http://www.louthcoco.ie/
Mayo County Council	Aras an Chontae, Castlebar, Co Mayo.	Ph: +353 94 90 24444 Fax: +353 94 90 23937	http://www.mayococo.ie/
Meath County Council	County Hall, Navan, Co Meath.	Ph: +353 46 9021581 Fax: +353 46 9097001	http://www.meath.ie/
Monaghan County Council	County Offices, The Glen, Monaghan.	Ph: + 353 47 30500 Fax: +353 47 82739	http://www.monaghan.ie/
North Tipperary County Council	Civic Offices, Limerick Rd, Nenagh, Co. Tipperary.	Ph: 353 67 44500 Fax: +353 67 33134	http://www.tipperarynorth.ie/
Offaly County Council	Courthouse, Tullamore, Co. Offaly.	Ph: +353 57 9346800 Fax: +353 506 46868	http://www.offaly.ie/
Roscommon County Council	Courthouse, Roscommon.	Ph: +353 903 37100, Fax: +353 47 82739	http://www.roscommon.ie/
Sligo County Council	Riverside, Sligo.	Ph: +353 71 9143221 Fax: +353 71 9141119	http://www.sligococo.ie/
South Dublin County Council	County Hall, Tallaght, Dublin 24.	Ph: +353 1 4149000 Fax: +353 1 4149111	http://www.sdcc.ie/
South Tipperary County Council	Aras an Chontae, Clonmel Co. Tipperary.	Ph: +353 52 34455 Fax: +353 52 24355	http://www.southtippcoco.ie/
Waterford County Council	Civic Offices, Dungarvan, Co Waterford.	Ph: +353 58 22000 Fax: +353 58 42911	http://www.waterfordcoco.ie/
Westmeath County Council	County Buildings, Mullingar, Co Westmeath.	Ph: +353 44 40861 Fax: +353 44 42330	http://www.westmeathcoco.ie/
Wexford County Council	County Hall, Wexford.	Ph: +353 53 42211 Fax: +353 53 43406	http://www.wexford.ie/
Wicklow County Council	County Offices, Wicklow.	Ph: +353 404 20100 Fax: +353 404 67792	http://www.wicklow.ie/

An Ghníomhaireacht um Chaomhnú Comhshaoil

Is í an Ghníomhaireacht um Chaomhnú Comhshaoil (EPA) comhlachta reachtúil a chosnaíonn an comhshaoil do mhuintir na tíre go léir. Rialaímid agus déanaimid maoirsiú ar ghníomhaíochtaí a d'fhéadfadh truailliú a chruthú murach sin. Cinntímid go bhfuil eolas cruinn ann ar threochtaí comhshaoil ionas go nglactar aon chéim is gá. Is iad na príomhnithe a bhfuilimid gníomhach leo ná comhshaoil na hÉireann a chosaint agus cinntiú go bhfuil forbairt inbhuanaithe.

Is comhlacht poiblí neamhspleách í an Ghníomhaireacht um Chaomhnú Comhshaoil (EPA) a bunaíodh i mí Iúil 1993 faoin Acht fán nGníomhaireacht um Chaomhnú Comhshaoil 1992. Ó thaobh an Rialtais, is í an Roinn Comhshaoil, Pobal agus Rialtais Áitiúil.

ÁR bhFREAGRACHTAÍ

CEADÚNÚ

Bíonn ceadúnais á n-eisiúint againn i gcomhair na nithe seo a leanas chun a chinntiú nach mbíonn astuithe uathu ag cur sláinte an phobail ná an comhshaoil i mbaol:

- áiseanna dramhaíola (m.sh., líonadh talún, loisceoirí, stáisiúin aistriúcháin dramhaíola);
- gníomhaíochtaí tionsclaíocha ar scála mór (m.sh., déantúsaíocht cógaisíochta, déantúsaíocht stroighne, stáisiúin chumhachta);
- diantalmhaíocht;
- úsáid faoi shrian agus scaoileadh smachtaithe Orgánach Géinathraithe (GMO);
- mór-áiseanna stórais peitreal;
- scardadh dramhuisce.

FEIDHMÍÚ COMHSHAOIL NÁISIÚNTA

- Stiúradh os cionn 2,000 iniúchadh agus cigireacht de áiseanna a fuair ceadúnas ón nGníomhaireacht gach bliain.
- Maoirsiú freagrachtaí cosanta comhshaoil údarás áitiúla thar sé earnáil - aer, fuaim, dramhaíl, dramhuisce agus caighdeán uisce.
- Obair le húdaráis áitiúla agus leis na Gardaí chun stop a chur le gníomhaíocht mhídhleathach dramhaíola trí chomhordú a dhéanamh ar líonra forfheidhmíthe náisiúnta, díriú isteach ar chiontóirí, stiúradh fiosrúcháin agus maoirsiú leigheas na bhfadhbanna.
- An dlí a chur orthu siúd a bhriseann dlí comhshaoil agus a dhéanann dochar don chomhshaoil mar thoradh ar a gníomhaíochtaí.

MONATÓIREACHT, ANAILÍS AGUS TUAIRISCIÚ AR AN GCOMHSHAOIL

- Monatóireacht ar chaighdeán aeir agus caighdeán aibhneacha, locha, uiscí taoide agus uiscí talaimh; leibhéil agus sruth aibhneacha a thomhas.
- Tuairiscíú neamhspleách chun cabhrú le rialtais náisiúnta agus áitiúla cinntiú a dhéanamh.

RIALÚ ASTUITHE GÁIS CEAPTHA TEASA NA HÉIREANN

- Cainníochtú astuithe gáis ceaptha teasa na hÉireann i gcomhthéacs ár dtiomantas Kyoto.
- Cur i bhfeidhm na Treorach um Thrádáil Astuithe, a bhfuil baint aige le hos cionn 100 cuideachta atá ina mór-ghineadóirí dé-ocsaíd charbóin in Éirinn.

TAIGHDE AGUS FORBAIRT COMHSHAOIL

- Taighde ar shaincheisteanna comhshaoil a chomhordú (cosúil le caighdeán aeir agus uisce, athrú aeráide, bithéagsúlacht, teicneolaíochtaí comhshaoil).

MEASÚNÚ STRAITÉISEACH COMHSHAOIL

- Ag déanamh measúnú ar thionchar phleananna agus chláracha ar chomhshaoil na hÉireann (cosúil le pléanna bainistíochta dramhaíola agus forbartha).

PLEANÁIL, OIDEACHAS AGUS TREOIR CHOMHSHAOIL

- Treoir a thabhairt don phobal agus do thionscal ar cheisteanna comhshaoil éagsúla (m.sh., iarratais ar cheadúnais, seachaint dramhaíola agus rialacháin chomhshaoil).
- Eolas níos fearr ar an gcomhshaoil a scaipeadh (trí cláracha teilifíse comhshaoil agus pacáistí acmhainne do bhunscoileanna agus do mheánscoileanna).

BAINISTÍOCHT DRAMHAÍOLA FHORGHNÍOMHACH

- Cur chun cinn seachaint agus laghdú dramhaíola trí chomhordú An Chláir Náisiúnta um Chosc Dramhaíola, lena n-áirítear cur i bhfeidhm na dTionscnamh Freagrachta Táirgeoirí.
- Cur i bhfeidhm Rialachán ar nós na treoracha maidir le Trealamh Leictreach agus Leictreonach Caite agus le Srianadh Substaintí Ghuaiseacha agus substaintí a dhéanann ídiú ar an gcrios ózóin.
- Plean Náisiúnta Bainistíochta um Dramhaíl Ghuaiseach a fhorbairt chun dramhaíl ghuaiseach a sheachaint agus a bhainistiú.

STRUCHTÚR NA GNÍOMHAIREACHTA

Bunaíodh an Ghníomhaireacht i 1993 chun comhshaoil na hÉireann a chosaint. Tá an eagraíocht á bhainistiú ag Bord lánaimseartha, ar a bhfuil Príomhstíúrthóir agus ceithre Stíúrthóir.

Tá obair na Ghníomhaireachta ar siúl trí ceithre Oifig:

- An Oifig Aeráide, Ceadúnaithe agus Úsáide Acmhainní
- An Oifig um Fhorfheidhmíúchán Comhshaoil
- An Oifig um Measúnacht Comhshaoil
- An Oifig Cumarsáide agus Seirbhísí Corparáide

Tá Coiste Comhairleach ag an nGníomhaireacht le cabhrú léi. Tá dáréag ball air agus tagann siad le chéile cúpla uair in aghaidh na bliana le plé a dhéanamh ar cheisteanna ar ábhar imní iad agus le comhairle a thabhairt don Bhord.



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