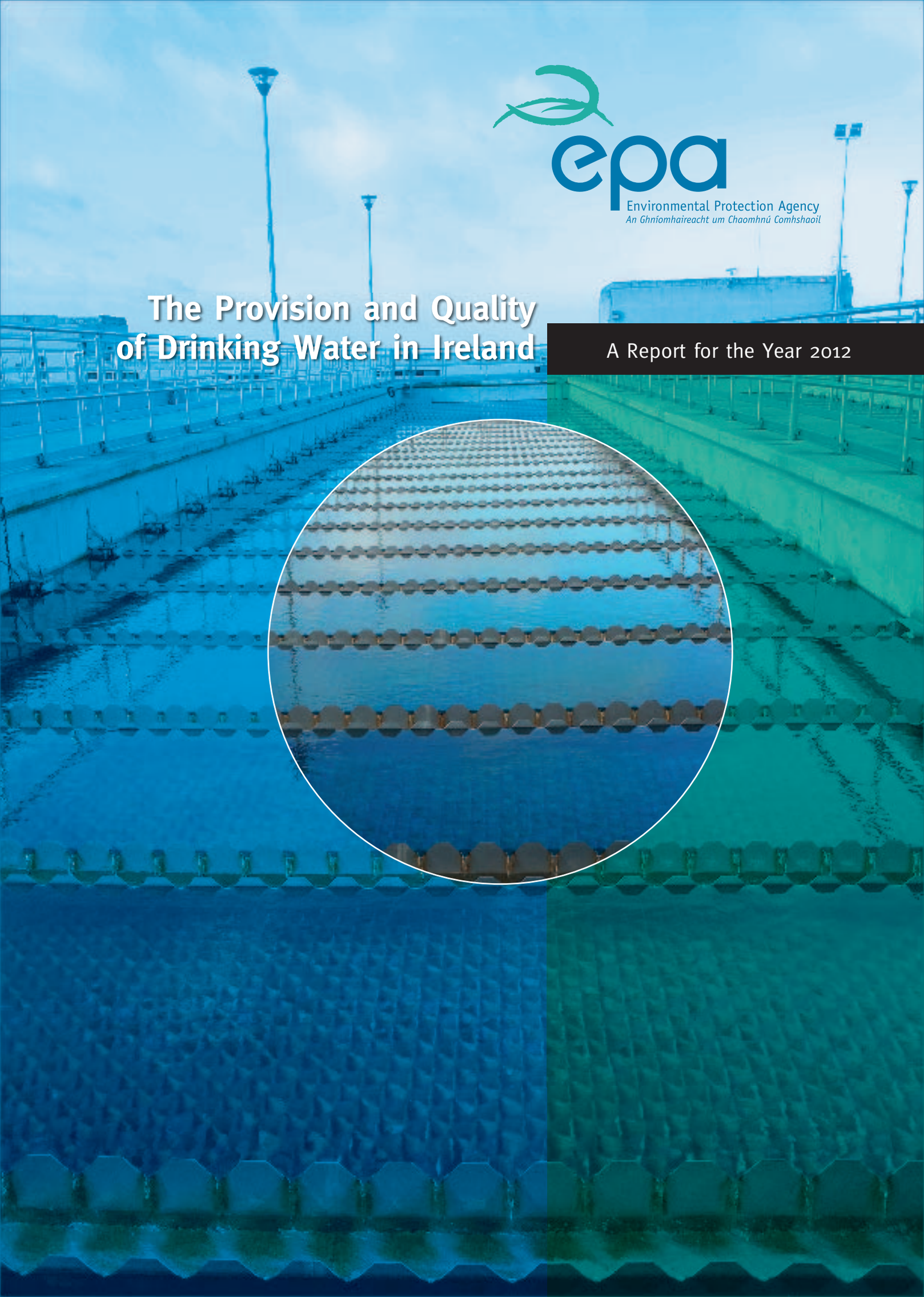

Environmental Protection Agency
An Ghníomhaireacht um Chaomhnú Comhshaoil

The Provision and Quality of Drinking Water in Ireland

A Report for the Year 2012

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.

OUR RESPONSIBILITIES

LICENSING

We license the following to ensure that their emissions do not endanger human health or harm the environment:

- waste facilities (e.g., landfills, incinerators, waste transfer stations);
- large scale industrial activities (e.g., pharmaceutical manufacturing, cement manufacturing, power plants);
- intensive agriculture;
- the contained use and controlled release of Genetically Modified Organisms (GMOs);
- large petrol storage facilities;
- waste water discharges;
- dumping at sea.

NATIONAL ENVIRONMENTAL ENFORCEMENT

- Conducting over 1200 audits and inspections of EPA licensed facilities every year.
- Overseeing local authorities' environmental protection responsibilities in the areas of - air, noise, waste, waste-water and water quality.
- Working with local authorities and the Gardaí to stamp out illegal waste activity by co-ordinating a national enforcement network, targeting offenders, conducting investigations and overseeing remediation.
- Prosecuting those who flout environmental law and damage the environment as a result of their actions.

MONITORING, ANALYSING AND REPORTING ON THE ENVIRONMENT

- Monitoring air quality and the quality of rivers, lakes, tidal waters and ground waters; measuring water levels and river flows.
- Independent reporting to inform decision making by national and local government.

REGULATING IRELAND'S GREENHOUSE GAS EMISSIONS

- Quantifying Ireland's emissions of greenhouse gases in the context of our Kyoto commitments
- Implementing the Emissions Trading Directive, involving over 100 companies who are major generators of carbon dioxide in Ireland.

ENVIRONMENTAL RESEARCH AND DEVELOPMENT

- Co-ordinating research on environmental issues (including air and water quality, climate change, biodiversity, environmental technologies).

STRATEGIC ENVIRONMENTAL ASSESSMENT

- Assessing the impact of plans and programmes on the Irish environment (such as waste management and development plans).

ENVIRONMENTAL PLANNING, EDUCATION AND GUIDANCE

- Providing guidance to the public and to industry on various environmental topics (including licence applications, waste prevention and environmental regulations).
- Generating greater environmental awareness (through environmental television programmes and primary and secondary schools' resource packs).

PROACTIVE WASTE MANAGEMENT

- Promoting waste prevention and minimisation projects through the co-ordination of the National Waste Prevention Programme, including input into the implementation of Producer Responsibility Initiatives.
- Enforcing Regulations such as Waste Electrical and Electronic Equipment (WEEE) and Restriction of Hazardous Substances (RoHS) and substances that deplete the ozone layer.
- Developing a National Hazardous Waste Management Plan to prevent and manage hazardous waste.

MANAGEMENT AND STRUCTURE OF THE EPA

The organisation is managed by a full time Board, consisting of a Director General and four Directors.

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.

The Provision and Quality of Drinking Water in Ireland

A Report for the Year 2012

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The Provision and Quality of Drinking Water in Ireland
A Report for the Year 2012

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This report was prepared under the direction of Mr. Gerard O'Leary, Director of the Office of Environmental Enforcement.

EXECUTIVE SUMMARY

DRINKING WATER IN IRELAND

This report gives an overview of the quality of drinking water in Ireland in 2012. The report is based on monitoring data from 34 Water Services Authorities (WSAs) submitted to the EPA. In Ireland, 82% of the population is provided with drinking water from one of 932 public supplies. The remaining population is served by public or private group water schemes, small private supplies (7.4% of the population) and private wells (serving 10.6% of the population). In general, drinking water quality in public water supplies continued to improve in 2012. However, the ability of public supplies to maintain supply quality during adverse weather events was severely tested in 2012.

In summary,

- ***E. coli*** compliance in Public Water Supplies continues to improve. Since 2005, there has been a **92% reduction** in the number of public water supplies reporting *E. coli* exceedances.
- **Trihalomethanes compliance** in public water supplies **declined** from 89.1% in 2011 to 85.1% in 2012. The decrease is likely due to the poor weather conditions that prevailed in the summer of 2012 and the inability of some treatment plants to adequately cope with a variation in raw water quality.
- Since 2008, WSAs have completed remedial actions on **70%** (237) of supplies from the original EPA Remedial Action List (RAL). Further remedial works on **70** supplies are scheduled for completion by the end of 2013.

QUALITY OF PUBLIC DRINKING WATER SUPPLY

Three categories of tests are conducted by the Water Services Authorities to determine the quality of drinking water; microbiological, chemical and indicator tests. Almost 250,000 monitoring tests are conducted across all water supplies in Ireland each year with the results compared against the limits set out in the Drinking Water Regulations. Microbiological parameters are the most important, as their presence can indicate a potential risk to health. Prolonged exposure to chemical parameters can also pose a potential risk to health. Indicator parameters are not normally a risk to health, but indicate that investigations are warranted before it becomes a potential risk to human health.

Chemical standard compliance in public water supplies slipped from 99.5% in 2011 to 99.3% in 2012. Trihalomethanes (THMs) compliance deteriorated as compared to 2011 and accounted for 68% of all chemical standard breaches in 2012. Reducing the organic matter in the raw water, optimising treatment to remove organic matter and minimising chlorination, can all be used to reduce the formation of THMs. Care is needed, however, not to reduce chlorination to such an extent so as to compromise the microbial safety of drinking water. The increase in THM chemical standard breaches is most likely linked to the poor weather conditions in the summer of 2012.

Figure E-1 illustrates a 92% reduction in *E. coli* exceedances in public water supplies since 2005. EPA analysis shows that *E. coli* was detected in seven public water supplies in 2012 as compared to 87 in 2005. This progress is due to improvements by WSAs to the security of disinfection systems.

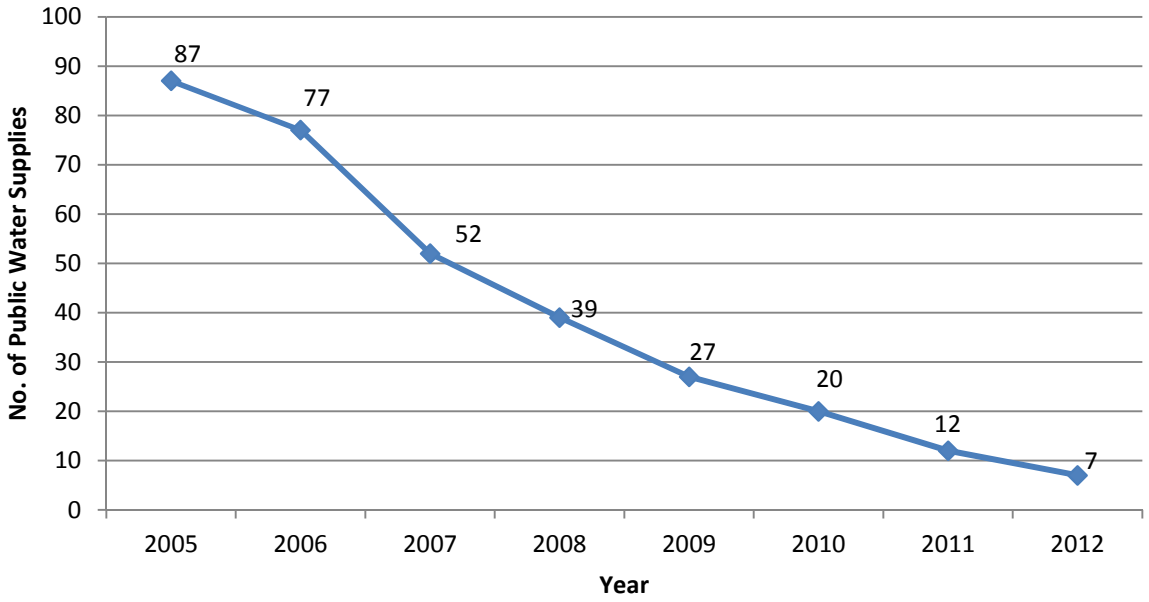

Figure E-1: Number of public water supplies in which *E. coli* was detected in compliance monitoring at least once from 2005 to 2012.

The microbiological quality of private group water schemes continues to improve. There has been an 89% reduction in the number of private group water schemes reporting *E. coli* failures since 2005. Nonetheless, the microbiological quality of private group water schemes remains inferior to public water supplies. The number of private group water schemes where *E. coli* was detected in 2012 was 26 (6.4%), down from 46 (10.2%) in 2011.

Small private supplies showed an increase in *E. coli* non-compliance, from 7.7% of supplies in 2011 to 11.3% of supplies in 2012. However, there is a 19% increase in the number of small supplies monitored. With the introduction of water charges, consumers may be tempted to drill private wells in an attempt to reduce costs. EPA analysis indicates that a significant portion of private wells are contaminated and not suitable for consumption without treatment. As such, private home owners need to be aware that if they replace their supply from the public mains with a private well, they are taking on a major responsibility of ensuring that the water is fit for purpose. Owners of private wells should ensure that they are designed, located, installed and maintained properly. Otherwise, they are putting their health and that of their family at risk.

Overall, the level of compliance with the aluminium parametric value decreased from 98.8% in 2011 to 98.7% in 2012. While a small number of water supply zones have naturally elevated levels of aluminium, the majority of aluminium non-compliances in 2012 are due to operational management and design, in particular, poor control over pH.

REGULATION and REMEDIATION (PUBLIC WATER SUPPLIES)

The EPA focuses regulatory resources on the issues that present the greatest risk to health, such as contamination with *E. coli* and *Cryptosporidium*. This risk based, outcome-driven approach includes the further development of a Water Safety Plan tool during 2013 that allows WSAs to assess and manage risks associated with individual drinking water supplies.

The Remedial Action List for public drinking water supplies focuses attention on resolving the most serious deficiencies in public water supplies. The primary issues addressed to-date include, disinfection for *E. coli*, barriers to *Cryptosporidium*, adequate treatment for trihalomethanes and operational controls for managing aluminium and turbidity levels. Since 2008, 70% (237) of supplies have been removed from the original list because the necessary remedial actions were completed by WSAs. Remedial works in a further 70 supplies are scheduled for completion by the end of 2013. Additional supplies have also been added to the original RAL, and as of September 2013, 147 public water supplies remain on the RAL. Progress made to reduce the number of supplies on the RAL is shown in Figure E-2.

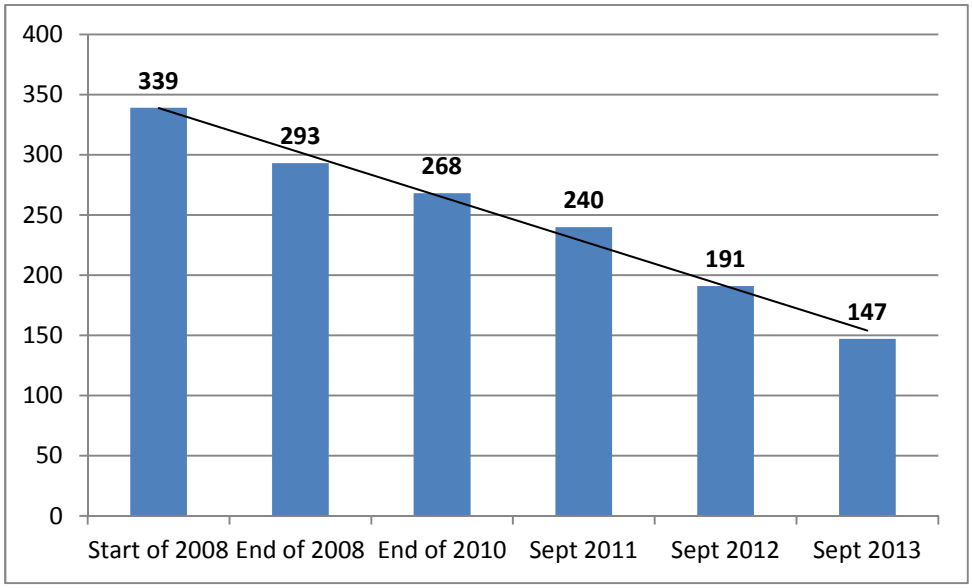

Figure E-2. Progress made in reducing the number of supplies on the RAL.

The EPA issued four legally binding Directions to two WSAs (Laois and Wexford) in 2012. The Directions require specific actions to be undertaken to improve the security of the relevant public water supplies. One successful prosecution was taken by the EPA in 2012 against Mayo County Council for the failure to implement an agreed action programme. In 2012, WSAs issued 42 Boil Water Notices (BWN) and Water Restrictions (WR) affecting approximately 50,000 consumers while 66 BWN and WR affecting approximately 57,000 consumers were lifted.

PROVISION OF DRINKING WATER INFORMATION TO THE PUBLIC

The posting of up-to-date monitoring results by Water Services Authorities on their websites 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 only six Water Services Authorities (down from 27 in 2012) are currently publishing some or all of their drinking water quality data as required by the Ministerial direction.

EMERGING ISSUES

The heavy rainfall in the summer of 2012 and the occurrence of sudden changes in raw water quality arising from the subsequent flooding compromised a number of water supplies. This led to a significant rise in the number of drinking water quality failures in the same period, as well as the imposition of a number of boil water notices in public water supplies.

There was an increase in the number of VTEC infections in the community reported by the Health Service Executive (HSE) in 2012 (554) as compared to 2011 (284) (www.hpsc.ie). VTEC *E. coli* can cause severe illness. These bacteria can be transmitted in a number of ways, e.g. person to person, by water, and by food. The second most common transmission route reported by the HSE was waterborne transmission and especially water from private wells. The increase in VTEC infections has been attributed to the increased rainfall during the summer of 2012 but also, in part, to better diagnosis.

Completing the remedial action programmes, improving controls on chemical dosing, source protection and compliance with the Good Agricultural Practice Regulations will help improve the resilience of our water supplies. In addition, applying the water safety plan approach will provide an integrated way to manage risks associated with drinking water supplies from catchment to consumer into the future.

IRISH WATER

Next year marks a new beginning for the delivery of water services in Ireland with the responsibility for the provision of water services moving from the 34 Local Authorities to one national water authority, Irish Water, a semi-state company. The EPA will continue to be the environmental regulator with regard to public water supplies. Irish water is charged with delivering drinking water to homes, businesses and other organisations with greater efficiency, economies of scale and better strategic infrastructural planning than has existed in Ireland to-date.

There are a number of challenges that Ireland faces to provide safe and secure drinking water. These include:

- Reducing the population on long-term boil water notices.
- Addressing delays to the provision of major water supply projects, and upgrade supplies with no *Cryptosporidium* barriers.
- Ensuring that supplies are capable of delivering drinking water during all weather conditions and variations in raw water supply.
- Elimination of lead pipes from the distribution mains and service lines.
- Provision of up-to-date monitoring results which allows consumers to gain timely information about the quality of their drinking water.
- Operation of the Water Safety Plan approach in the provision of water supplies.

As the environmental regulator, the EPA will continue to update, track and report the number of supplies on the Remedial Action List; drinking water exceedance notifications; active boil water notices on public water supplies; supplies with no *Cryptosporidium* barriers, the number of water safety plans in place and progress made in making Ireland a leader in the provision of drinking water. In addition, the Agency will continue to publish the results of all drinking water audits on our website (www.epa.ie).

1.

The Safety and Security of Drinking Water in Ireland

1. The Safety and Security of Drinking Water in Ireland

1.1 INTRODUCTION

This report covers the quality of drinking water in Ireland in 2012. 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 2012.

In Ireland the majority of drinking water originates from surface water (81.0%) and the remainder originates from groundwater (11.4%) and springs (7.6%). Public Water Supplies (PWS) 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 WSAs. The owners of Small Private Supplies are subject to the requirements of the Drinking Water Regulations and WSAs 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 standards set out in the Regulations.

Table 1-1 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 1-1: Non-compliance with Drinking Water Standards by Supply Category for samples taken in 2012[1].

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						
E. coli	↓ 7	0.1	↓ 1	0.1	↓ 29	1.8
Enterococci	↑ 6	0.3	↔ 0	0	↓ 9	2.9
Chemical Parameters						
Lead	↔ 15	0.7	↔ 0	0	↔ 0	0
Nitrate	↓ 5	0.1	↔ 0	0	↓ 0	0
Trihalomethanes (Total)	↑ 179	13.0	↑ 52	39.7	↔ 17	6.2
Indicator Parameters						
Aluminium	↑ 91	1.2	↑ 21	1.9	↔ 16	1.5
Turbidity (at WTW)	↓ 70	4.0	↔ 6	3.4	↔ 1	3.6

↓ Improvement on 2011 ↑ Disimprovement on 2011 ↔ Similar to 2011

[1]This assessment of compliance is based on results submitted.

1.3 The Safety of Drinking Water in Ireland

1.3.1 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 and 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 distribution system after treatment. The World Health Organisation (2008[2]) 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.

1.3.1.1 E. coli

The majority of the population (82%) 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 2012. Since 2005, there has been a 92% reduction in the number of public water supplies and an 89% reduction in the number of private group water schemes reporting *E. coli* exceedances. However, at 6.4 %, the number of private group water schemes reporting *E. coli* exceedances remains unacceptably high (Table 1-2).

Table 1-2: Summary of Water Supply Zones (WSZs) where *E. coli* was detected at least once in 2012.

	No. of WSZs monitored in 2012	No. of WSZs with exceedances in 2012
Public Water Supplies	928	7 (0.8%)
Public Group Water Schemes	602	1 (0.2%)
Private Group Water Schemes	408	26 (6.4%)
Small Private Supplies	1303	147 (11.3%)
Total:	**3241**	**181 (5.6%)**

Small private supplies were the only supply category that did not show an improvement in *E. coli* compliance in 2012. That said, there was a 19% increase in the number of small private supplies monitored (1,303 supplies monitored in 2012, up from 1,059 in 2011). A total of 181 supplies (out of 3,241 supplies) failed to meet the standard for *E. coli* at one time or more during 2012 (Table 1-2), up from 144 in 2011. Overall, *E. coli* was detected at least once in 5.6% of all water supplies during 2012, a disimprovement from 4.7% in 2011. Small private supplies accounted for 81% of all *E. coli* exceedances in 2012.

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

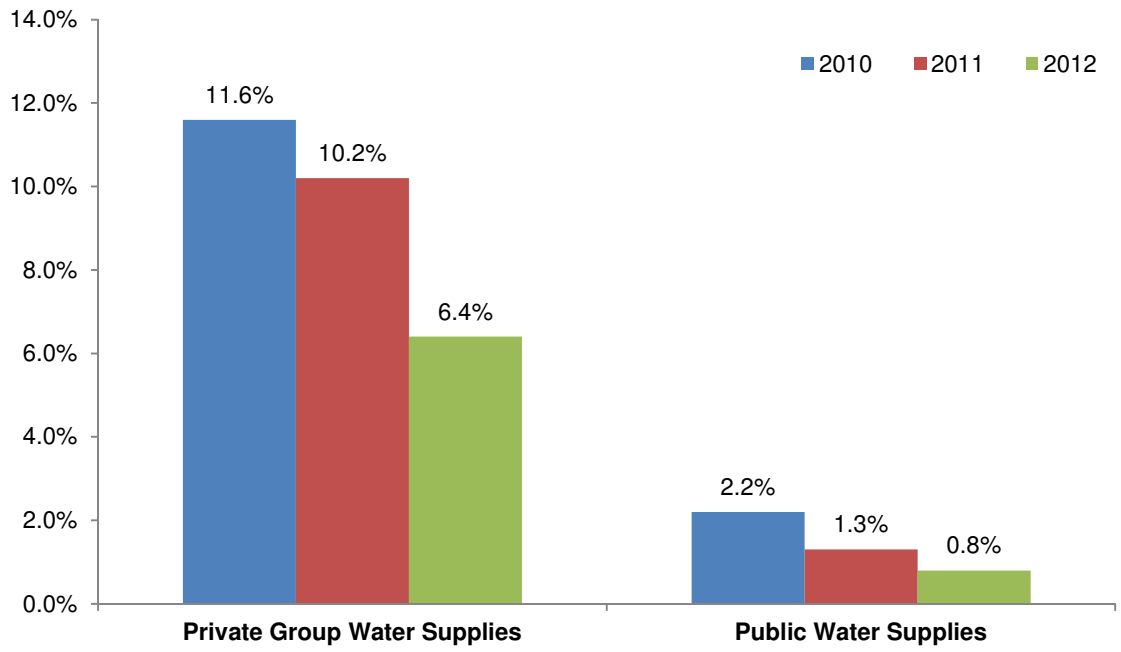

Figure 1-1: Percentage of supplies where *E. coli* was detected, 2010 to 2012.

1.3.1.2 Enterococci

The total number of supplies where *Enterococci* was detected in 2012 was 76, compared to 56 in 2011. *Enterococci* compliance in private group schemes improved in 2012 while compliance in public supplies and small private supplies disimproved. Overall, *Enterococci* was detected at least once in 4.7% of all water supplies during 2012, a disimprovement from 3.5% in 2011. Small private supplies accounted for 81% of all *Enterococci* exceedances in 2012.

Table 1-3: Summary of Compliance with the *Enterococci* Parametric Value, 2012 and 2011.

	No. of WSZs monitored in 2012	No. of WSZs with Exceedances in 2012	No. of WSZs monitored in 2011	No. of WSZs with Exceedances in 2011
Public Water Supplies	675	6 (0.9%)	685	3 (0.4%)
Public Group Water Schemes	101	0 (0.0%)	116	0 (0.0%)
Private Group Water Schemes	251	9 (3.6%)	249	13 (5.2%)
Small Private Supplies	583	61 (10.5%)	531	40 (7.5%)
Total:	**1,610**	**76 (4.7%)**	**1,581**	**56 (3.5%)**

1.3.2 Compliance with the Chemical Standards

The Regulations set out the required quantitative standard for each of the 26 chemical standards. Table 1-4 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 2012, while compliance levels in excess of 99% were reported for a further 10 parameters (Table 1-4). Compliance for two parameters was less than 99% in 2012 (trihalomethanes and antimony). Overall, chemical compliance levels disimproved from 99.5% in 2011 to 99.3% in 2012, with trihalomethanes exceedances accounting for 68% of all chemical exceedances in 2012. Three additional parameters (acrylamide, epichorohydrin and vinyl chloride)[3] do not require to be directly monitored but are controlled by product specification.

Table 1-4: Total Number of Water Supply Zones (WSZs) Monitored and Samples Analysed for Chemical Parameters, 2012.

Parameter	No. of WSZs Monitored	No. of WSZs with Exceedances	% of WSZs Complying	No. of Samples Analysed	No. of Samples Exceeding	% of Samples Complying
Chemical Parameters						
1,2-dichloroethane	959	0	**100**	1517	0	**100**
Benzene	955	0	**100**	1501	0	**100**
Benzo(a)pyrene	919	0	**100**	1378	0	**100**
Boron	882	0	**100**	1417	0	**100**
Cadmium	1081	0	**100**	1732	0	**100**
Chromium	1080	0	**100**	1733	0	**100**
Cyanide	803	0	**100**	1245	0	**100**
Mercury	894	0	**100**	1430	0	**100**
Nitrite (at tap)	2377	4	**99.8**	8277	4	**100**
PAH	893	0	**100**	1344	0	**100**
Tetrachloroethene & Trichloroethene	965	0	**100**	1528	0	**100**
Arsenic	986	2	**99.8**	1608	2	**99.9**
Bromate	987	2	**99.8**	1508	2	**99.9**
Nitrites (at WTW)	168	1	**99.4**	777	1	**99.9**
Pesticides – Total	946	2	**99.8**	1427	2	**99.9**
Selenium	867	1	**99.9**	1398	1	**99.9**
Nickel	1119	3	**99.7**	1774	3	**99.8**
Copper	1340	7	**99.5**	2137	7	**99.7**
Nitrate	2218	18	**99.2**	6665	20	**99.7**
Lead	1644	14	**99.1**	3417	16	**99.5**
Fluoride	1119	27	**97.6**	3739	34	**99.1**
Antimony	874	2	**99.8**	1464	26	**98.2**
Trihalomethanes(Total)	1008	141	**86.0**	1800	248	**86.2**

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

1.3.2.1 Lead

The Regulations impose a parametric value of 25 µg/l lead until 24 December 2013, after which the parametric value reduces to 10 µg/l. The results for 2012 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 1-5: Compliance with the Lead Parametric Value in 2012.

	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	99.3	13	97.4	38
Public Group Water Schemes	100	0	100	0
Private Group Water Schemes	100	0	100	0
Small Private Supplies	99.9	1	99.6	3
Overall:	**99.5**	**14**	**98.2**	**41**

A total of 14 supplies reported lead exceedances during 2012 (13 in 2011); however, 41 supplies have reported levels of lead in excess of the 2013 parametric value of 10 µg/l (42 in 2011). The majority of these are public water supplies.

Reduction of the plumbosolvency[4] can be implemented by correcting pH. Implementation of this measure can assist the WSAs 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.

The EPA *Advice Note No.1* ("*Lead compliance monitoring and surveys*") should be followed by each WSA to determine the extent of lead piping 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.

1.3.2.2 Nitrate

Exceedances of the nitrate parametric value were reported in 18 supplies in 2012 (up from 17 in 2011). Five public water supplies reported elevated levels of nitrates in both 2011 and 2012 while the remaining supplies with nitrate were small private supplies. The population affected by nitrate exceedances decreased from 7,673 in 2011 to 820 in 2012 (Table 1-6).

Table 1-6: Summary of Water Supply Zones (WSZs) Non-Compliant with Nitrate Parametric Value, 2012 and 2011.

	No. of WSZs with Exceedances in 2012	Population Affected in 2012	No. of WSZs with Exceedances in 2011	Population Affected in 2011
Public Water Supplies	5	820	5	3,293
Public Group Water Schemes	0	0	0	0
Private Group Water Schemes	0	0	2	4,380
Small Private Supplies	13	N/A	10	N/A
Overall:	**18**	**820**	**17**	**7,673**

[4] Plumbosolvency is the ability of a solvent, notably water, to dissolve lead.

1.3.2.3 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 increases as a function of the chlorine and humic acid concentration, temperature, pH and bromide ion concentration.

There were 1,800 samples analysed for trihalomethanes in 1,008 water supply zones in 2012. The Regulations impose a parametric value of 100 µg/l. The results, as shown in Table 1-7, show that the trihalomethanes parametric value was exceeded in 14.0% of all water supplies during 2012, a disimprovement from 9.9% in 2011. Trihalomethanes compliance in public water supplies disimproved from 89.1% in 2011 to 85.1% in 2012. 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 2.4.3.

Table 1-7: Compliance with the Trihalomethanes (Total) Parametric Value in 2012.

	No. of WSZs Monitored	No. of Non-compliant WSZs	No. of Samples Analysed	No. of Non-compliant Samples
Public Water Supplies	645	96 (14.9%)	1,374	179 (13.0%)
Public Group Water Schemes	102	29 (28.4%)	131	52 (39.7%)
Private Group Water Schemes	239	16 (6.7%)	272	17 (6.2%)
Small Private Supplies	22	0 (0.0%)	23	0 (0.0%)
Overall:	**1,008**	**141 (14.0%)**	**1800**	**248(13.8%)**

Analysis of the % of THM samples returning non-compliance results across the months of 2012 (Figure 1-2), indicate that non-compliance peaked in the months of July and September. This is consistent with Met Eireann data which indicates above average rainfall during both these months in 2012.

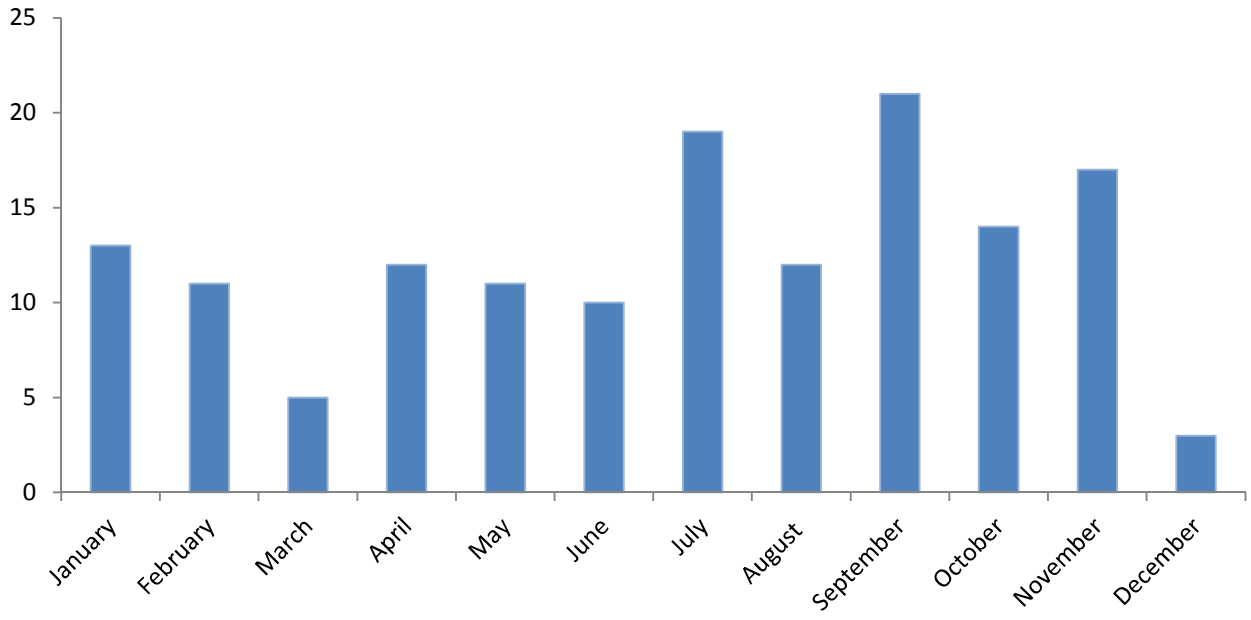

Figure 1-2: Percentage non-compliant THM samples per month during 2012.

1.3.2.4 Fluoride

Naturally elevated levels of fluoride are quite rare in Ireland and thus any exceedances reported are almost entirely due to public water supplies being dosed with fluoride at levels in excess of the legally permitted dose. There has been a reduction on the previous year in the number of public water supplies, 24 in 2012, down from 31 in 2011 failing to meet the fluoride parametric value. The number of public group water schemes failing to meet the fluoride parametric value was three in both 2011 and 2012. There was no fluoride exceedances reported for private group water schemes and small private supplies in 2012. It is important to note that the Irish standard of 0.8 mg/l is more stringent than the EU Drinking Water Directive Standard of 1.5 mg/l. No drinking water supplies exceeded the 1.5 mg/l standard in 2012.

Table 1-8: Compliance with the Fluoride Parametric Value, 2012.

	No. of WSZs Monitored in 2012	% of Samples Complying in 2012	No. of non-Compliant WSZs in 2012
Public Water Supplies	675	99.0	24
Public Group Water Schemes	177	99.1	3
Private Group Water Schemes	235	100	0
Small Private Supplies	32	100	0
Total:	**1119**	**99.1**	**27**

1.3.3 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 WSA 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 1-9.

Table 1-9: Total Number of Water Supply Zones (WSZs) Monitored and Samples Analysed for the Indicator Parameters, 2012.

Parameter[5]	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						
Conductivity	3111	4	**99.9**	15643	4	**100**
Oxidisability	7	0	**100**	7	0	**100**
Sulphate	955	0	**100**	1524	0	**100**
Ammonium	3148	51	**98.4**	15256	80	**99.5**
Chloride	1194	6	**99.5**	1794	10	**99.4**
Clostridium Perfringens	2206	68	**96.9**	11796	82	**99.3**
Turbidity (at tap)	3182	95	**97.0**	15450	107	**99.3**
Taste	1877	12	**99.4**	11016	87	**99.2**
Aluminium	1954	87	**95.5**	10767	143	**98.7**
Odour	2941	109	**96.3**	14487	262	**98.2**
Sodium	1077	23	**97.9**	1712	31	**98.2**
Colony Count @ 22Â℃	1078	44	**95.9**	1876	45	**97.6**
Total Organic Carbon	887	34	**96.2**	1512	36	**97.6**
Colour	3186	231	**92.7**	15503	410	**97.4**
Iron	2420	174	**92.8**	9931	276	**97.2**
Manganese	1772	128	**92.8**	4088	146	**96.4**
Turbidity (at WTW)	256	44	**82.8**	1937	77	**96.0**
pH	3185	477	**85.0**	15687	838	**94.7**
Coliform Bacteria	3247	657	**79.8**	15355	845	**94.5**
Radioactivity						
Tritium	6	0	**100**	27	0	**100**
Total Indicative Dose	4	0	**100**	25	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.

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.

[5] 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 WSA may be concerned about the quality of the water and should investigate further.

1.3.3.1 Aluminium

Overall, the level of compliance with the aluminium parametric value decreased from 98.8% in 2011 to 98.7% in 2012. However, the number of public supplies reporting aluminium exceedances reduced from 51 in 2011 to 46 in 2012. Compliance 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 2012 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 1-10.

Table 1-10: Summary of Aluminium Monitoring, 2012.

	No. of WSZs Monitored	% of Samples Complying	No. of Non-Compliant WSZs
Public Water Supplies	705	98.8	46
Public Group Water Schemes	471	98.1	19
Private Group Water Schemes	330	98.5	9
Small Private Supplies	448	98.1	13
Total:	**1954**	**98.7**	**87**

1.3.3.2 Coliform Bacteria

There was a reduction in the number of public water supplies failing to meet the coliform bacteria standard, 104 in 2012, down from 124 in 2011. The number of private group water schemes failing to meet the coliform bacteria parametric value also reduced, 90 in 2012, down from 113 in 2011.

Table 1-11: Summary of Coliform Bacteria Monitoring, 2012.

	No. of WSZs Monitored	% of Samples Complying	No. of Non-Compliant WSZs
Public Water Supplies	930	98.3	104
Public Group Water Schemes	602	97.9	29
Private Group Water Schemes	408	92.9	90
Small Private Supplies	1307	74.2	434
Total:	**3247**	**94.5**	**657**

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 in place to ensure that there is no contamination in the network.

1.3.3.3 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 1-12: Percentage of Samples in Compliance with the Turbidity Parametric Values in 2012.

Parameter	Overall	PWS	PuGWS	PrGWS	SPS
Turbidity (at the tap)	**99.3**	99.7	99.9	99.5	96.6
Turbidity (at WTW)	**96.0**	96.0	96.6	96.4	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 or not *Cryptosporidium* is being removed adequately. The number of compliant turbidity samples taken at the water treatment works increased from 95.7% in 2011 to 96.0% in 2012. However, the number of supplies reporting turbidity exceedances at the plant was similar in both years (43 in 2011 and 44 in 2012) (see Appendix IV). Despite this, turbidity compliance at the plant requires improvement. 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.

1.3.4 Group Water Schemes and Private Water Supplies

Although capital investment fell to its lowest level since 1999, 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 2012. 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 results for 2012 shows that 26 schemes or 6.4% (down from 10.2% in 2011) of all privately-sourced group schemes monitored were contaminated with *E. coli* at least once during 2012. The percentage of supplies contaminated with E. coli from 2010 to 2012 is illustrated in Fig. 1-1 and shows a year on year decrease in *E. coli* contamination in this period. Figure 1-1 shows the number of schemes contaminated with *E. coli* as a proportion of the total number of schemes. As with previous years, chemical compliance amongst many privately-sourced group water schemes remained high.

Photograph 1-1: Sheepgrange Group Water Scheme in County Louth, which was upgraded in 2012 with a new reservoir and treatment facility.

The sourcing and provision of relevant training continues to be a key role for the National Federation of Group Water Schemes (NFGWS), with 43 training events being organised for the delivery of one or other of five courses to 216 schemes. These courses covered training in Disinfection and Basic Filtration (mainly for stand-alone schemes), Distribution Network Management and Maintenance (for all schemes) and Sampling & Monitoring of Drinking Water (for all schemes). Quality assurance site visits were carried out on 61 group schemes in 2012 and on more than 200 schemes since 2010.

Following on from the practical experience gained from recent pilot projects conducted on surface and groundwater sources, the NFGWS has completed the development of a guidance document on source protection for group schemes. The Federation anticipates that preliminary assessments to determine the zone of contribution to drinking water sources will be completed on as many as 35 schemes in 2013, as part of a five year programme.

Figure 1-3 shows the number of Private Group Schemes contaminated with *E.coli* during 2012 as a proportion of the total number of schemes. Overall, 26 Private Group Schemes in 10 different counties reported *E.coli* exceedances during 2012.

Figure 1-3: Number of Private Group Water Schemes contaminated with *E. coli* during 2012[6] as a proportion of the total number of schemes

[6] There are no group water schemes serving >50 persons in any of the four Dublin WSA areas.

1.4 Security of Drinking Water Supplies

For Ireland's drinking water supplies to be deemed secure, every WSA should profile and manage the risks to the supply using the water safety plan approach. While there is no legal requirement for WSAs to complete water safety plans, the EPA will continue as a priority to support the development of water safety plans by WSAs/Irish Water with the current emphasis 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 supplier. The EPA Advice Note No.8 – Developing Drinking Water Safety Plans, provides guidance on the WSP approach and is available on the EPA website. In 2011, the EPA developed a WSP tool and in 2012, with the assistance of Galway City Council and the WSTG, training was rolled out to WSA staff on its use to assist WSAs on the implementation of their plans. The Agency plans to release a revised version of the WSP tool to all WSAs early 2014.

The Drinking Water Safety Plan Working Group (DWSP WG), established in 2011, continued to progress its implementation of WSPs; this group is made up of representatives from the EPA and representatives from eight WSAs who provide drinking water to the largest populations in Ireland. This working group provides support and guidance to each other and other WSAs on the preparation and implementation of WSPs. The DWSP WG also has a webpage on NIECE (Network for Ireland's Environmental Compliance and Enforcement). The primary aim of this site is to provide a forum whereby information and experience can be exchanged between WSAs in their implementation of WSPs and to provide a mechanism of feedback to the EPA on the practicalities of the WSP process.

The 2012 Drinking Water Returns data showed that two WSPs are complete and 66 are in preparation. This is an overall improvement from last year where two were complete and 45 were in preparation. The EPA plan to use this information to track progress on the management of risks associated with drinking water supplies.

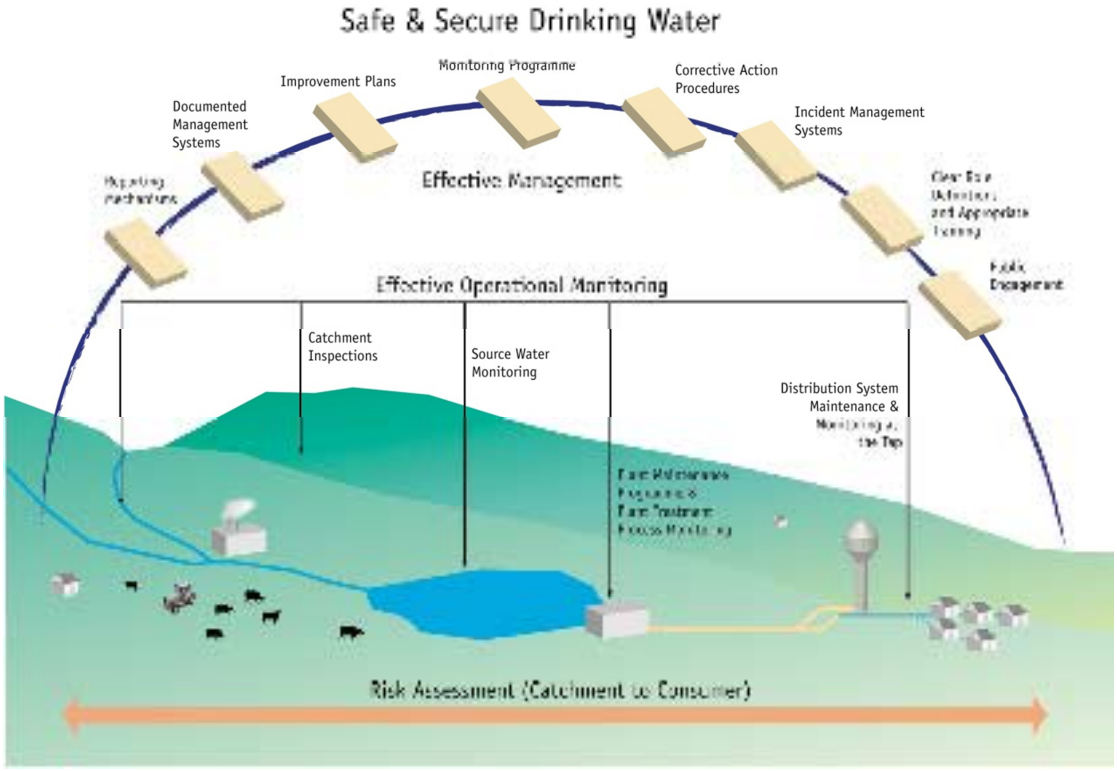

Figure 1-4. Essential Components of a Drinking Water Safety Plan.

1.5 Access to Information on Drinking Water Quality

The annual drinking water report provides a snapshot of the quality of drinking water and the outcomes of enforcement work by the EPA. Access to up-to-date monitoring results allows consumers to gain timely information on the quality of their drinking water. To this end, the Minister for Environment, Community and Local Government (DECLG) issued a circular on 20th July 2009, requesting WSAs to provide up to date information on the quality of drinking water on their respective websites. The Minister directed that all WSAs should publish the results and that access to the data should be made available in a prominent position on each WSA website homepage.

At the time of publication of this report, 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:

- 8 out of 34 WSAs were publishing exceedances of the legal standards online.
- 31 out of 34 were publishing *E. coli*, Enterococci, Lead, Nitrate, Trihalomethanes, Aluminium, and Turbidity results but only 13 were publishing *Cryptosporidium* results. 29 were publishing other parameters.
- 20 WSAs are using their websites to communicate supplies where there is a risk to human health (e.g. boil water notices). Only 7 WSAs were providing maps to illustrate the areas affected and to enable consumers to easily determine if they are in an affected area.
- 26 WSAs did not have up to date drinking water monitoring results published on their websites; further effort is required to ensure WSAs 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 WSAs should publish on their websites. In particular, it recommends that the following information be published on the WSA websites:

- Details of any notifications sent to the EPA;
- The relevant WSA 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 WSA's functional area.

The findings show that only 11 WSAs published details of notifications sent to the EPA; 9 WSAs published the most recent drinking water summary report; only 14 WSAs published the EPA's drinking water audit reports[7] online and only 4 WSAs had published the most recent Remedial Action List.

Many local authorities link to the www.epa.ie website to information such as the Remedial Action List. This is a reliable way of ensuring members of the public can readily access the current version of this list which is reviewed quarterly. Local Authorities should note, however, that the EPA website was restructured during 2013 and their external link to the EPA RAL now requires updating.

Table 1-13: Assessment of No. of WSAs in compliance with Ministerial Circular Letter on access to information on Drinking water.

Survey Year	Full Compliance	Substantive Compliance	Non - compliant
2011	0	2	32
2012	6	27	1
2013	0	6	28

In 2011 only two WSAs were reported as being in substantive compliance with the Ministerial Circular letter. In 2012, six WSAs were in full compliance with all of the requirements and recommendations in the circular letter and 27 were in substantial compliance. At the time of publication of this report (2013) no WSAs were fully compliant with the Ministerial Circular letter and only 6 were in substantive compliance (Donegal, Kilkenny, Limerick City, Louth, North Tipperary and Dublin City) with 28 deemed non-compliant.

Overall, whilst many WSAs have developed intuitive and user-friendly website structures for access to information, the provision of up-to-date drinking water monitoring data and associated information to the public within the web structures has deteriorated significantly compared to the last assessment undertaken in 2012. Further and on-going work in populating and maintenance of websites is required in order to achieve compliance with the Ministerial Circular and in so doing provide timely information to the public on the quality of their drinking water.

[7] All EPA Drinking Water Audit Reports from 2012 are available to view on www.epa.ie

2.

Enforcement

2. Enforcement

2.1 Introduction

The EPA regulates public water supplies and WSAs are responsible for the regulation of private water supplies. As the supervisory authority over public supplies the EPA has been assigned a number of significant legislative powers – to direct that a water supply complies with quality standards, to oversee actions taken by WSAs to meet the quality standards, to oversee monitoring of supplies, to audit treatment plants and to publish guidance. As the supervisory authority over private supplies (including group water schemes) WSAs have been assigned similar powers and responsibilities to the EPA in relation to private supplies.

The Regulations require WSAs to notify the EPA of failures to meet the quality standards. The EPA has the power to issue a Direction to a WSA to take corrective action to improve a drinking water supply. The EPA may prosecute a WSA if it fails to comply with an EPA Direction. It is not an offence for a water supplier to supply water to consumers that is not clean and wholesome.

2.2 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 WSAs prepare and implement an action programme for each public water supply on the list.

2.2.1 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.

2.2.2 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 WSAs, 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 WSA and the effectiveness of the measures is demonstrated to the satisfaction of the EPA. In general, a

supply will not be removed from the list on the basis of monitoring results alone, the WSA 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 WSAs for Public Water Supplies,* available to download at www.epa.ie

2.2.3 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. 237 (70%) of the original 339 supplies have been removed from the RAL.
2. Remedial works will be complete in a further 47 supplies on the original RAL by the end of 2013.
3. 65 supplies were added to the original RAL but have been subsequently removed.
4. 45 supplies were added to the original RAL and remain on the current RAL.
5. 147 supplies in total were on the RAL as of the end of September 2013 (see Fig. 2-1).
6. There have been significant delays with some WSAs in submitting information to verify the effectiveness of the remedial works. 11 supplies have been identified by the EPA where the initial remedial works have been complete but have not been successful. Further remedial works are required in these supplies.

The population served by supplies where the necessary remedial works have been completed and have been removed from the RAL is over 750,000. However, 957,036 persons are served by supplies that are currently on the RAL, with 511,135 of these being served by one of three supplies, Vartry Reservoir (Dublin City), Lee Road (Cork City) and Staleen (East Meath and Drogheda).

Remedial works have been completed on a further 23 water supplies serving 73,777 persons and WSAs are in the process of verifying the effectiveness of these remedial works while remedial works in an additional 47 are scheduled for completion before the end of 2013.

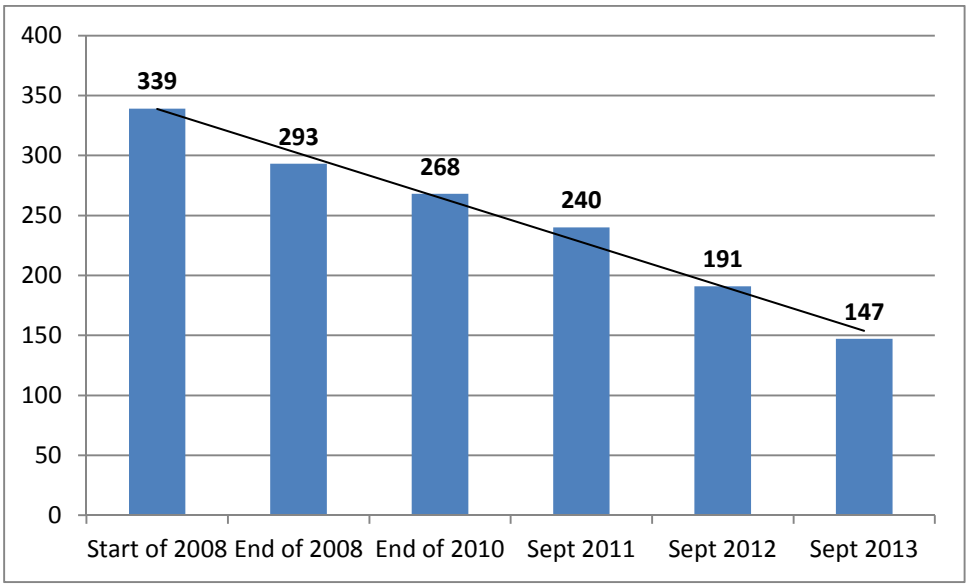

Figure 2-1: Progress with the number of public water supplies on the Remedial Action List.

Table 2-1 gives a summary of the supplies added or removed from the original RAL.

Table 2-1: 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. *E. coli, Cryptosporidium*	66
Table B: Chemical Failure e.g. nitrate, trihalomethanes	46
Table C: Indicator Failure e.g. aluminium, coliforms	14
Other[8]	21
Total No. of Supplies Added	**147**
Supplies removed from the original RAL	
Abandoned or Replaced	69
Upgraded	110
Improved Operations	46
Other[14]	12
Total No. of Supplies Removed from the Original RAL	**237**

2.2.4 Progress with Remedial Actions

WSAs 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 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 WSA 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 website (www.epa.ie) while Table 2-2 gives an overview of the actions proposed.

Table 2-2: Summary of Actions to be taken for the 147 Current RAL Supplies (to end September 2013).

	No. of Water Supplies
To be Abandoned or Replaced:	17
To be Upgraded:	122
To Improve Operations:	8
Total No. of Supplies:	**147**

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

Since its initial publication in January 2008, a number of large public water supplies (237 from the original list) 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. The EPA has provided training on water safety plans and is working with WSAs to implement these plans and is currently rolling out a new online tool for the completion of Water Safety Plans for WSAs. The RAL addressed the issues of insufficient or inadequate infrastructure at a plant level whereas the WSP represents a step forward that will allow the identification of hazards and assessment of risk within the entire water supply system. The adoption of this approach will lead to further improvements in the security of water supplies and will enable limited resources be focused on weaknesses in the water supply chain that most require attention.

Table 2-3: Number of Supplies on the Original RAL and Timeframes for the Completion of Remedial Action Plans for each WSA

WSA	No. of Supplies on RAL		Progress on Completion of Remedial Works			
	Original RAL	Current RAL	Works Completed	To be completed in 2013	To be completed in or after 2014	No Timeframe for Completion
Kerry County Council	41	36	16	11	9	0
Galway County Council	34	16	15	1	0	0
Wicklow County Council	22	13	0	4	9	0
Waterford County Council	18	12	0	8	4	0
Donegal County Council	33	11	1	0	3	7
Roscommon County Council	10	10	0	0	10	0
South Tipperary County Council	14	9	1	1	7	0
Cork County Council	38	7	0	3	4	0
Meath County Council	8	5	0	4	1	0
Sligo County Council	8	4	0	0	4	0
Mayo County Council	15	3	1	1	1	0
Dublin City Council	1	3	0	2	1	0
Dun Laoghaire Rathdown Co. Co.	0	3	0	2	1	0
Louth County Council	3	2	0	2	0	0
Cavan County Council	10	2	0	2	0	0
Kilkenny County Council	7	2	0	0	2	0
Monaghan County Council	12	2	0	1	1	0
Longford County Council	5	1	0	1	0	0
North Tipperary County Council	6	1	0	1	0	0
Limerick County Council	12	1	0	1	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	1	0	0	0
Carlow County Council	4	0	n/a	n/a	n/a	n/a
Clare County Council	9	0	n/a	n/a	n/a	n/a
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

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

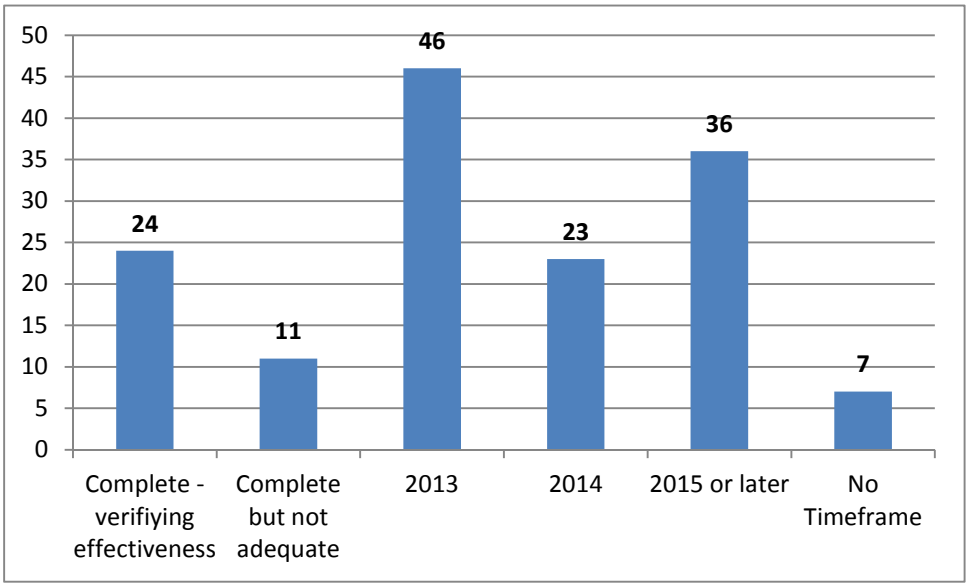

Figure 2-2: Timeframes for completion of Remedial Action Plans.

The WSAs have reported that remedial works will be complete in 70 supplies currently on the RAL by the end of 2013. 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.

Donegal County Council has not provided completion dates for 7 supplies in the county. The EPA has issued legally binding Directions in respect of the majority of the supplies where no dates have been submitted. These Directions require the completion of remedial works by specified dates in 2013. The EPA is currently examining progress in compliance with these Directions and further enforcement action is being considered.

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 www.epa.ie .

2.3 EPA Audits of Public Water Supplies

The Regulations provide for the auditing of water supplies. The EPA audits drinking water treatment plants supplying public schemes and the WSAs audit plants supplying private schemes. The EPA conducts scheduled and unscheduled audits. Scheduled audits are conducted as part of a targeted campaign of audits to review a particular issue at a national level. Unscheduled or 'reactive' audits are conducted to follow up on issues as they arise during the year.

The EPA conducted a total of 83 audits of WSA drinking water treatment plants during 2012. One further audit was undertaken at the offices of a WSA to examine procedures and record-keeping. Of the 83 drinking water treatment plant audits undertaken, 28 were reactive audits and 55 were scheduled campaign audits. The breakdown within the scheduled campaign audit category between general audits and e-audits is explained in the subsections that follow.

Following each audit an audit report was issued to the WSA summarising the findings made and making recommendations to address any compliance issues identified. These reports are published on the EPA website. WSAs are required to take measures to address the recommendations made. In each case, the implementation of these measures is pursued by the EPA as part of on-going enforcement work until completed.

2.3.1 Groundwater E-Audit Campaign

2.3.1.1 Introduction

The EPA visits several groundwater public water supplies as part of the National Ground Water Quality Monitoring Programme (GWQMP). The scope of these visits was expanded to examine source protection and disinfection efficiency at these supplies.

A campaign of dual purpose site visits commenced in 2011 and was completed in 2012. A total of 47 e-audits were completed at groundwater-fed public water supplies during 2012 representing a significant proportion of the 57 scheduled audits for the year.

In order to structure the capture of drinking water supply information during these dual purpose site visits to groundwater supplies, an electronic E-Audit template was developed and completed at the drinking water treatment plant on an electronic device. These audits are, therefore, called groundwater 'e-audits'. Non e-audits or 'general' audits captured information without the use of an electronic recording device.

2.3.1.2 Groundwater E-Audit Findings

The main findings of the groundwater e-audits are outlined in this section whilst the findings of the general audits are discussed in the following section. Of the 47 public water supplies visited under the e-audit campaign:

Table 2-4: Positive Findings of 2012 Groundwater E-Audits

Groundwater E-audit Finding	
- All had chlorine monitors and alarms in place.	✓
- All were using approved chemicals.	✓
- None were partially or fully bypassing any treatment processes	✓
- None were operating above design capacity.	✓

In general, a minimum of two barriers are required to ensure that drinking water is treated to the required standard. In the case of groundwater, the natural geology typically and source protection act as the first barrier and disinfection acts 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

During the groundwater e-audits completed in 2012, compliance issues were identified in respect of both the first and second barriers. These findings are summarised in Tables 2-5.

Table 2-5: Groundwater E-Audit Compliance Issues Identified re: Treatment Barriers

First Barrier - Source Protection & Spring / Well Protection	
- 13 supplies were deemed to have inadequate source-protection measures in place in the zone of contribution.	✘
- 13 had a poorly protected spring /well head.	✘
- 13 supplies had a final water turbidity was greater than 1.0 NTU.	✘
- 10 supplies had evidence of microbiological contamination in raw water monitoring results.	✘
- 2 supplies had evidence of surface water ingress.	✘
Second Barrier - Disinfection	
- 3 supplies did not have adequate disinfection contact time.	✘
- 3 supplies did not have duty and standby chlorine dosing pumps.	✘

2.3.1.3 Groundwater E-Audit Conclusions

Findings such as those summarised above should signal to WSAs the requirement for to review their groundwater-fed drinking water supplies to assess the adequacy of the treatment currently in place. Where source protection is inadequate or springs or wells are inadequately protected further action is needed to prevent contamination or an additional treatment barrier may be necessary to ensure safe drinking water is supplied to consumers.

2.3.2 General Audits

2.3.2.1 Introduction

A total of 36 general (non-e-audit) audits were undertaken during 2012 by the EPA; 8 were scheduled and 26 were reactive. These supplies include treatment plants served by both surface water and ground water sources. Of the 26 reactive audits, 12 were of supplies where a new boil water or water restriction notice was issued during the year.

A summary of the main compliance issues identified across the 36 general audits of public water supplies completed by the EPA during 2012 is provided in the sections, below. (Note: None of the groundwater e-audits results are included in this section's summary statistics.)

2.3.2.2 Source Protection

As discussed in the previous section, source protection, in tandem with natural geology in the case of groundwater supplies, acts as the first barrier for the production of safe drinking water. By improving source protection, the quality of the source water may be improved. This in turn, can lead to a reduction in the production of treatment by-products and minimise operational costs.

The main source protection-related findings of the 36 general audits conducted by the EPA on public water supplies during 2012 are summarised in Table 2-6a

Table 2-6a: Compliance Issues Identified at General Audits - Source Protection

- 12 supplies (surface water and ground water) had inadequate source protection measures in place in either the immediate or local catchment or zone of contribution (ZOC).	*Poor source protection measures in the catchment or ZOC to an abstraction point lead to a higher risk of contaminants entering the surface water or ground water body and the supply.*
- 12 groundwater supplies had poorly protected well heads or uncovered springs.	*Poorly protected wells and springs are at risk of contamination from the ingress of contaminating material.*
- 9 groundwater supplies showed evidence of surface water ingress into the supply.	*Surface water ingress can lead to the contamination of source water.*
- 7 groundwater supplies had evidence of microbiological contamination in raw water monitoring results.	*Microbiological contamination of the source poses risks to human health.*

The main issues identified included inadequate or poor borehole construction, in particularly poor protection of the well head, and ingress of surface water into boreholes (e.g. unsealed boreholes).

Where source protection was recorded as inadequate or the integrity of groundwater supplies (either at the ground water body scale or at the abstraction point) was found to be inadequate the Audit Reports issued to WSAs sought that either source protection be enhanced or that the suitability of the current treatment be critically assessed.

2.3.2.3. Disinfection

As a minimum, all drinking water supplies should be disinfected to provide a barrier to microbiological contamination towards ensuring 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). Chlorination is the most common disinfection technology used in the treatment of drinking water in Ireland though UV is increasingly being used as a primary disinfectant in many supplies (usually with chlorination as a secondary disinfectant).

Of the 36 general audits completed by the EPA during 2012, all plants had chlorination in place. The main compliance issues identified are summarised in Table 2-6b.

Table 2-6b: Compliance Issues Identified at General Audits – Disinfection Contact Time

- 4 supplies did not have disinfection contact time calculated.	*Completion of this calculation is required to determine whether the minimum required disinfection contact time is met.*
- 5 supplies had inadequate disinfection contact time.	*Inadequate contact time may result in micro-organisms posing a risk to human health.*

Both the calculation and the achievement of the World Health Organisation minimum recommended disinfection contact time continued to be an issue in 2012. Approximately half of all plants audited during 2011 did not have disinfection contact time calculated and available during the EPA audits. This had improved in 2012; when less than one tenth of plants audited did not have this calculation completed. Of those plants audited in 2012 for which the calculation had been completed, the 5 plants with inadequate disinfection contact time were requested to address this deficiency in the audit report recommendations.

Table 2-6c: Compliance Issues Identified at General Audits – Disinfection Instruments

- 2 supplies had no chlorine monitor and alarm	*Chlorine monitors and alarms alert the operator of the plant to inadequate treatment of the supply even when the plant is unattended.*
- 2 plants were without duty and stand-by chlorine dosing pumps.	*If a pump fails undisinfected water may enter the water supply and pose a risk to human health.*

Of the two supplies without chlorine monitors and alarms, one of the WSAs in question had addressed this requirement by installing an alarm before the end of 2012 whilst the second WSA in question had installed a chlorine monitor and alarm by the end of September 2013.

Of the 34 drinking water treatment plants audited that had chlorine monitors and alarms in place, 3 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. Whilst this represents an improvement on the previous reporting period, the response to disinfection alarm remains a critical element of supply security which needs to be addressed as a priority by WSAs where the issue has not yet been resolved.

The installation of duty and standby disinfectant dosing was pursued by the EPA at the plants in question until this requirement was met.

2.3.2.4 Treatment Barriers

As outlined above, a minimum of two barriers are required to ensure that drinking water is treated to the required standard and to prevent the entry of *Cryptosporidium* into the water supply. Of the 36 general audits undertaken by the EPA during 2012 18 plants were using either filtration or a chemicals coagulation treatment process or both. The adequacy of installed barriers (filters and clarifiers) was examined. It was recorded that all were using appropriate and approved chemicals which was an improvement on previous years. Compliance issues identified in relation to filters and clarifiers at the 18 plants are summarised in Table 2-6d, below.

Table 2-6d: Compliance Issues Identified at General Audits – Treatment barriers

- 9 supplies had a final water turbidity of >1.0 NTU[9].	*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.*
- 8 plants showed evidence of problems in the operation of the filters	*Poor filtration indicates inadequate treatment of the water which may result in contaminants not being removed.*
- 4 plants did not have a turbidity monitor in each filter.	*Turbidity monitors are critical for controlling the quality of treated water post filtration.*

[9] Nephelometric Units

- 2 plants had floc carryover from the clarifiers	*Floc carryover indicates poor control over chemical dosing and may result in excessive chemicals in treated water, inadequate treatment of water or compromise filter operation.*
- 2 plants had inadequate chemical dosing arrangements in place.	*Failure to dose correctly will result in excessive chemicals in treated water or inadequately treated water.*

The number of plants showing evidence of problems in the operation of the filter units was similar to the previous reporting period and represents a similar proportion of plants with filters in place. Greater effort and attention is required in this important aspect of the drinking water treatment process.

Final water turbidity should be below 1 NTU and supplies with a high risk of *Cryptosporidium* contamination should strive for 0.25 NTU. The nine supplies with turbidity greater than 1.0 NTU represents one quarter of the supplies audited by the EPA during 2012. A significant increase (more than doubling) in the proportion of audits at which the issue was identified in 2011.

One plant found to be bypassing the coagulation treatment process. Bypassing treatment processes reduces the protection to the supply that these treatment processes provide and increase the likelihood of contamination. Following the audit of this plant the EPA issued a Direction to the local authority requiring this critical treatment process to be made operational within 2 weeks of its issue. This was complied with by the WSA.

2.3.2.5. Integrity of treated water storage tanks:

Treated water can encounter a number of hazards[10] after it enters the distribution system which have the potential to compromise drinking water security and, consequently, its safety. 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 2012.

Of the 24 supplies audited that had treated water storage tanks as part of their infrastructure the following main findings were made.

Table 2-6e: Compliance Issues Identified at General Audits – Treated Water Storage Tanks

- six supplies' clearwater tanks did not have adequately secured vents or access points.	*Uncovered vents or unlocked access points can allow unauthorised human or animal access to treated water resulting in contamination.*
- two supplies had clearwater tanks that were not covered.	*Direct contamination of treated water by animals or malicious intent may occur and may pose a risk to human health.*

Works to address integrity issues were pursued by the EPA at the plants in question until completed.

[10] 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).

2.3.2.6 Conclusions from the Audits of 2012

Overall there has been some improvement in certain respects in the infrastructure, operation and management of treatment plants across a range of key indicators noted during EPA audits. However, a number of key indicators did not show any improvement on 2011.

Findings of the 2012 audits highlighted, however, the need for further improvements in achieving final water turbidity of less than 1.0 NTU. The high proportion of supplies in the previous reporting period with poorly operating and managed filters was sustained in 2012. An increase in the proportion with inadequate source protection and spring/well head protection from surface water ingress and microbiological contamination.

2.4 Notifications of Failures to meet Parametric Values

Where a water supply has failed to meet the standard specified in the Regulations, the WSA 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.

The consultation and agreement with the HSE 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.

The Drinking Water Regulations require WSAs 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 WSA must notify the EPA of any failure, be it from operational[11] or compliance[12] monitoring and also the results of its investigations in accordance with the *Drinking Water Handbook on the Implementation of the Regulations for WSAs for Public Water Supplies.*

The EPA assesses each notification of the failure to meet the parametric values and the corrective actions proposed by the WSA 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 human health. Where the corrective action is not deemed 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. Where the investigation indicates that the risk cannot be resolved quickly and is due to the water treatment plant, the supply may be 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.

During 2012, the EPA received and assessed notifications in relation to public water supplies. There was a slight increase in the number of supplies in which microbiological parameters were detected in 2012 compared to 2011. For key chemical parameters distinct trends of improvement and deterioration in 2012 compared to 2011 were observed, depending on the parameter in question. The number of public water supplies with THM detections, for example, increased whilst the number with

[11] Compliance monitoring is carried out to determine if water supplies are complying with the standards and indicator values in the Regulations.

[12] Operational monitoring is carried out to check that treatment works and distribution works are operating effectively.

lead detections decreased. A breakdown of the number of public water supplies in which a microbiological or chemical parameter exceeded the standards in 2011 and 2012 and was subsequently notified to the EPA is provided in Table 2-5.

Table 2-5. No. of Public Water Supplies where the detection of a microbiological or chemical parameter was notified to the EPA during 2011 and 2012.

Parameter	No. of PWSs with Parameter Exceeded in 2011	No. of PWSs with Parameter Exceeded in 2012	Change since 2011
Microbiological			
E. coli	24	25	↑ 1
Enterococci	3	8	↑ 5
Chemical			
Antimony	3	3	**No change**
Arsenic	2	0	↓ 2
Benzene	0	0	**No change**
Benzo(a)pyrene	0	0	**No change**
Bromate	1	0	↓ 1
Cadmium	0	0	**No change**
Copper	4	1	↓ 3
Epichlorohydrin	0	0	**No change**
Fluoride	4	5	↑ 1
Lead	23	13	↓ 10
Nickel	4	2	↓ 2
Nitrate	5	6	↑ 1
Nitrite (at tap)	0	1	↑ 1
PAH	1	0	↓ 1
Pesticides	10	16	↑ 6
Trihalomethanes(Total)	70	98	↑ 28

↓ Improvement on 2011 ↑ Deterioration on 2011

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) or where notifications were received for the following key parameters is provided below: *E. coli*, trihalomethanes, lead, nitrate, and pesticides.

2.4.1 Boil Water Notices/Water Restrictions

In certain circumstances, the Health Service Executive (HSE) may advise the WSA that there is a potential danger to human health. The WSA 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 2012, 34 new boil water notices and 8 water restriction notices were put in place. 74 individual boil water or water restriction notices were active at some stage during the 2012, representing an increase from 73 active notices during 2011 (see Table 2-6).

Table 2-6: Summary of New Boil Notices / Water Restrictions during 2012.

Restriction Type	No. of Notices	No. of Supplies Affected
Boil Water Notices active during 2012:	47	43
Water Restrictions active during 2012 :	27	24
Total No. of Boil Notices / Water Restrictions:	**74**	**67**

The number of boil water notices active during 2012 decreased from 50 in 2011 to 47 in 2012. In summary, 42 BWN and WR affecting approximately 50,000 consumers were issued during 2012 while 66 BWN and WR affecting approximately 57,000 consumers were lifted. Further details of the public water supplies affected by boil water notices or water restriction notices during 2012 are provided in Appendix III.

There was an increase in the number of cases of cryptosporidiosis reported to the Health Protection Surveillance Centre (HPSC) in 2012 (556 in 2012 up from 428 in 2011) (www.hpsc.ie). While drinking water is not confirmed as the origin of the pathogenic organism in each case of sickness, it is generally recognised as a common source of ingestion of the parasite.

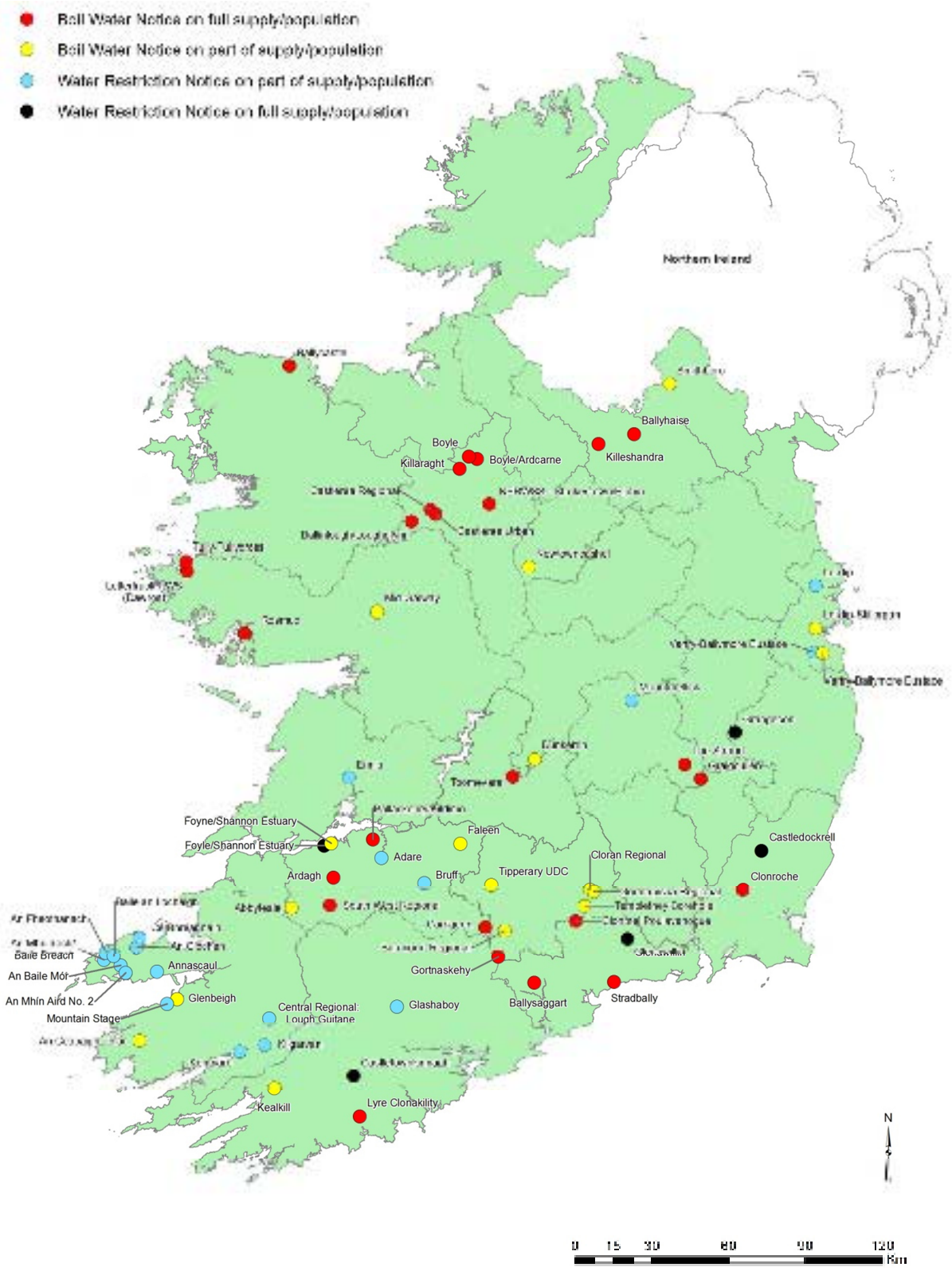

Figure 2-4: Map of Boil Water Notices/Restrictions of Use Placed or Active in Public Water Supplies during 2012.

2.4.2 *E. coli* Notifications

As outlined in Section 1.2, *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 31 occasions in in 25 public water supplies 2012 up from 26 occasions in 24 supplies in 2011. This increase in the detection of *E. coli* contamination in public water supplies follows an encouraging trend of general improvement in 2011, the previous reporting period.

In 2011 two supplies in which E. coli was detected found *E. coli* on more than one occasion whereas in 2012 four public water supplies detected *E. coli* on more than one occasion. (Table 2-7).

Table 2-7: Summary of *E. coli* Notifications.

	2011	2012
No. of PWS in which *E. coli* was detected	24	25
No. of times the detection of *E. coli* notified to the EPA	26	31

Analysis of the spread of notifications across the months of 2012 indicates that the months of June, September and October saw greater numbers of detections than other months. June 2012 saw rainfall above average in at all Met Éireann recording stations with the percentage of average values ranging from 107% to 377%. It was the wettest June on record in many areas and the longest highest daily fall record was broken. There were no *E. coli* detections during the month of July during which rainfall was near or above average in most areas. August and September, however, saw the number of notifications increase to five each month correlating with recorded rainfall levels once again exceeding monthly averages regionally, although some areas had levels below average. The pattern of notifications across the year correlates, in approximate terms, with periods of exceptional rain, particularly where this was preceded by dry weather. The same analysis of 2011 *E. coli* notifications reveals low numbers of notifications during the summer months and higher numbers during autumn. Summer 2011 had rainfall levels closer to normal averages whilst autumn 2011 had above average rainfall. Patterns for 2012 and 2012 are illustrated in Figure 2-5, below.

This analysis and approximate correlation with high rainfall in both 2012 and 2011 points to a need for WSAs to ensure that treatment systems are made more robust and capable of dealing with variations in raw water quality. Critically, responsiveness of treatment systems needs to be ensured also, particularly where raw water quality has shown to have potential to vary rapidly.

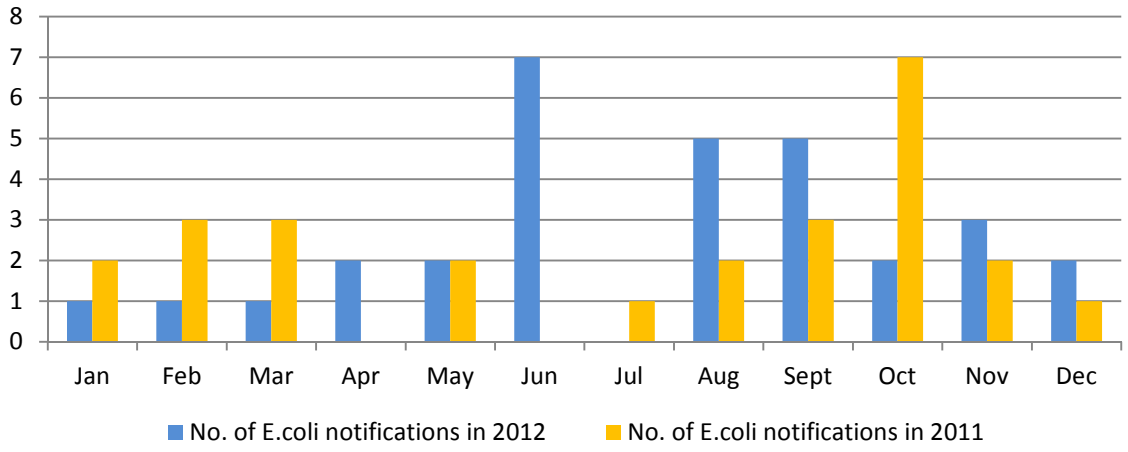

Figure 2-5. Number of *E. coli* Notifications in Public water Supplies in 2012 & 2011, month by month.

Further analysis examining the likely cause of *E. coli* failures in 2012 is shown in Figure 2-6. This analysis shows that the number of incidents caused by pollution of the source increased from zero in 2011 to five in 2012. Specifically, extreme rainfall events were identified as the cause in most of these cases. There was little change (13 in 2012 compared to 14 in 2011) in the number of incidents caused by network related issues (e.g. contamination at the tap or in the distribution network). The dramatic drop reported in last year's report in the number of failures attributed to inadequate treatment at the plant was sustained in 2012 with only one incident attributed to this cause during 2012. The number of incidents where chlorination process breakdown was identified as the cause was four, down from six in 2011. This reinforces the conclusions made last year concerning 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 paying yielding measurable and sustained outcomes. As with the 2011 results, the 2012 results highlight that a twin track approach of further improving and maintaining treatment and disinfection systems will be required in tandem with improvements in the distribution network if the number of *E. coli* incidents is to be reduced further.

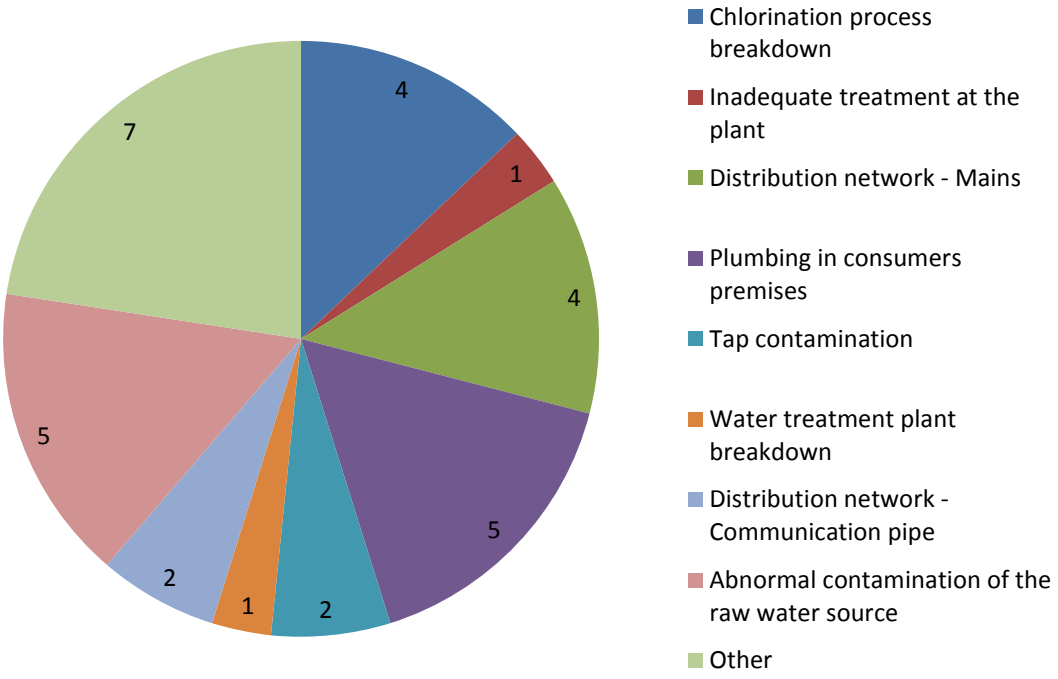

Figure 2-6. The main causes of *E. coli* Notifications in Public Water Supplies in 2012.

2.4.3 Trihalomethanes Notifications

There has been an increase in the number of public water supplies where the detection of trihalomethanes was notified to the EPA from 70 in 2011 to 98 in 2012. A breakdown of the main causes of the THM notifications is shown on Table 2-8. This shows that, as concluded in the previous reporting period, the majority of THM failures continue to be caused by the absence of adequate treatment to remove organic matter (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'. 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 published a position paper summarising the issues in relation to THMs 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. The elimination of all THMs exceedances remains 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 remedial works in these supplies to be completed before 2014. During 2012 the EPA pursued the enforcement of a number of legally binding Directions issued during 2011 which required appropriate actions to be taken to eliminate THM exceedances.

Of the 147 supplies on the RAL, 44 supplies, providing water to over 185,000 persons, have reported THM exceedances at least once. In other words, THM exceedances have been reported in approximately 5% of public water supplies. Considerable work is being undertaken by WSAs to improve such supplies. To assist WSAs in this work, the EPA published in 2012 a second revision of Drinking Water Advice Note No. 4 on Disinfection By-Products containing further guidance arising from the EPA National THM study. It is available to download at www.epa.ie.

Table 2-8: Summary of Causes of THM Failures, 2012.

Reason for the Failure	No. of Public Water Supplies
Inadequate treatment at the plant	55
Chemical dosing issues	5
Abnormal contamination of the raw water source	9
Distribution network	3
Chlorination process breakdown	0
Structural faults or maintenance in reservoirs	2
Water Treatment Plant operating above design capacity or under stress	2
Awaiting WSA investigations	4
Other	18

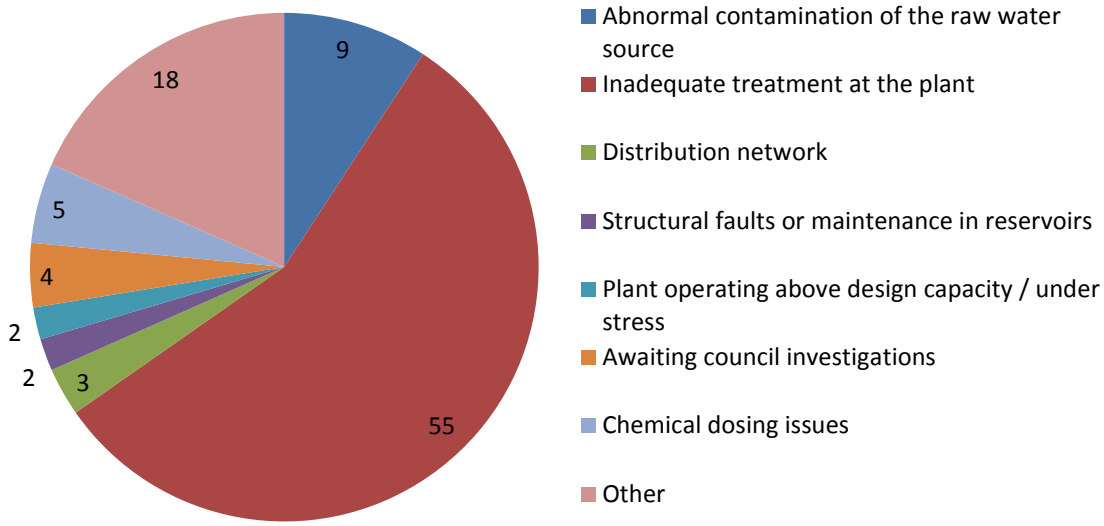

Figure 2-7. The main causes of THM Notifications in Public Water Supplies in 2012.

2.4.4 Nitrate Notifications

Elevated levels of nitrate above the parametric value of 50 mg/l were detected in seven supplies in 2012, an increase from five supplies in 2011. The seven supplies in 2012 were located in Waterford (three supplies), Wexford (two supplies) and Wicklow (two supplies).

The exceedances were attributed to diffuse pollution (four supplies) and abnormal contamination of the raw water source (one supply). No specific cause was identified at two of the supplies and subsequent samples taken as a part of the investigation were compliant.

Of the five supplies reporting elevated levels of nitrate in 2011, elevated nitrate levels have persisted in one supply which is being replaced by the WSA. Elevated nitrate levels were addressed in the four other affected supplies as follows:

- Installation of a nitrate removal system.
- Blending of high nitrate source with a source that has low levels, so that water supply is compliant.
- A combination of source protection and installation of a nitrate removal system
- Enforcement of GAP Regulations.

2.4.5 Lead Notifications

There has been a significant decrease in the number of public water supplies where lead failures were notified to the EPA from 23 public water supplies in 2011 to 9 in 2012. 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 WSA in conjunction with lead in consumers plumbing. Only one exceedance notified to the EPA was reported by the water Services Authority to be due to the presence of lead mains.

2.4.6 Pesticide Notifications

The EPA received 24 notifications of exceedances of the 0.1 µg/l parametric value for pesticides during 2012; an increase from 9 notifications in 2011. The exceedance notifications pertained to 16

public water supplies during 2012. This is an increase from 6 supplies in 2011 and 5 supplies in 2010. In all 16 supplies with pesticide notifications during 2012, the herbicide MCPA was identified. In one supply, a second herbicide, Mecoprop, was found to also exceed the limit.

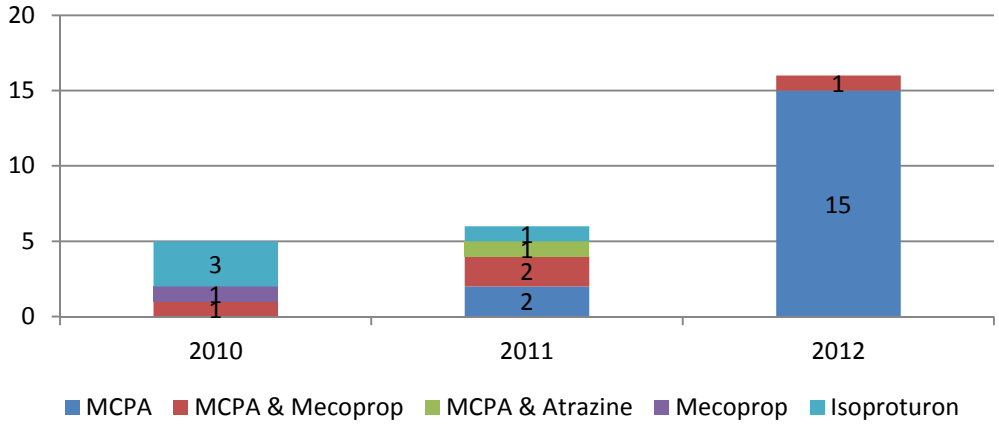

Figure 2-8: Numbers of supplies with pesticide exceedances 2010- 2012 with breakdown according to individual pesticide

The World Health Organisation sets guideline limit values for individual pesticides in drinking water. These guideline values are summarised in Table 2-9 along with a brief description of all pesticides detected in public water supplies over the past three years. The limit set by the 2007 Drinking water Regulations is 0.1 µg/l for any individual pesticide; this is much lower than the WHO guideline values taking a precautionary approach for the protection of human health.

Table 2-9 Profile of all pesticides detected in Public Supplies 2010-2012.

Pesticide	Description	WHO Guideline Value
MCPA:	Herbicide, most commonly used in Ireland to control rushes in pastureland.	2 µg/l
Mecoprop :	Widely used general herbicide. It often found as an ingredient in household weed-killers or 'weed-and-feed' type products used on lawns or sports fields to control broad-leaved weeds.	10 µg/l
Isoproturon:	Selective, systemic herbicide used in the control of annual grasses and broad-leaved weeds in cereals.	9 µg/l
Atrazine:	Selective, systemic herbicide used for the control of annual broad-leaved and grassy weeds in major crops, specifically maize and forestry. It has been banned for use in Ireland since 2007.	100 µg/l

A trend of overall increase in the number of supplies with pesticide notifications has emerged over the past 3 years. Notifications received by the EPA for the herbicide MCPA have increased, notably, in number. Its prevalence over all other pesticides has increased also.

MCPA is most commonly used for the control of rushes in marginal pasture land. Wet weather has had a significant influence on their recent dominance. The years 2010 to 2012 saw successive wet summers with annual average rainfalls recorded as above average in most parts of the country. In general, water tables rose and pastureland vegetation responded accordingly with rushes becoming established, in many instances, normally dry fields. In order to maintain land for agricultural use such as grazing, the application of chemicals like MCPA has become more widespread.

The EPA has prepared *Advice Note No. 13: Pesticides in Drinking Water* to provide guidance to Water Services Authorities (WSAs) where pesticides have been detected in drinking water and on the actions that should be taken in such an event. This Advice Note is available to download on www.epa.ie. Actions recommended to WSAs by the EPA where exceedances have been detected focus on identifying the source first and enacting catchment-based control measures. Treatment to remove pesticides is recommended only either as a temporary solution where the HSE has deemed the concentrations in drinking water to constitute a risk to human health or where catchment-based preventative measures have proved insufficient in reducing levels in raw waters.

Since the publishing of the Advice Note on Pesticides in Drinking Water, a "Pesticides Working Group" has been convened by the EPA to address pesticide-related concerns and issues which were raised during the preparation of the advice note but which fell outside of its scope. The group convenes pesticide and drinking water quality management expertise from representatives of the WSAs, the River Basin Districts, the National Federation of Group Water Schemes, the HSE, the Department of Agriculture, Food and the Marine, Teagasc and from the commercial pesticides sector also. The main focus of the Working Group is on review existing information available on pesticides and on addressing any gaps identified by preparing standardised guidance / information. Deliverables of the Pesticide Working Group will include specific guidance on MCPA for professional users with dual objectives of promoting its correct and effective usage and the preventing its entry to drinking water sources.

2.5 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 WSA are adequate.

The EPA issued four legally binding Directions to two WSAs during 2012, 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 2-10.

Table 2-10: Summary of EPA Enforcement Actions, 2012.

Action	Received / Issued under:	2012
Directions Issued:	Under Regulation 9:	1
	Under Regulation 10:	0
	Under Regulation 13	0
	Under Regulation 16[13]:	3
Prosecutions:	Under the DW Regulations 2007:	1

Of the four Directions issued during 2012, three have been complied with by the WSAs and were subsequently closed by the EPA while the remaining Direction is in the process of being complied with by the WSA. The EPA took one prosecution against Mayo County Council in 2012 for failing to comply with a Direction in respect of the Lough Mask Public Water Supply.

Overall, there are currently 16 "Open" Directions that were issued in or prior to 2012. A Direction is considered to be "Open" if there are outstanding issues that must be actioned by the WSA. Table 2-11 provides details of these open directions.

Table 2-11: Breakdown of Open Directions Issued to WSAs.

WSA	Supply	Reason for Direction	Date of Issue	Status of Open Directions
Sligo	North Sligo Water Supply	Iron and Turbidity exceedances and no Chlorine Monitor or Alarm	24-Sep-07	Action Programme being implemented by Local Authority
Mayo	L. Mask RWSS	Trihalomethanes exceedances and inadequate action plan submitted	21-Apr-09	WSA prosecuted for non-compliance with Direction
Roscommon	Castlerea Urban	No *Cryptosporidium* barrier in place and no action plan submitted	08-Nov-10	On-going EPA enforcement action
Clare	Ennis PWS	No timeframe submitted for the removal of lead mains in the network	06-Jan-11	Action programme is being implemented by the WSA
Donegal	Letterkenny PWS	Trihalomethanes exceedances and inadequate action plan submitted	24-Mar-11	Action programme is being implemented by the WSA
Donegal	Fintown PWS	Trihalomethanes exceedances and inadequate action plan	24-Mar-11	Action programme is being implemented by the WSA

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

WSA	Supply	Reason for Direction	Date of Issue	Status of Open Directions
		submitted		
Donegal	Cashilard PWS	Trihalomethanes exceedances and inadequate action plan submitted	24-Mar-11	Action programme is being implemented by the WSA
Donegal	Ballyshannon PWS	Trihalomethanes exceedances and inadequate action plan submitted	24-Mar-11	Action programme is being implemented by the WSA
Donegal	Gortahork/ Falcarragh PWS	Trihalomethanes exceedances and inadequate action plan submitted	09-Sep-11	Currently under Assessment by the EPA
Donegal	Rathmullen PWS	Trihalomethanes exceedances and inadequate action plan submitted	09-Sep-11	Upgrade works to be completed by September 2013
Donegal	Greencastle PWS	Trihalomethanes exceedances and inadequate action plan submitted	09-Sep-11	Upgrade works to be completed by September 2013
Donegal	Portnoo Narin PWS	Trihalomethanes exceedances and inadequate action plan submitted	09-Sep-11	Upgrade works to be completed by September 2013
Galway	Kilkerrin Moylough PWS	No *Cryptosporidium* barrier in place and no action plan submitted	26-Sep-11	Action programme is being implemented by the WSA
Kerry	Lisardboola PWS	No timeframe submitted for the removal of lead mains in the network	28-Sep-11	Works to be completed by December 2013
Cork	Mallow PWS	No timeframe submitted for the removal of lead mains in the network	28-Sep-11	Works to be completed by December 2013
Laois	The Strand	No Chlorine monitor of Alarm	19-Oct-12	Action programme is being implemented by the WSA

2.6 Removal of Lead Distribution Mains

In order to address the issue of lead in drinking water, the EPA regularly surveys WSAs to identify any remaining lead distribution mains still in place. The results of the most recent assessment indicate that approximately 5,000 m of lead mains remain in place in three public water supplies. The full list and location of these mains and also the length of mains removed in these supplies since 2010, is included in Table 2-12. 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 2-12. Locations of Remaining Lead Distribution Mains

Water Services Authority	Name of Water Supply	Mains removed since 2010	Length of Main(s)
Clare County Council	Ennis	205 m	1135m
Cork County Council	Mallow	0 m	1557 m
Kerry County Council	Lough Guitane	1,071 m	2274 m
Longford County Council	Longford Central	1,220 m	0 m
Longford County Council	Granard	305 m	0 m

The EPA has issued Directions to Cork County Council and Clare County Council in respect of the removal of lead mains in Mallow and Ennis, respectively. The action plans submitted by the two WSAs require that the lead mains are replaced by Dec 2013 in the case of Mallow and by September 2011 in the case of Ennis. Clare County Council is currently in the process of removing the lead

mains from the Ennis supply and has removed 165 m of lead mains so far in 2013. Cork County Council has not yet began the process of removing the remaining lead mains in the Mallow supply.

In 2011, three 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). As can be seen in Table 2-12, the remaining lead mains in the Longford Central and Granard supplies were replaced in September 2013. Kerry County Council has not yet began the process of removing the remaining lead mains in the Lough Guitane supply.

While the replacement of lead mains in these areas will reduce lead concentrations that consumers are exposed to, 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 may 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.

2.7 Emerging Issues in Drinking Water

Heavy rainfall in the summer of 2012 affected compliance levels in private supplies. The number of VTEC infections in the community reported by the HSE in 2012 was 563 notifications compared with 284 in 2011. Part of the increase in 2012 is explained by improved sensitivity of laboratory testing methods. Most cases have occurred in rural areas.

The identification and management of small private supplies by WSAs needs to be improved to ensure the provision of safe and secure drinking water from these supplies. WSAs are also required to identify exempted supplies and provide advice to owners to protect human health in accordance with EPA advice note 12: Exempted Drinking Water Supplies.

Heavy rainfall also affected compliance levels in public water supplies. During the summer of 2012, the frequency of notified exceedances of the parametric limits in public water supplies increased. Improved source protection and robust treatment processes are required to cope with such weather events. WSAs should have an operational Drinking Water Incident Response Plans (DWIRP) in place, in accordance with the requirements of the Department of the Environment, Community and Local Government (DEHLG) Circular letter L4/09 issued in April 2009 to deal with such adverse weather conditions.

THM compliance deteriorated significantly during 2012. To improve compliance, WSAs should examine the cause of trihalomethanes exceedances and should optimise 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. WSAs should have regard to the EPA Advice note on disinfection by-products in drinking water.

A trend of overall increase in pesticide exceedances has emerged over the years 2010 to 2012 and the herbicide MCPA has increased in prevalence amongst notifications to the EPA over this period. *Advice Note No. 13: Pesticides in Drinking Water* has been prepared for WSAs detecting pesticide exceedances to reference and further guidance material will be produced by the multi-agency Pesticide Working Group in 2013 and 2014.

The quality of water in Small Private Supplies has been shown to be inferior to that of public water supplies and group water schemes. Many operators of commercial companies or activities have or are likely to drill private wells in an attempt to reduce costs. The monitoring data from 2012 illustrates that a significant portion of such supplies are contaminated and not suitable for consumption without treatment. Owners or commercial companies or activities proposing to do this need to be aware of the risks of this practice and indeed private home owners need to be aware of the potential health implications of replacing their public mains supply with a private well.

3.

Findings and Recommendations

3. FINDINGS AND RECOMMENDATIONS

The main recommendations presented in this chapter are based on an assessment of monitoring results for 2012 and EPA enforcement of the Drinking Water Regulations in 2012. 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 WSAs 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. In Ireland, 82% of the population is served by 932 WSA operated public water supplies. The remaining 18% is served by 632 public group water schemes (serving 2.3% of the population), 433 private group water schemes (serving 4.3%), 1,705 small private supplies (serving 0.8%) and private wells that are exempt from the regulations (serving 10.6%).

Findings – Public Water Supplies

1. 237 (70%) 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.

2. There are now 147 supplies on the EPA Remedial Action List. The WSAs have indicated that remedial works in a further 70 supplies will be complete by the end of 2013.

3. *E. coli* was detected in 7 (0.8%) public water supplies during compliance monitoring in 2012 as compared to 12 (1.3%) supplies in 2011. The number has reduced from 87 in 2005, representing a 92% reduction in the past seven years.

4. At the end of 2012, one public water supply did not have a chlorine monitor or alarm in place.

5. Nitrate exceedances were reported in five public water supplies in both 2011 and 2012. However, the population affected by nitrate exceedances decreased from 3,293 in 2011 to 820 in 2012.

6. Public water supply compliance with the chemical standards disimproved from 99.5% in 2011 to 99.3% in 2012.

7. The number of public water supplies failing to meet the trihalomethanes parametric value disimproved from 10.9% in 2011 to 14.9% in 2012. This was due to the poor weather conditions in the summer of 2012 and the inability of some treatment plants to adequately cope with raw waters during this period.

8. Aluminium compliance was 98.8% in both 2011 and 2012 while turbidity (at the water treatment plant) compliance improved from 95.5% in 2011 to 96.0% in 2012.

9. Pesticide exceedances were notified to the EPA in respect of 16 public water supplies in 2012; an increase from 6 in 2011. Notably, the herbicide MCPA has increased both in the number of notifications and in its prevalence over other pesticides.

10. In 2012, WSAs issued 42 Boil Water Notices (BWN) and Water Restrictions (WR) affecting approximately 50,000 consumers while 66 BWN and WR affecting approximately 57,000 consumers were lifted.

11. EPA Groundwater E-Audits undertaken in 2012 found that 13 of 47 supplies visited had poor source protection, poorly protected springs or well heads and 10 had evidence of microbiological contamination in raw water sampling. A significant proportion of the groundwater supplies audited, therefore, were of questionable integrity and security.

12. EPA general audits in 2012 found that, in tandem with improvements across some key indicators at drinking water treatment plants visited, there were disimprovements in other equally critical areas. The findings highlighted the need for further improvements in the operation of filters, the achievement of final water turbidity of less than 1.0 NTU and in the protection of spring and well head sources from surface water ingress. Prolonged periods of heavy rainfall experienced during 2012 appear to have tested the robustness and of treatment processes in many cases and their ability to respond to changing raw water conditions.

13. The 2012 drinking water returns showed that 66 Water Safety Plans are in preparation and two are complete.

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

1. The number of Small Private Supplies that were monitored for *E. coli* in 2012 was 1,303 compared to 1,059 in 2011.

2. The microbiological quality of **public group water schemes** improved in 2012 with 0.2% of supplies contaminated with *E. coli,* down from 0.7% in 2011.

3. The level of non-compliance with the trihalomethanes parametric value in **public group water schemes** disimproved from 12.4% in 2011 to 28.4% in 2012. The incidence of failure to meet the trihalomethanes parametric value was higher than the parent public water supplies (14.9%) from which the water is taken, indicating that management of the networks needs to be improved.

4. There has been a significant improvement in the microbiological quality of the **private group water schemes** in 2012. Nonetheless, 26 schemes (6.4%) were found to be contaminated with *E. coli* at least once during 2012, down from 46 (10.2%) in 2011. Since 2005, the number of private group water schemes contaminated with *E. coli* has dropped by 89%. However, the quality of drinking water in private group water schemes still remains inferior to that in public water supplies.

5. There has been a disimprovement in the microbiological quality of **small private supplies** in 2012. 147 supplies (11.3%) were found to be contaminated with *E. coli* at least once during 2012, up from 82 (7.7%) in 2011.

Recommendations - Public Water Supplies

1. WSAs 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 WSA should 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. WSAs 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. WSAs 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 by the seven WSAs who provide drinking water to the largest populations in Ireland (Drinking Water Safety Plan Working Group members). WSAs should also commence the preparation of Water Safety Plans for selected small supplies.

4. WSAs 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. Where the necessary works are complete, the WSA should collate and submit monitoring data without delay, so the EPA can verify the effectiveness of the remedial works to enable the supply to be removed from the RAL.

5. WSAs 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. WSAs should carry out chlorine residual monitoring in the network at a frequency which allows WSA personnel to respond quickly to any deviation in chlorine levels in the network.

7. WSAs should ensure that all disinfection systems are operated in such a way that undisinfected water does not enter the distribution mains at any time. WSAs 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 disinfection by-product formation. Disinfection contact times should be calculated for all supplies and it should be ensured that adequate contact time is achieved prior to serving the first consumer.

8. WSAs should ensure that filters are managed correctly and their performance reviewed regularly as a matter of priority. Final water turbidity should be closely monitored and responsive action taken as is necessary in order to achieve levels of less than 1.0 NTU at all times

9. WSAs 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.

10. Where public water supplies are using surface water or water influenced by surface water as their source, WSAs should ensure that a *Cryptosporidium* treatment barrier is in place. If these barriers are not in place, WSAs 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.

11. WSAs should examine the cause of trihalomethanes exceedances and should optimise plant operation and management of the distribution network to reduce the levels of THMs in supply. The formation of THMs can be minimised by effective coagulation, sedimentation and filtration by removing organic precursors prior to final disinfection or by additional treatment to slow sand filters. However, the efficiency of the disinfection system must never be compromised in an attempt to reduce THM levels. WSAs should have regard to the recently published EPA Advice note on disinfection by-products in drinking water.

12. WSAs detecting pesticide exceedances in public water supplies should have regard to *Advice Note No. 13: Pesticides in Drinking Water* in determining the appropriate actions to take.

13. When conducting a lead survey, WSAs should have regard to the new lead parametric value of 10 µg/l (effective from 25th December 2013) and to the EPA Advice Note No. 1: *Lead Compliance Monitoring and Surveys.*

14. WSAs 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.

15. WSAs 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.

16. Prolonged heavy rainfall events experienced during the summer of 2012 challenged many treatment processes in public water supplies. WSAs should ensure that treatment process are both robust and responsive to changing raw water quality order to effectively and reliably treat water that meets the standards set in the Drinking Water Regulations in all conditions.

17. WSAs 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.

18. 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. WSAs should ensure that the level of *E. coli* monitoring in Small Private Supplies is improved as a matter of priority and that the monitoring frequencies are in line with those set out in the Regulations.

2. WSAs 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. WSAs should take the appropriate enforcement action where there is evidence that such investigations and actions are not being undertaken.

3. WSAs 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 WSA should use enforcement powers under the 2007 Regulations to bring the supply into compliance.

4. WSAs 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 WSA does not deteriorate in the group water schemes distribution network.

4.

Appendices

APPENDIX I - SUMMARY REPORTS FOR ALL WSAS.

CARLOW COUNTY COUNCIL

Summary of Public Water Supply Quality in 2012

Carlow County Council is responsible for the operation of 14 Public Water Supplies (PWS) serving a population of 47,786.

Microbiological compliance levels in PWSs in Carlow increased from 99.0% in 2011 to 100% in 2012. Chemical compliance levels increased from 99.5% in 2011 to 99.9% in 2012.

	Micro	Chemical
2012	100.0	99.9

Microbiological Parametric Values:

No non-compliances of the microbiological parametric values occurred during 2012.

Chemical Parametric Values:

A summary of the PWS with non-compliances of the chemical parametric values during 2012 is as follows:

	2012
Parameter	**Name of PWS**
Trihalomethanes	Carlow Central Regional (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

No boil water notices or water restriction notices were issued to consumers by Carlow County Council during 2012 and none remained active during 2012 from previous years.

EPA Enforcement in 2012

Remedial Action List

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

Audits of Drinking Water Treatment Plants

The following drinking water treatment plant was audited by the EPA during 2012:

Date Audited	PWS Audited
June-12	Carlow Town

CAVAN COUNTY COUNCIL

Summary of Public Water Supply Quality in 2012

Cavan County Council is responsible for the operation of 17 Public Water Supplies (PWS) serving a population of 25,015.

Microbiological compliance in Cavan PWSs decreased from 100% in 2011 to 99.3% in 2012. Chemical compliance levels increased from 97.9% in 2011 to 98.2% in 2012.

	Micro	Chemical
2012	99.3	98.2

Microbiological Parametric Values:

A summary of the PWS with microbiological non-compliances during 2012 is as follows:

Parameter	2012 Name of PWS
Enterococci	Killeshandra P.W.S. (1)
Total No.:	**1**

Chemical Parametric Values:

A summary of the PWS with non-compliances of the chemical parametric values during 2012 is as follows:

Parameter	2012 Name of PWS
Pesticides -Total	Cavan R.W.S.S. (1)
Pesticides (MCPA)	Ballyjamesduff R.W.S.S (3) Cavan R.W.S.S. (2) Kingscourt (1) Gowna (1) Arvagh (1) Belturbet (1)
Total No.:	**10**

The Pesticides exceedances were due to elevated levels of Pesticides in the raw water.

Boil Water Notices & Water Restrictions

A summary of boil water notices (BWN) and water restriction (WR) notices issued to consumers by Cavan County Council or active during 2012 is as follows (full details in Appendix III):

Date Issued	Date Lifted/ Active	BWN/ WR[1]	Name of PWS	Reason
Jul-12	Jul-12	BWN	Ballyhaise	Coliform Bacteria
Aug-12	Sep-12	BWN	Killeshandra	Coliform Bacteria

Two new boil water notices were issued during 2012 and none remained in place from the previous year. At the end of 2012, no boil notices or water restrictions remained in place on Cavan County Council's PWS.

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

EPA Enforcement in 2012

Remedial Action List

No. of PWS on the RAL at the end of 2012:	3
No. of PWS added to RAL in 2012:	0
No. of PWS removed from RAL in 2012:	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 2012, two public water supplies (Cavan R.W.S.S and Cootehill) in Cavan were removed from the RAL as remedial works had been completed to the satisfaction of the EPA. No public water supplies in Cavan were added to the RAL in 2012. For full details on RAL supplies in Cavan, see www.epa.ie

Audits of Drinking Water Treatment Plants

The EPA did not carry out any audits of drinking water treatment plants during 2012.

CLARE COUNTY COUNCIL

Summary of Public Water Supply Quality in 2012

Clare County Council is responsible for the operation of 21 Public Water Supplies (PWS) serving a population of 79,913.

Microbiological compliance in Clare PWSs was 100% in both 2011 and 2012. Chemical compliance levels decreased from 100% in 2011 to 99.2% in 2012.

	Micro	Chemical
2012	100	99.2

Microbiological Parametric Values:

No non-compliances of the microbiological parametric values occurred during 2012.

Chemical Parametric Values:

A summary of the PWS with non-compliances of the chemical parametric values during 2012 is as follows:

Parameter	2012 Name of PWS
Trihalomethanes	Limerick City Council RWS (4) W.Clare RWS New (1)
Fluoride	Shannon/Sixmilebridge RWSS (1)
Lead	Killaloe PWS (1)
Total No.:	**7**

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. The lead non-compliance was most likely due to the presence of lead piping in the consumer's internal plumbing.

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 2012 is as follows (full details in Appendix III):

Date Issued	Date Lifted/ Active	BWN / WR[2]	Name of PWS	Reason
Oct-08	Active	WR	Ennis*	Lead

*BWN/WR affected part of the supply zone

One water restriction notice remained active during 2012 from previous years. No new boil water notices were issued during 2012. One water restriction remained active at the end of 2012 for part of the Ennis PWS (approximately 80 people are affected).

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

EPA Enforcement in 2012

Remedial Action List

No. of PWS on the RAL at the end of 2012:	0
No. of PWS added to RAL in 2012:	0
No. of PWS removed from RAL in 2012:	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 2012, one public water supply (Turlough) was removed from the RAL due to the completion of the necessary remedial works to the satisfaction of the EPA. No public water supplies in Clare were added to the RAL in 2012. For full details on RAL supplies in Clare, see www.epa.ie

Audits of Drinking Water Treatment Plants

The EPA did not carry out any audits of drinking water treatment plants during 2012.

CORK CITY COUNCIL

Summary of Public Water Supply Quality in 2012

Cork City Council is responsible for the operation of 1 Public Water Supply (PWS) serving a population of 125,230.

Microbiological compliance levels were 100% in both 2011 and 2012. Chemical compliance levels decreased from 100% in 2011 to 99.8% in 2012.

	Micro	Chemical
2012	100	99.8

Microbiological Parametric Values:

No non-compliances of the microbiological parametric values occurred during 2012.

Chemical Parametric Values:

A summary of the PWS with non-compliances of the chemical parametric values during 2012 is as follows:

	2012
Parameter	Name of PWS
Nickel	Cork City Water Supply (1)
Total No.:	1

The nickel non-compliance was a once off occurrence and all follow up samples were clear.

Boil Water Notices & Water Restrictions

No boil water notices or water restriction notices were issued to consumers by Cork City Council during 2012 and none remained active during 2012 from previous years.

EPA Enforcement in 2012

Remedial Action List

No. of PWS on the RAL at the end of 2012:	1
No. of PWS added to RAL in 2012:	0
No. of PWS removed from RAL in 2012:	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 the end of 2014. For full details on RAL supplies in Cork City, see www.epa.ie

Audits of Drinking Water Treatment Plants

The EPA did not carry out any audits of drinking water treatment plants during 2012.

CORK COUNTY COUNCIL

Summary of Public Water Supply Quality in 2012

Cork County Council is responsible for the operation of 180 Public Water Supplies (PWS) serving a population of 334,637.

Microbiological compliance in Cork PWSs has increased from 99.7% in 2011 to 99.9% in 2012. Chemical compliance levels have increased from 99.2% in 2011 to 99.3% in 2012.

	Micro	Chemical
2012	99.9	99.3

Microbiological Parametric Values:

A summary of the PWS with microbiological non-compliances during 2012 is as follows:

Parameter	2012 Name of PWS
E. coli	Ballyvisteen (1)
Total No.:	**1**

Chemical Parametric Values:

A summary of the PWS with non-compliances of the chemical parametric values during 2012 is as follows:

Parameter	2012 Name of PWS
Trihalomethanes	Ballingeary (1) Drimoleague (1) Glengarriff (1) Kealkill (1) Leap (1) Schull (1)
Fluoride	Cork Harbour & City (2) Glanworth (1)
Total No.:	**9**

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 2012 are detailed below (full details in Appendix III):

Date Issued	Date Lifted/ Active	BWN / WR[3]	Name of PWS	Reason
Mar-07	Feb-12	WR	Castletownkinnagh	Nitrate
Nov-08	Active	WR	Glashaboy*	Lead
Jul-10	Active	WR	Glashaboy*	Lead
Oct-11	Feb-12	BWN	Gortnaskehy	Inadequate Disinfection
Jun-12	Jul-12	BWN	Kealkill*	*Cryptosporidium*
Aug-12	Aug-12	BWN	Lyre Clonakility	Precautionary

*BWN/WR affected part of the supply zone

Two new boil water notices were issued during 2012 and one that remained in place from previous years was lifted. One new water restriction notice was issued but two remained in place (two in Glashaboy) from previous years. One water restriction notice from previous years was lifted in 2012(Castletownkinnagh).

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

EPA Enforcement in 2012

Remedial Action List

No. of PWS on the RAL at the end of 2012:	13
No. of PWS added to RAL in 2012:	0
No. of PWS removed from RAL in 2012:	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 2012, nine public water supplies in Cork were removed from the RAL and none were added. For full details on RAL supplies in Cork, see www.epa.ie

Audits of Drinking Water Treatment Plants

The following drinking water treatment plants were audited by the EPA during 2012:

Date Audited	PWS Audited
Mar-12	Allow Regional
Mar-12	Crookstown
Aug-12	Kealkill
Aug-12	Lyre Clonakilty
Feb-12	Ballyvisteen
Feb-12	Ballykenley/Johnstown
Mar-12	Newmarket
Mar-12	Charleville

DONEGAL COUNTY COUNCIL

Summary of Public Water Supply Quality in 2012

Donegal County Council is responsible for the operation of 34 Public Water Supplies (PWS) serving a population of 136,579.

Microbiological compliance in Donegal PWSs has increased from 99.5% in 2011 to 100% in 2012. Chemical compliance levels decreased from 99.4% in 2011 to 99.1% in 2012.

	Micro	Chemical
2012	100	99.1

Microbiological Parametric Values:

No non-compliances of the microbiological parametric values occurred during 2012.

Chemical Parametric Values:

A summary of the PWS with non-compliances of the chemical parametric values during 2012 is as follows:

Parameter	2012 Name of PWS
Trihalomethanes	Cashilard (1) Fintown (1) Greencastle (1) Letterkenny (2) Portnoo-Narin (1) Rathmullen (2) Burnfoot (1) Creeslough (1) Owenteskna (5) Fanad West (Tullyconnell) (1) Glenties-Ardara (2) Gortahork-Falcarragh (2) Pettigo (1) Rosbeg (1)
Copper	Letterkenny Mixed (1)
Lead	Carrigart-Downings (1)
Pesticides (MCPA)	Donegal Eske (1) Killybegs (1) Pollan Dam (2)
Total No.:	**28**

The copper and lead non-compliances were most likely due to the consumer's internal plumbing while the trihalomethanes non-compliances were primarily due to the chlorination of water with elevated levels of organic matter present. The pesticide exceedances were due to elevated levels of the pesticide, MCPA, in the source water.

Boil Water Notices & Water Restrictions

No boil water notices or water restriction notices were issued to consumers during 2012 and none remained active from previous years.

EPA Enforcement in 2012

Remedial Action List

No. of PWS on the RAL at the end of 2012:	14
No. of PWS added to RAL in 2012:	1
No. of PWS removed from RAL in 2012:	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 2012, one public water supply in Donegal was added to the RAL (Creeslough PWS) and none were removed. For full details on RAL supplies in Donegal, see www.epa.ie

Audits of Drinking Water Treatment Plants

The following drinking water treatment plants were audited by the EPA during 2012:

Date Audited	PWS Audited
Feb-12	Ballyshannon
Mar-12	Pettigo

DUBLIN CITY COUNCIL

Summary of Public Water Supply Quality in 2012

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 was 100% in both 2011 and 2012. Chemical compliance levels increased from 99.5% in 2011 to 99.6% in 2012.

	Micro	Chemical
2012	100	99.6

Microbiological Parametric Values:

No non-compliances of the microbiological parametric values occurred during 2012.

Chemical Parametric Values:

A summary of the PWS with non-compliances of the chemical parametric values during 2012 is as follows:

Parameter	2012 Name of PWS
Lead	Ballymore Eustace (1) Ballyboden (1) Vartry-Ballymore Eustace (2)
Total No.:	4

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

Boil Water Notices & Water Restrictions

A summary of boil water notices (BWN) and water restriction (WR) notices active or issued to Dublin City Council consumers during 2012 are detailed below (full details in Appendix III):

Date Issued	Date Lifted/ Active	BWN / WR[4]	Name of PWS	Reason
Mar-12	Mar-12	WR	Vartry-Ballymore Eustace*	*E.coli*
Jul-12	Sep-12	WR	Vartry-Ballymore Eustace*	Odour
Aug-12	Aug-12	WR	Vartry-Ballymore Eustace*	Coliform Bacteria
Aug-12	Aug-12	BWN	Leixlip-Stillorgan*	Coliform Bacteria
Aug-12	Aug-12	BWN	Vartry-Ballymore Eustace*	Coliform Bacteria

*BWN/WR affected part of the supply zone

Two new boil water notices were issued during 2012. No boil water notices or water restrictions remained active from previous years. Three new water restriction notices were issued during 2012. At the end of 2012, no boil water notices or water restrictions remained in place.

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

EPA Enforcement in 2012

Remedial Action List

No. of PWS on the RAL at the end of 2012:	3
No. of PWS added to RAL in 2012:	0
No. of PWS removed from RAL in 2012:	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 2012, no public water supplies in Dublin City were removed or added to the RAL. For full details on RAL supplies in Dublin City, see www.epa.ie

Audits of Drinking Water Treatment Plants

The EPA did not carry out any audits of drinking water treatment plants during 2012.

DUN LAOGHAIRE RATHDOWN COUNTY COUNCIL

Summary of Public Water Supply Quality in 2012

Dun Laoghaire Rathdown County Council is responsible for the operation of 8 Public Water Supplies (PWS) serving a population of 202,500.

Microbiological compliance in Dun Laoghaire Rathdown PWSs was 100% in both 2011 and 2012. Chemical compliance levels have decreased from 100% in 2011 to 99.7% in 2012.

	Micro	Chemical
2012	100	99.7%

Microbiological Parametric Values:

No non-compliances of the microbiological parametric values occurred during 2012.

Chemical Parametric Values:

A summary of the PWS with non-compliances of the chemical parametric values during 2012 is as follows:

Parameter	2012 Name of PWS
Trihalomethanes	Ballyedmonduff (1) Roundwood (1)
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 2012 and none remained active from previous years.

EPA Enforcement in 2012

Remedial Action List

No. of PWS on the RAL at the end of 2012:	3
No. of PWS added to RAL in 2012:	0
No. of PWS removed from RAL in 2012:	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 2012, no public water supplies in Dun Laoghaire Rathdown were removed or added to the RAL. For full details on RAL supplies in Dun Laoghaire Rathdown, see www.epa.ie

Audits of Drinking Water Treatment Plants

The EPA did not carry out any audits of drinking water treatment plants during 2012.

FINGAL COUNTY COUNCIL

Summary of Public Water Supply Quality in 2012

Fingal County Council is responsible for the operation of 2 Public Water Supplies (PWS) serving a population of 259,100.

Microbiological compliance in Fingal PWSs has increased from 99.7% in 2011 to 100% in 2012. Chemical compliance levels decreased from 100% in 2011 to 99.5% in 2012.

	Micro	Chemical
2012	100	99.5

Microbiological Parametric Values:

No non-compliances of the microbiological parametric values occurred during 2012.

Chemical Parametric Values:

A summary of the PWS with non-compliances of the chemical parametric values during 2012 is as follows:

Parameter	2012 Name of PWS
Lead	Bog of the Ring (1)
Nickel	Bog of the Ring (1)
Total No.:	**2**

The lead non-compliance was attributed to the presence of lead communication pipes in the distribution network while the nickel non-compliance was attributed to the consumer's internal plumbing.

Boil Water Notices & Water Restrictions

A summary of boil water notices (BWN) and water restriction (WR) notices active or issued to Fingal County Council consumers during 2012 are detailed below (full details in Appendix III):

Date Issued	Date Lifted/ Active	BWN/ WR[5]	Name of PWS	Reason
Oct-11	Active	WR	Leixlip*	Copper & Nickel

*BWN/WR affected part of the supply zone

No new boil notices or water restriction notices were issued to consumers during 2012. One water restriction notice remained active from the previous year. At the end of 2012 one water restriction remained in place.

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

EPA Enforcement in 2012

Remedial Action List

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

Audits of Drinking Water Treatment Plants

The following drinking water treatment plant was audited by the EPA during 2012:

Date Audited	PWS Audited
Nov-12	Leixlip

GALWAY CITY COUNCIL

Summary of Public Water Supply Quality in 2012

Galway City Council is responsible for the operation of 1 Public Water Supply (PWS) serving a population of 75,415.

Microbiological compliance in the Galway City PWS was 100% in both 2011 and 2012. Chemical compliance levels decreased from 100% in 2011 to 99.9% in 2012.

	Micro	Chemical
2012	100	99.9

Microbiological Parametric Values:

No non-compliances of the microbiological parametric values occurred during 2012.

Chemical Parametric Values:

A summary of the PWS with non-compliances of the chemical parametric values during 2012 is as follows:

Parameter	2012 Name of PWS
Nitrites (at WTW)	Galway City Council P.W.S.S. (1)
Total No.:	1

The nitrites (at WTW) non-compliance was once off occurrence and all follow up samples were clear.

Boil Water Notices & Water Restrictions

No boil water notices or water restriction notices were issued to consumers by Galway City Council during 2012 and none remained active during 2012 from previous years.

EPA Enforcement in 2012

Remedial Action List

There are no supplies in Galway City on the Remedial Action List.

Audits of Drinking Water Treatment Plants

The EPA did not carry out any audits of drinking water treatment plants during 2012.

Galway City Council was the first WSA in Ireland to fully implement the Water Safety Plan approach to manage the Galway City public water supply.

GALWAY COUNTY COUNCIL

Summary of Public Water Supply Quality in 2012

Galway County Council is responsible for the operation of 38 Public Water Supplies (PWS) serving a population of 106,824.

Microbiological compliance in Galway County PWSs was 100% in both 2011 and 2012. Chemical compliance levels decreased from 99.6% in 2011 to 99.5% in 2012.

	Micro	Chemical
2012	100	99.5

Microbiological Parametric Values:

No non-compliances of the microbiological parametric values occurred during 2012.

Chemical Parametric Values:

A summary of the PWS with non-compliances of the chemical parametric values during 2012 is as follows:

Parameter	2012 Name of PWS
Fluoride	Oughterard (1)
Lead	Ballinasloe (1)
Trihalomethanes	Carraroe (2) Inishere (1) Kinvara (1) Ballinasloe (1) Ballyconneely (1) Portumna (1) Leenane (1)
Total No.:	**10**

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-compliance was due to the presence of a lead communication pipe in the supply.

Boil Water Notices & Water Restrictions

A summary of boil water notices (BWN) and water restriction (WR) notices issued to consumers or active during 2012 are detailed below (full details in Appendix III):

Date Issued	Date Lifted/ Active	BWN/ WR[6]	Name of PWS	Reason
Oct-08	May-12	BWN	Letterfrack	*Cryptosporidium*
Oct-08	Mar-12	BWN	Rosmuc	*Cryptosporidium*
Aug-10	May-12	BWN	Tully-Tullycross	*E. coli*
Nov-12	Dec-12	BWN	Mid-Galway*	Precautionary

*BWN/WR affected part of the supply zone

One new boil water notice was issued during 2012. Three remained in place from previous years. No new water restriction notices were issued during 2012 and none remained in place from previous years. At the end of 2012, no boil water notices remained active.

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

EPA Enforcement in 2012

Remedial Action List

No. of PWS on the RAL at the end of 2012:	20
No. of PWS added to RAL in 2012:	0
No. of PWS removed from RAL in 2012:	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 2012, nine public water supplies in Galway were removed from the RAL and none were added. For full details on RAL supplies in Galway, see www.epa.ie

Audits of Drinking Water Treatment Plants

The following drinking water treatment plants were audited by the EPA during 2012:

Date Audited	PWS Audited
Feb-12	Mountbellew
Dec-12	Mid-Galway
Dec-12	Kilkerrin/Moylough
Feb-12	Rosmuc
Mar-12	Ballygar

KERRY COUNTY COUNCIL

Summary of Public Water Supply Quality in 2012

Kerry County Council is responsible for the operation of 72 Public Water Supplies (PWS) serving a population of 113,645.

Microbiological compliance levels in Kerry PWSs decreased from 99.9% in 2011 to 99.7% in 2012. Chemical compliance levels have increased from 96.9% in 2011 to 97.3% in 2012.

	Micro	Chemical
2012	99.7	97.3

Microbiological Parametric Values:

A summary of the PWS with microbiological non-compliances during 2012 is as follows:

Parameter	2012 Name of PWS
E. coli	An Mhin Aird No. 1 (1) Caragh Lake (1)
Total No.:	**2**

Chemical Parametric Values:

A summary of the PWS with non-compliances of the chemical parametric values during 2012 is as follows:

Parameter	2012 Name of PWS
Trihalomethanes	An Ghleann (3) Aughacasla (3) Caherdaniel (2) Ceann Tra (2) Camp PWSS (1) Cahersiveen (2) Caragh Lake (1) Castlegregory (1) Central Regional : Ballintobeenig (3) Ballymacadam (4) Killsarkin (3) Knocknageeha Gneeveguilla (3) Lisloose (6) Lissardboola (6) Sheheree (6) Lough Guitane (1) Scart (6) Kenmare (2) Kilgarvan (1) Shrone (3) Templenoe (3) Waterville (2)
Lead	Lisloose (1)
Total No.:	**65**

The trihalomethanes non-compliances were primarily due to the chlorination of water with elevated levels of organic matter present. The lead non-compliance was to the presence of lead mains piping in the supply.

Boil Water Notices & Water Restrictions

A summary of boil water notices (BWN) and water restriction (WR) notices issued to consumers or active during 2012 are detailed below (full details in Appendix III):

Date Issued	Date Lifted/ Active	BWN / WR[7]	Name of PWS	Reason
Jun-09	Dec-12	BWN	Glenbeigh*	Inadequate Disinfection
Jul-09	Active	WR	Kenmare*	Inadequate Disinfection
Jul-09	Active	WR	Mountain Stage*	Inadequate Disinfection
Aug-09	Aug-13	WR	Kilgarvan*	Inadequate Disinfection
Aug-09	Aug-13	WR	An Mhuiríoch/ Baile Breach*	Inadequate Disinfection
Aug-09	Oct-12	WR	An Baile Mór*	Inadequate Disinfection
Aug-09	Jun-12	WR	An Mhín Aird No 2*	Inadequate Disinfection
Aug-09	Apr-13	WR	An Fheothanach*	Inadequate Disinfection
Aug-09	Aug-12	WR	Baile an Lochaigh	Inadequate Disinfection
Aug-09	Jan-13	WR	Central Regional: Lough Guitane(H)*	Inadequate Disinfection
May-10	Dec-13	BWN	An Cheapaigh Thiar*	Inadequate Disinfection
Jul-10	Nov-12	WR	Annascaul*	Inadequate Disinfection
Jul-10	Jan-13	WR	An Clochán*	Inadequate Disinfection
Jul-10	Dec-12	WR	Cé Bhréannain*	Inadequate Disinfection

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

Two boil water notices and twelve water restriction notices remained active during 2012 from previous years. At the end of 2012, one boil water notice and five water restriction notices remained active. No new boil water notices or water restriction notices were issued to consumers during 2012.

EPA Enforcement in 2012

Remedial Action List

No. of PWS on the RAL at the end of 2012:	41
No. of PWS added to RAL in 2012:	0
No. of PWS removed from RAL in 2012:	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 2012, nine public water supplies in Kerry were removed from the RAL and none were added. For full details on RAL supplies in Kerry, see www.epa.ie

Audits of Drinking Water Treatment Plants

The following drinking water treatment plants were audited by the EPA during 2012:

Date Audited	PWS Audited
Feb-12	Portmagee
Feb-12	Mid Kerry: Knocknavota
Mar-12	Rathmore
Mar-12	Mid Kerry : Gearha
Mar-12	Sneem
Mar-12	Ardfert North
Mar-12	Galey PWSS

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

KILDARE COUNTY COUNCIL

Summary of Public Water Supply Quality in 2012

Kildare County Council is responsible for the operation of 11 Public Water Supplies (PWS) serving a population of 177,758.

Microbiological compliance levels in Kildare PWSs were 100% in both 2011 and 2012. Chemical compliance levels were also 100% in both 2011 and 2012.

	Micro	Chemical
2012	100	100

Microbiological Parametric Values:

No non-compliance of the microbiological parametric values occurred during 2012.

Chemical Parametric Values:

No non-compliances of the chemical parametric values occurred during 2012.

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 2012

Remedial Action List

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

Audits of Drinking Water Treatment Plants

The EPA did not carry out any audits of drinking water treatment plants during 2012.

KILKENNY COUNTY COUNCIL

Summary of Public Water Supply Quality in 2012

Kilkenny County Council is responsible for the operation of 19 Public Water Supplies (PWS) serving a population of 61,507.

Microbiological compliance in Kilkenny PWSs has increased from 99.7% in 2011 to 100% in 2012. Chemical compliance levels decreased marginally from 99.7% in 2011 to 99.6% in 2012.

	Micro	Chemical
2012	100	99.6

Microbiological Parametric Values:

No non-compliance of the microbiological parametric values occurred during 2012.

Chemical Parametric Values:

A summary of the PWS with non-compliances of the chemical parametric values during 2012 is as follows:

Parameter	2012 Name of PWS
Trihalomethanes	Kilkenny City (Radestown) (4) Inistioge (1) Moocoin Regional (1)
Total No.:	6

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 and none remained active from previous years.

EPA Enforcement in 2012

Remedial Action List

No. of PWS on the RAL at the end of 2012:	2
No. of PWS added to RAL in 2012:	0
No. of PWS removed from RAL in 2012:	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 2012, one public water supplies (Paulstown) was removed from the RAL and none were added. For full details on RAL supplies in Kilkenny, see www.epa.ie

Audits of Drinking Water Treatment Plants

The EPA did not carry out any audits of drinking water treatment plants during 2012.

LAOIS COUNTY COUNCIL

Summary of Public Water Supply Quality in 2012

Laois County Council is responsible for the operation of 27 Public Water Supplies (PWS) serving a population of 58,727.

Microbiological compliance levels in PWSs in Laois were 99.6% in both 2011 and 2012. Chemical compliance levels were 99.8% in both 2011 and 2012.

	Micro	Chemical
2012	99.6	99.8

Microbiological Parametric Values:

A summary of the PWS with microbiological non-compliances during 2012 is as follows:

Parameter	2012 Name of PWS
E. coli	The Strand (1)
Total No.:	**1**

Chemical Parametric Values:

A summary of the PWS with non-compliances of the chemical parametric values during 2012 is as follows:

Parameter	2012 Name of PWS
Fluoride	Abbeyleix (1) Graigcullen (1) Rathdowney (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 by Laois County Council or active during 2012 is as follows (full details in Appendix III):

Date Issued	Date Lifted/ Active	BWN/ WR[8]	Name of PWS	Reason
Jan- 07	Active	BWN	The Strand	*E. coli*
Sep-12	Oct-12	BWN	Graigcullen	Precautionary
Nov-12	Active	WR	Mountmellick*	Lead

*BWN/WR affected part of the supply zone

One new boil water notice was issued to consumers in 2012 and one remained active from 2007. One new water restriction notice was issued in 2012. At the end of 2012, one boil notice and one water restriction notice remained in place.

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

EPA Enforcement in 2012

Remedial Action List

No. of PWS on the RAL at the end of 2012:	1
No. of PWS added to RAL in 2012:	0
No. of PWS removed from RAL in 2012:	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 2012, no public water supplies in Laois were added or removed from the RAL. For full details on RAL supplies in Laois, see www.epa.ie

Directions

The EPA issued two Directions to Laois County Council during 2012. Details are as follows:

Year	Name of PWS	Reason for Direction
2012	Swan	Deficiencies in disinfection procedures and inadequate action plan submitted
2012	The Strand	Deficiencies in disinfection procedures were identified

Audits of Drinking Water Treatment Plants

The following drinking water treatment plants were audited by the EPA during 2012:

Date Audited	PWS Audited
Feb & Nov-12	Portlaoise
Nov-12	Timahoe
Mar-12	Swan
Mar-12	Ballyroan
Sep-12	The Strand

LEITRIM COUNTY COUNCIL

Summary of Public Water Supply Quality in 2012

Leitrim County Council is responsible for the operation of 15 Public Water Supplies (PWS) serving a population of 19,139.

Microbiological compliance levels in Leitrim PWSs were 100% in both 2011 and 2012. Chemical compliance levels decreased marginally from 99.2% in 2011 to 99.1% in 2012.

	Micro	Chemical
2012	100	99.1

Microbiological Parametric Values:

No non-compliance of the microbiological parametric values occurred during 2012.

Chemical Parametric Values:

A summary of the PWS with non-compliances of the chemical parametric values during 2012 is as follows:

Parameter	2012 Name of PWS
Fluoride	Kinlough (1) Tullaghan (1) Erriff (1)
Trihalomethanes	South Leitrim Regional (1)
Total No.:	**4**

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

No boil water notices or water restrictions notices were issued to consumers during 2012 and none remained active from previous years.

EPA Enforcement in 2012

Remedial Action List

No. of PWS on the RAL at the end of 2012:	1
No. of PWS added to RAL in 2012:	0
No. of PWS removed from RAL in 2012:	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 2012, no public water supplies in Leitrim were added or removed from the RAL. For full details on RAL supplies in Leitrim, see www.epa.ie

Audits of Drinking Water Treatment Plants

The following drinking water treatment plants were audited by the EPA during 2012:

Date Audited	PWS Audited
Sep-12	South Leitrim Regional
Sep-12	NLRWSS-Cornalaghta to Creevelea and Crannywood Reservoirs WSZ

LIMERICK CITY COUNCIL

Summary of Public Water Supply Quality in 2012

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 2011 and 2012. Chemical compliance levels decreased from 100% in 2011 to 99.9% in 2012.

	Micro	Chemical
2012	100	99.9

Microbiological Parametric Values:

No non-compliance of the microbiological parametric values occurred during 2012.

Chemical Parametric Values:

A summary of the PWS with non-compliances of the chemical parametric values during 2012 is as follows:

Parameter	2012 Name of PWS
Trihalomethanes	Limerick City Water Supply (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

No boil water or water restrictions notices were issued to consumers during 2012 and none remained active from previous years.

EPA Enforcement in 2012

Remedial Action List

There are no supplies in Limerick City on the Remedial Action List.

Audits of Drinking Water Treatment Plants

The EPA did not carry out any audits of drinking water treatment plants during 2012.

LIMERICK COUNTY COUNCIL

Summary of Public Water Supply Quality in 2012

Limerick County Council is responsible for the operation of 45 Public Water Supplies (PWS) serving a population of 66,851.

Microbiological compliance has decreased in PWSs in Limerick from 99.8% in 2011 to 99.5% in 2012. Chemical compliance in Limerick PWSs decreased from 100% in 2011 to 99.9% in 2012.

	Micro	Chemical
2012	99.5	99.9

Microbiological Parametric Values:

A summary of the PWS with microbiological non-compliances during 2012 is as follows:

Parameter	2012 Name of PWS
Enterococci	Anglesboro (1) Croom (1) Kilglass (1)
Total No.:	**3**

Chemical Parametric Values:

A summary of the PWS with non-compliances of the chemical parametric values during 2012 is as follows:

Parameter	2012 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 2012 are detailed below (full details in Appendix III):

Date Issued	Date Lifted/ Active	BWN/ WR[9]	Name of PWS	Reason
Jan-08	Active	WR	Bruff*	Lead
Jun-10	Sep-12	BWN	Faleen*	Precautionary
Jan-12	Feb-12	WR	Foynes/ Shannon Estuary	Hydrocarbons
Jan-12	Feb-12	BWN	Pallaskenry/ Kildimo	Precautionary
Feb-12	Mar-12	WR	Adare*	Turbidity
May-12	Jul-12	BWN	Abbeyfeale*	*E.coli*
Jun-12	Jun-12	BWN	Ardagh	*E.coli*
Jun-12	Jun-12	BWN	South West Regional	Precautionary
Jun-12	Mar-13	BWN	Carrigeen	Precautionary
Oct-12	Oct-12	BWN	Foynes/ Shannon Estuary*	Coliform Bacteria

*BWN/WR affected part of the supply zone

Six new boil water notices were issued during 2012 and one remained in place from previous years. Two new water restriction notices were issued in 2012 and one remained in place from previous years. At the end of 2012, one boil water notice remained in place.

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

EPA Enforcement in 2012

Remedial Action List

No. of PWS on the RAL at the end of 2012:	1
No. of PWS added to RAL in 2012:	0
No. of PWS removed from RAL in 2012:	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 2012, two public water supplies in Limerick (Faleen and Banogue) were removed from the RAL and none were added. For full details on RAL supplies in Limerick, see www.epa.ie

Audits of Drinking Water Treatment Plants

The following drinking water treatment plants were audited by the EPA during 2012:

Date Audited	PWS Audited
Feb-12	Cappamore
Mar-13	Glin
Jan-12	Foynes/Shannon Estuary
Mar-12	Herbertstown
Mar-12	Bruff
Sep-12	Carigeen

LONGFORD COUNTY COUNCIL

Summary of Public Water Supply Quality in 2012

Longford County Council is responsible for the operation of 6 Public Water Supplies (PWS) serving a population of 14,852.

Microbiological compliance levels in PWSs in Longford were 100% in both 2011 and 2012. Chemical compliance levels increased from 96.8% in 2011 to 98.5% in 2012.

	Micro	Chemical
2012	100	98.5

Microbiological Parametric Values:

No non-compliance of the microbiological parametric values occurred during 2012.

Chemical Parametric Values:

A summary of the PWS with non-compliances of the chemical parametric values during 2012 is as follows:

Parameter	2012 Name of PWS
Trihalomethanes	Granard (1) Longford Central (1)
Pesticides (MCPA)	Ballymahon (1) Longford Central (2)
Total No.:	**5**

The trihalomethanes non-compliances were primarily due to the chlorination of water with elevated levels of organic matter present. The pesticide exceedances were due to elevated levels of the pesticide, MCPA, in the source water.

Boil Water Notices & Water Restrictions

A summary of boil water notices (BWN) and water restriction (WR) notices issued to consumers or active during 2012 are detailed below (full details in Appendix III):

Date Issued	Date Lifted/ Active	BWN/ WR[10]	Name of PWS	Reason
Sep-11	Active	BWN	Newtowncashel*	Inadequate Disinfection

*BWN/WR affected part of the supply zone

No new boil water notices were issued during 2012 and one remained in place from the previous year. No new water restriction notices were issued and none remained in place from previous years. At the end of 2012, one boil water notice remained in place on Longford County Council's PWSs.

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

EPA Enforcement in 2012

Remedial Action List

No. of PWS on the RAL at the end of 2012:	1
No. of PWS added to RAL in 2012:	0
No. of PWS removed from RAL in 2012:	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 2012, two public water supplies in Longford (Granard and Longford Central) were removed from the RAL and none were added. For full details on RAL supplies in Longford, see www.epa.ie

Audits of Drinking Water Treatment Plants

The EPA did not carry out any audits of drinking water treatment plants during 2012.

LOUTH COUNTY COUNCIL

Summary of Public Water Supply Quality in 2012

Louth County Council is responsible for the operation of 15 Public Water Supplies (PWS) serving a population of 99,575.

Microbiological compliance levels in PWSs in Louth were 100% in both 2011 and 2012. Chemical compliance levels decreased from 98.9% in 2011 to 96.6% in 2012.

	Micro	Chemical
2012	100	96.6

Microbiological Parametric Values:

No non-compliance of the microbiological parametric values occurred during 2012.

Chemical Parametric Values:

A summary of the PWS with non-compliances of the chemical parametric values during 2012 is as follows:

Parameter	2012 Name of PWS
Trihalomethanes	Cavanhill (2) Clogherhead (1) Staleen (3)
Antimony	Clogherhead (3) Staleen (23)
Total No.:	**32**

The trihalomethanes non-compliances were primarily due to the chlorination of water with elevated levels of organic matter present. The antimony non-compliances were due to elevated levels of antimony in the source water. Louth County Council significantly increased the frequency of antimony monitoring in 2012.

Boil Water Notices & Water Restrictions

No boil water or water restrictions notices were issued to consumers during 2012 and none remained active from previous years.

EPA Enforcement in 2012

Remedial Action List

No. of PWS on the RAL at the end of 2012:	3
No. of PWS added to RAL in 2012:	0
No. of PWS removed from RAL in 2012:	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 2012, no public water supplies in Louth were removed or added to the RAL. For full details on RAL supplies in Louth, see www.epa.ie

Audits of Drinking Water Treatment Plants

The EPA did not carry out any audits of drinking water treatment plants during 2012.

MAYO COUNTY COUNCIL

Summary of Public Water Supply Quality in 2012

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 2011 and 2012. Chemical compliance levels have increased from 99.3% in 2011 to 99.5% in 2012.

	Micro	Chemical
2012	100	99.5

Microbiological Parametric Values:

No non-compliance of the microbiological parametric values occurred during 2012.

Chemical Parametric Values:

A summary of the PWS with non-compliances of the chemical parametric values during 2012 is as follows:

Parameter	2012 Name of PWS
Trihalomethanes	Cong (1) Lough Mask (2)
Pesticides (MCPA)	Ballina (1) Kiltimagh (1)
Total No.:	**5**

The trihalomethanes non-compliances were primarily due to the chlorination of water with elevated levels of organic matter present. The pesticide exceedances were due to elevated levels of the pesticide, MCPA, in the source water.

Boil Water Notices & Water Restrictions

A summary of boil water notices (BWN) and water restriction (WR) notices issued to consumers or active during 2012 are detailed below (full details in Appendix III):

Date Issued	Date Lifted/ Active	BWN/ WR[11]	Name of PWS	Reason
Dec-12	Dec-12	BWN	Ballycastle	*E. coli*

One new boil water notice was issued during 2012 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 2012, no boil water notices remained in place on Mayo County Council's PWSs.

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

EPA Enforcement in 2012

Remedial Action List

No. of PWS on the RAL at the end of 2012:	3
No. of PWS added to RAL in 2012:	0
No. of PWS removed from RAL in 2012:	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 2012, two public water supplies in Mayo (Cong and Foxford) were removed from the RAL and none were added. For full details on RAL supplies in Mayo, see www.epa.ie

Audits of Drinking Water Treatment Plants

The following drinking water treatment plants were audited by the EPA during 2012:

Date Audited	PWS Audited
Mar-12	Kilkelly
Sep-12	Charlestown
Sep-12	Erris
Feb-12	Kilmaine
Mar-12	Swinford
Jan-12	Westport

MEATH COUNTY COUNCIL

Summary of Public Water Supply Quality in 2012

Meath County Council is responsible for the operation of 36 Public Water Supplies (PWS) serving a population of 140,674.

Microbiological compliance levels in PWSs in Meath were 100% in both 2011 and 2012. Chemical compliance levels decreased from 100% in 2011 to 99.6% in 2012.

	Micro	Chemical
2012	100	99.6

Microbiological Parametric Values:

No non-compliance of the microbiological parametric values occurred during 2012.

Chemical Parametric Values:

A summary of the PWS with non-compliances of the chemical parametric values during 2012 is as follows:

Parameter	2012 Name of PWS
Trihalomethanes	Drumcondrath (1) Navan-Mid Meath (1)
Fluoride	Ballivor (1)
Selenium	Longwood (1)
Pesticides (MCPA)	Kells/Oldcastle (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-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. The selenium non-compliance was due to elevated levels of naturally occurring selenium in the source water. The pesticide exceedance was due to elevated levels of the pesticide, MCPA, in the source water.

Boil Water Notices & Water Restrictions

No boil water or water restrictions notices were issued to consumers during 2012 and none remained active from previous years.

EPA Enforcement in 2012

Remedial Action List

No. of PWS on the RAL at the end of 2012:	5
No. of PWS added to RAL in 2012:	0
No. of PWS removed from RAL in 2012:	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 2012, no public water supplies in Meath were added or removed from the RAL. For full details on RAL supplies in Meath, see www.epa.ie

Audits of Drinking Water Treatment Plants

The following drinking water treatment plants were audited by the EPA during 2012:

Date Audited	PWS Audited
Mar-12	Trim
Feb-12	Longwood
Mar-12	Dunshaughlin

MONAGHAN COUNTY COUNCIL

Summary of Public Water Supply Quality in 2012

Monaghan County Council is responsible for the operation of 10 Public Water Supplies (PWS) serving a population of 31,712.

Microbiological compliance levels in PWSs in Monaghan were 100% in both 2011 and 2012. Chemical compliance levels decreased from 100% in 2011 to 99.6% in 2012.

	Micro	Chemical
2012	100	99.6

Microbiological Parametric Values:

No non-compliance of the microbiological parametric values occurred during 2012.

Chemical Parametric Values:

A summary of the PWS with non-compliances of the chemical parametric values during 2012 is as follows:

Parameter	2012 Name of PWS
Trihalomethanes	LERWSS (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

A summary of boil water notices (BWN) and water restriction (WR) notices issued to consumers or active during 2012 are detailed below (full details in Appendix III):

Date Issued	Date Lifted/ Active	BWN/ WR[12]	Name of PWS	Reason
Apr-12	May-12	BWN	Smithboro*	*E.coli*

*BWN/WR affected part of the supply zone

One new boil water notice was issued during 2012 and none remain in place from previous years. No water restriction notices were issued during 2012 and none remained active from previous years. At the end of 2012, no boil notices or water restriction notices remained in place on PWSs in Monaghan.

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

EPA Enforcement in 2012

Remedial Action List

No. of PWS on the RAL at the end of 2012:	2
No. of PWS added to RAL in 2012:	0
No. of PWS removed from RAL in 2012:	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 2012, one public water supply in Monaghan (Clones) was removed from the RAL and none were added. For full details on RAL supplies in Monaghan, see www.epa.ie

Audits of Drinking Water Treatment Plants

The following drinking water treatment plants were audited by the EPA during 2012:

Date Audited	PWS Audited
July-12	Carrickmacross
Feb-12	Monaghan
May-12	Smithboro

NORTH TIPPERARY COUNTY COUNCIL

Summary of Public Water Supply Quality in 2012

North Tipperary County Council is responsible for the operation of 29 Public Water Supplies (PWS) serving a population of 43,937.

Microbiological compliance levels in PWSs in North Tipperary decreased from 100% in 2011 to 99.6% in 2012. Chemical compliance levels were 100% in both 2011 and 2012.

	Micro	Chemical
2012	99.6	100

Microbiological Parametric Values:

A summary of the PWS with microbiological non-compliances during 2012 is as follows:

Parameter	2012 Name of PWS
E.coli	Toomevara (1)
Total No.:	**1**

Chemical Parametric Values:

No non-compliances of the chemical parametric values occurred during 2012.

Boil Water Notices & Water Restrictions

A summary of boil water notices (BWN) and water restriction (WR) notices issued to consumers or active during 2012 are detailed below (full details in Appendix III):

Date Issued	Date Lifted/ Active	BWN/ WR[13]	Name of PWS	Reason
Jun-12	Jul-12	BWN	Toomevara	*E.coli*

One new boil water notice was issued during 2012 and none remain in place from previous years. At the end of 2012, no boil notices or water restriction notices remained in place on PWSs in North Tipperary.

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

EPA Enforcement in 2012

Remedial Action List

No. of PWS on the RAL at the end of 2012:	3
No. of PWS added to RAL in 2012:	0
No. of PWS removed from RAL in 2012:	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 2012, no public water supplies in North Tipperary were added or removed from the RAL. For full details on RAL supplies in North Tipperary, see www.epa.ie

Audits of Drinking Water Treatment Plants

The following drinking water treatment plants were audited by the EPA during 2012:

Date Audited	PWS Audited
Feb-12	Lorrha/Rathcabbin (Zone 1 - Riverstown)
Feb-12	Borrisoleigh
Sep-12	Toomevara
Feb-12	Templemore RWSS (Zone 1)
Feb-12	Roscrea RWSS (Zone 1)

OFFALY COUNTY COUNCIL

Summary of Public Water Supply Quality in 2012

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 were 100% in both 2011 and 2012. Chemical compliance levels increased from 99.3% in 2011 to 99.5% in 2012.

	Micro	Chemical
2012	100	99.5

Microbiological Parametric Values:

No non-compliance of the microbiological parametric values occurred during 2012.

Chemical Parametric Values:

A summary of the PWS with non-compliances of the chemical parametric values during 2012 is as follows:

Parameter	2012 Name of PWS
Trihalomethanes	Banagher (2)
Flouride	Birr (1) Kilcormac (1)
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

A summary of boil water notices (BWN) and water restriction (WR) notices issued to consumers or active during 2012 are detailed below (full details in Appendix III):

Date Issued	Date Lifted/ Active	BWN/ WR[14]	Name of PWS	Reason
Jun-12	Jul-12	BWN	Dunkerrin*	*E.coli*

*BWN/WR affected part of the supply zone

One new boil water notice was issued during 2012 and none remain in place from previous years. At the end of 2012, no boil notices or water restriction notices remained in place on PWSs in Offaly.

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

EPA Enforcement in 2012

Remedial Action List

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

Audits of Drinking Water Treatment Plants

The following drinking water treatment plants were audited by the EPA during 2012:

Date Audited	PWS Audited
Feb-12	Tullamore
June-12	Dunkerrin
Feb-12	Clonbullogue
Feb-12	Edenderry
Feb-12	Kinnitty
Feb-12	Kilcormac
Feb-12	Tullamore

ROSCOMMON COUNTY COUNCIL

Summary of Public Water Supply Quality in 2012

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 increased from 99.7% in 2011 to 100% in 2012. Chemical compliance levels decreased from 99.2% in 2011 to 98.9% in 2012.

	Micro	Chemical
2012	100	98.9

Microbiological Parametric Values:

No non-compliance of the microbiological parametric values occurred during 2012.

Chemical Parametric Values:

A summary of the PWS with non-compliances of the chemical parametric values during 2011 is as follows:

Parameter	2012 Name of PWS
Trihalomethanes	NERWSS - Strokestown/Elphin (2) NERWSS – Tarmonbarry (1) NERWSS – Rooskey (1) Boyle (1) North Roscommon Regional (1)
Fluoride	NERWSS – Strokestown/Elphin (1) Castlerea Urban (1)
Lead	Castlerea Urban (1)
Total No.:	**9**

The trihalomethanes non-compliances were primarily due to the chlorination of water with elevated levels of organic matter. 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. The lead non-compliance was a once off occurrence and all follow up samples were clear.

Boil Water Notices & Water Restrictions

A summary of boil water notices (BWN) and water restriction (WR) notices active or issued to consumers during 2012 is as follows (full details in Appendix III):

Date Issued	Date Lifted/ Active	BWN/ WR[15]	Name of PWS	Reason
Feb-10	Apr-12	BWN	Castlerea Regional	*Cryptosporidium*
Feb-12	Mar-12	BWN	Ballinlough/ Loughglynn	*Cryptosporidium*
Mar-12	Mar-12	BWN	Boyle/ Ardcarne	*Cryptosporidium*
Mar-12	Mar-12	BWN	Boyle	*Cryptosporidium*
May-12	Aug-12	BWN	Castlerea Urban	*Cryptosporidium*
Jun-12	Jun-12	BWN	Castlerea Regional	Precautionary
Jul-12	Aug-12	BWN	NERWSS-Strokestown/ Elphin	*Cryptosporidium*
Jul-12	Active	BWN	Castlerea Regional	Precautionary
Oct-12	Nov-12	BWN	Boyle	*Cryptosporidium*

*BWN affected part of the supply zone

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

Eight new boil notices were issued to consumers by Roscommon County Council during 2012 and one remained active from 2010. No new water restriction notices were issued to consumers during 2012 and none remained active from previous years. No boil notices remained in place at the end of 2012.

EPA Enforcement in 2012

Remedial Action List

No. of PWS on the RAL at the end of 2012:	7
No. of PWS added to RAL in 2012:	0
No. of PWS removed from RAL in 2012:	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 2012, three public water supplies in Roscommon (Mount Talbot, Grangemore and Keadue) were removed from the RAL none were added. For full details on RAL supplies in Roscommon, see www.epa.ie

Audits of Drinking Water Treatment Plants

The following drinking water treatment plants were audited by the EPA during 2012:

Date Audited	PWS Audited
July-12	Mount Talbot/Four Roads
Feb-12	Castlerea Urban
Feb-12	Killeglan
Feb-12	Ballinlough/Loughglynn

SLIGO COUNTY COUNCIL

Summary of Public Water Supply Quality in 2012

Sligo County Council is responsible for the operation of 9 Public Water Supplies (PWS) serving a population of 53,551.

Microbiological compliance levels in Sligo PWSs were 100% in both 2011 and 2012. Chemical compliance levels decreased from 98.8% in 2011 to 98.6% in 2012.

	Micro	Chemical
2012	100	98.6

Microbiological Parametric Values:

No non-compliance of the microbiological parameter values occurred during 2012.

Chemical Parametric Values:

A summary of the PWS with non-compliances of the chemical parametric values during 2012 is as follows:

Parameter	2012 Name of PWS
Lead	Foxes Den (1) Kilsellagh (2) Lough Easkey Regional (1)
Trihalomethanes	Lough Gill (Cairns Hill) (2) Lough Talt Regional (4)
Flouride	Lough Talt Regional (1)
Total No.:	**11**

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 2012 is as follows (full details in Appendix II):

Date Issued	Date Lifted/ Active	BWN/ WR[16]	Name of PWS	Reason
Mar-12	Mar-12	BWN	Killaraght[17]	*Cryptosporidium*
Oct-12	Nov-12	BWN	Killaraght[17]	*Cryptosporidium*

Two new boil notices were issued to consumers by Sligo County Council during 2012 and none remained active from previous years. No water restrictions were issued in 2012 and none remained active from previous years. At the end of 2012, no boil or water restriction notices remained in place.

EPA Enforcement in 2012

Remedial Action List

No. of PWS on the RAL at the end of 2012:	4
No. of PWS added to RAL in 2012:	1
No. of PWS removed from RAL in 2012:	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 2012, one public water supply in Sligo was removed from the RAL (North Sligo Regional Water Supply) and one was added (Lough Gill Regional Water Supply). For full details on RAL supplies in Sligo, see www.epa.ie

Audits of Drinking Water Treatment Plants

The EPA did not carry out any audits of drinking water treatment plants during 2012.

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

[17] Killaraght PWS is supplied from the Boyle/Ardcarne PWS which is operated by Roscommon Co. Co.

SOUTH DUBLIN COUNTY COUNCIL

Summary of Public Water Supply Quality in 2012

South Dublin County Council is responsible for the operation of 4 Public Water Supplies (PWS) serving a population of 257,600.

Microbiological compliance levels in PWSs in South Dublin were 100% in both 2011 and 2012. Chemical compliance levels increased from 99.8% in 2011 to 100% in 2012.

	Micro	Chemical
2012	100	100

Microbiological Parametric Values:

No non-compliance of the microbiological parametric values occurred during 2012.

Chemical Parametric Values:

No non-compliances of the chemical parametric values occurred during 2012.

Boil Water Notices & Water Restrictions

No boil water notices or water restriction notices were issued to consumers during 2012 and none remained in place from previous years.

EPA Enforcement in 2012

Remedial Action List

There are no supplies in South Dublin on the Remedial Action List.

Audits of Drinking Water Treatment Plants

The EPA did not carry out any audits of drinking water treatment plants during 2012.

SOUTH TIPPERARY COUNTY COUNCIL

Summary of Public Water Supply Quality in 2012

South Tipperary County Council is responsible for the operation of 25 Public Water Supplies (PWS) serving a population of 72,800.

Microbiological compliance levels have decreased in PWSs in South Tipperary from 100% in 2011 to 99.7% in 2012. Chemical compliance levels were 99.7% in both 2011 and 2012.

	Micro	Chemical
2012	99.7	99.7

Microbiological Parametric Values:

A summary of the PWS with microbiological non-compliances during 2012 is as follows:

Parameter	2012 Name of PWS
E.coli	Clonmel Poulavanogue (1)
Total No.:	**1**

Chemical Parametric Values:

A summary of the PWS with non-compliances of the chemical parametric values during 2012 is as follows:

Parameter	2012 Name of PWS
Trihalomethanes	Gortnapisha Regional (1)
Fluoride	Ardfinnan (1) Cloran Regional (1)
Total No.:	**3**

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 2012 is as follows (full details in Appendix III):

Date Issued	Date Lifted/ Active	BWN / WR[17]	Name of PWS	Reason
Oct-08	Active	BWN	Cloran Regional*	*E.coli*
Oct-08	Active	BWN	Gortnapisha Regional*	*E.coli*
Sep-09	Active	BWN	Burncourt Regional*	*E.coli*
May-12	Active	BWN	Templetney*	Inadequate Disinfection
Jun-12	Jul-12	BWN	Tipperary UDC*	*E.coli*
Aug-12	Aug-12	BWN	Clonmel Poulavanogue	*E.coli*

*BWN affected part of the supply zone

Three new boil water notices were issued during 2012 and three remained active from previous years. No water restriction notices were issued in 2012 and none remained active from previous years. At the end of 2012, four boil notices remained in place.

EPA Enforcement in 2012

Remedial Action List

No. of PWS on the RAL at the end of 2012:	11
No. of PWS added to RAL in 2012:	0
No. of PWS removed from RAL in 2012:	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 2012, two supplies in South Tipperary (Cahir Reservoir and Galtee Regional) were removed from the RAL and none were added. For full details on RAL supplies in South Tipperary, see www.epa.ie

Audits of Drinking Water Treatment Plants

The following drinking water treatment plants were audited by the EPA during 2012:

Date Audited	PWS Audited
Feb-12	Mullinbawn
Mar-12	Coolnamuck (Carrick-on-Suir- Crottys Lake)
Feb-12	Coalbrook

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

WATERFORD CITY COUNCIL

Summary of Public Water Supply Quality in 2012

Waterford City Council is responsible for 2 Public Water Supply (PWS) serving a population of 46,759.

Microbiological compliance in Waterford City PWSs was 100% in both 2011 and 2012. Chemical compliance levels were 99.6% in both 2011 and 2012.

	Micro	Chemical
2012	100	99.6

Microbiological Parametric Values:

No non-compliance of the microbiological parametric values occurred during 2012.

Chemical Parametric Values:

A summary of the PWS with non-compliances of the chemical parametric values during 2012 is as follows:

	2012
Parameter	Name of PWS
Fluoride	Waterford City (1)
Total No.:	1

The fluoride non-compliance was due to elevated levels of fluoride above the Irish standard. However, the sample was 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 2012 and none remained in place from previous years.

EPA Enforcement in 2012

Remedial Action List

There are no supplies in Waterford City on the Remedial Action List.

Audits of Drinking Water Treatment Plants

The EPA did not carry out any audits of drinking water treatment plants during 2012.

WATERFORD COUNTY COUNCIL

Summary of Public Water Supply Quality in 2012

Waterford County Council is responsible for the operation of 110 Public Water Supplies (PWS) serving a population of 35,273.

Microbiological compliance levels in PWSs in Waterford County were 99.7% in both 2011 and 2012. Chemical compliance levels decreased marginally from 99.2% in 2011 to 99.1% in 2012.

	Micro	Chemical
2012	99.7	99.1

Microbiological Parametric Values:

A summary of the PWS with microbiological non-compliances during 2012 is as follows:

Parameter	2012 Name of PWS
Enterococci	Inchinleamy (1)
Total No.:	**1**

Chemical Parametric Values:

A summary of the PWS with non-compliances of the chemical parametric values during 2012 is as follows:

Parameter	2012 Name of PWS
Nitrate	Glenawillin (1) LCB Ballyhane (1) Monadiha (1)
Trihalomethanes	Ring/Helvick/Seaview (1) Tallow (1) Bonmahon (1) LCB Lismore (1) Tramore/Carrigavantry (1)
Fluoride	Deelish/Ballinacourty (2) Ring/Helvick/Seaview (1)
Total No.:	**11**

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 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 2012 are detailed below (full details in Appendix III):

Date Issued	Date Lifted/ Active	BWN/ WR[18]	Name of PWS	Reason
May-10	Active	WR	Glenawillin	Nitrate
Aug-12	Aug-12	BWN	Stradbally	Colour
Oct-12	Oct-12	BWN	Ballysaggart	Turbidity(at WTW)

Two new boil water notices were issued to consumers by Waterford County Council during 2012 and none remained from previous years. One water restriction remained active from 2010. At the end of 2012, one water restriction notice remained in place. No boil water notices remained in place at the end of 2012.

EPA Enforcement in 2012

Remedial Action List

No. of PWS on the RAL at the end of 2012:	12
No. of PWS added to RAL in 2012:	0
No. of PWS removed from RAL in 2012:	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 2012, one public water supply in Waterford (Kilnamack) was removed from the RAL none were added to the RAL. For full details on RAL supplies in Waterford, see www.epa.ie

Audits of Drinking Water Treatment Plants

The following drinking water treatment plants were audited by the EPA during 2012:

Date Audited	PWS Audited
Mar-12	Kilrossanty
Mar-12	Ballyduff/Kilmeaden
Aug-12	Stradbally
Mar-12	Ballymacarbry

[18] 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 2012

Westmeath County Council is responsible for the operation of 15 Public Water Supplies (PWS) serving a population of 62,325.

Microbiological compliance levels in PWSs in Westmeath were 100% in both 2011 and 2012. Chemical compliance levels decreased from 99.7% in 2011 to 99.5% in 2012.

	Micro	Chemical
2012	100	99.5

Microbiological Parametric Values:

No non-compliance of the microbiological parametric values occurred during 2012.

Chemical Parametric Values:

A summary of the PWS with non-compliances of the chemical parametric values during 2012 is as follows:

Parameter	2012 Name of PWS
Trihalomethanes	Athlone WSS (1) Ballany High Level Reservoir (1) Mount Temple (1)
Lead	Kilbeggan Water Tower (1)

The trihalomethanes non-compliances were primarily due to the chlorination of water with elevated levels of organic matter present while the lead exceedance was due to the presence of a lead communication pipe in the supply.

Boil Water Notices & Water Restrictions

No boil water notices or water restriction notices were issued to consumers during 2012 and none remained in place from previous years.

EPA Enforcement in 2012

Remedial Action List

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

Audits of Drinking Water Treatment Plants

The following drinking water treatment plant was audited by the EPA during 2012:

Date Audited	PWS Audited
Apr-12	Athlone

WEXFORD COUNTY COUNCIL

Summary of Public Water Supply Quality in 2012

Wexford County Council is responsible for the operation of 28 Public Water Supplies (PWS) serving a population of 99,830.

Microbiological compliance levels have decreased in PWSs in Wexford from 100% in 2011 to 99.6% in 2012. Chemical compliance levels decreased from 99.9% in 2011 to 99.7% in 2012.

	Micro	Chemical
2012	99.6	99.7

Microbiological Parametric Values:

A summary of the PWS with non-compliances of the microbiological parametric values during 2012 is as follows:

Parameter	2012 Name of PWS
E.coli	Clonroche (1)
Total No.:	**1**

Chemical Parametric Values:

A summary of the PWS with non-compliances of the chemical parametric values during 2012 is as follows:

Parameter	2012 Name of PWS
Nitrate	Castledockrell (1) Oulart (1)
Trihalomethanes	South Regional (1) Wexford Town (1)
Total No.:	**4**

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.

Boil Water Notices & Water Restrictions

A summary of boil water notices (BWN) and water restriction (WR) notices issued to consumers or active during 2012 are detailed below (full details in Appendix III):

Date Issued	Date Lifted/ Active	BWN / WR[19]	Name of PWS	Reason
July-12	July-13	WR	Castledockrell	Nitrate
Aug-12	Sep-12	BWN	Clonroche	*E.coli*

One new boil water notice was issued to consumers during 2012 and none remained active from the previous years. One water restriction was issued in 2012 and none remained active from the previous years. At the end of 2012, one water restriction remained in place.

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

EPA Enforcement in 2012

Remedial Action List

No. of PWS on the RAL at the end of 2012:	1
No. of PWS added to RAL in 2012:	0
No. of PWS removed from RAL in 2012:	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 2012, no public water supplies in Wexford were added or removed from the RAL. For full details on RAL supplies in Wexford, see www.epa.ie

Directions

The EPA issued two Directions to Wexford County Council during 2012. Details are as follows:

Year	Name of PWS	Reason for Direction
2012	Wexford	No Turbidity Monitors or Alarms
2012	New Ross	No Cryptosporidium barrier in place

Audits of Drinking Water Treatment Plants

The following drinking water treatment plants were audited by the EPA during 2012:

Date Audited	PWS Audited
Mar-12	Fardystown
Mar-12	Fardystown (Ballykelly / Ballyfinogue)
May-12	New Ross
Sep-12	Castledockrell
Sep-12	Clonroche
Mar-12	Carrigbyrne

WICKLOW COUNTY COUNCIL

Summary of Public Water Supply Quality in 2012

Wicklow County Council is responsible for the operation of 54 Public Water Supplies (PWS) serving a population of 111,131.

Microbiological compliance levels in Wicklow PWSs decreased from 100% in 2011 to 99.8% in 2012. Chemical compliance levels decreased from 99.1% in 2011 to 97.7% in 2012.

	Micro	Chemical
2012	99.8	97.7

Microbiological Parametric Values:

A summary of the PWS with non-compliances of the chemical parametric values during 2012 is as follows:

Parameter	2012 Name of PWS
Enterococci	Brittas Bay North (1)
Total No.:	**1**

Chemical Parametric Values:

A summary of the PWS with non-compliances of the chemical parametric values during 2012 is as follows:

Parameter	2012 Name of PWS
Trihalomethanes	Aughrim Annacurra (2) Bray (1) Enniskerry (1) Wicklow (14) Avoca Ballinaclash (1) Greystones (1) Newtown Newcastle (2)
Flouride	Baltinglass (4) Laragh Annamoe (1) Tinahely (3)
Total No.:	**30**

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 2012 are detailed below (full details in Appendix III):

Date Issued	Date Lifted/ Active	BWN/ WR[20]	Name of PWS	Reason
Jul-12	Active	WR	Grangecon	Precautionary

No new boil water notices were issued to consumers by Wicklow County Council during 2012 and none remained active from the previous year. One water restriction was issued in 2012 and none remained active from previous years. At the end of 2012, one water restriction remained in place.

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

EPA Enforcement in 2012

Remedial Action List

No. of PWS on the RAL at the end of 2012:	13
No. of PWS on the RAL at the end of 2012:	0
No. of PWS added to RAL in 2012:	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 2012, no public water supplies in Wicklow were added or removed from the RAL. For full details on RAL supplies in Wicklow, see www.epa.ie.

Audits of Drinking Water Treatment Plants

The following drinking water treatment plants were audited by the EPA during 2012:

Date Audited	PWS Audited
Aug-12	Arklow
Aug-12	Grangecon

APPENDIX II –DRINKING WATER SUPPLY IN IRELAND.

Drinking Water Supply in Ireland

The Regulations specify two types of supplies ("public" and "private"), but in practice there are five distinct categories of water supply in Ireland (see also Table 1):

- **Public Water Supplies (PWS).** These are WSA operated schemes (though these may be run by a private contractor on behalf of the WSA). 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 WSA 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 7% of the population of Ireland.

- **Small Private Supplies (SPS).** This is a group of different types of supplies (1,705) 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). This also includes private housing developments where greater than 50 persons are supplied.

- **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 11% of the population.

Table 1: Water Supply Zones (WSZs) and Proportion of the Population Served, 2012.

Type of Supply	No. of WSZs[1]	% of Total Population Served
Public Water Supply	932	82.0
Public Group Water Scheme	632	2.3
Private Group Water Scheme	433	4.3
Small Private Supply	1,705	0.8
Exempted Supplies[2]	N/A	10.6

[1] 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.

[2] Exempted supplies are supplies that are provided from either an individual supply providing less than 10m^3 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).

APPENDIX III - LIST OF ALL BOIL WATER NOTICES OR WATER RESTRICTIONS PLACED OR ACTIVE ON PUBLIC WATER SUPPLIES DURING 2012

WSA	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
Laois County Council	The Strand PWS	E. coli	BN	9	Full	11/01/2007	
Cork County Council	Castletownkinnagh	Nitrate	WR	33	Full	01/03/2007	15/02/2012
Limerick County Council	BRUFF PUB DWS	Lead	WR	18	Part	03/01/2008	
Clare County Council	Ennis PWS	Lead	WR	252	Part	07/10/2008	
Galway County Council	Letterfrack PWS(Dawros)	Cryptosporidium	BN	300	Full	10/10/2008	28/05/2012
Galway County Council	Rosmuc P.S	Cryptosporidium	BN	1,090	Full	10/10/2008	28/03/2012
South Tipperary County Council	Cloran Regional	E. coli	BN	9	Part	22/10/2008	
South Tipperary County Council	Gortnapisha Regional	E. coli	BN	9	Part	22/10/2008	
Cork County Council	Glashaboy	Lead	WR	150	Part	11/11/2008	
Kerry County Council	Glenbeigh PWSS 040A	Inadequate Disinfection	BN	16	Part	26/06/2009	12/12/2012
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	
Kerry County Council	Kilgarvan PWSS 046A	Inadequate Disinfection	WR	5	Part	05/08/2009	01/08/2013
Kerry County Council	An Mhuiríoch/ Baile Breach PWSS 063D	Inadequate Disinfection	WR	3	Part	05/08/2009	01/08/2013
Kerry County Council	An Baile Mór PWSS 012D	Inadequate Disinfection	WR	150	Part	05/08/2009	26/10/2012
Kerry County Council	An Mhín Aird No. 2 PWSS 061D	Inadequate Disinfection	WR	30	Part	05/08/2009	18/06/2012
Kerry County Council	An Fheothanach PWSS	Inadequate Disinfection	WR	50	Part	05/08/2009	12/04/2013

WSA	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
Kerry County Council	Baile an Lochaigh PWSS 007D	Inadequate Disinfection	WR	50	Part	05/08/2009	07/08/2012
Kerry County Council	Central Regional: Lough Guitane (H) 400F	Inadequate Disinfection	WR	30	Part	05/08/2009	22/01/2013
South Tipperary County Council	Burncourt Regional	E. coli	BN	178	Part	01/09/2009	
Roscommon County Council	Castlerea Regional	Cryptosporidium	BN	2,600	Full	26/02/2010	30/04/2012
Kerry County Council	An Ceapaigh Thiar PWSS 021D	Inadequate Disinfection	BN	9	Part	06/05/2010	01/08/2013
Waterford County Council	Glenawillin	Nitrate	WR	60	Full	24/05/2010	
Limerick County Council	Faleen PUB DWS	Precautionary - no exceedance confirmed	BN	6	Part	01/06/2010	03/09/2012
Kerry County Council	An Clochán PWSS 028D	Other	WR	9	Part	16/07/2010	01/08/2013
Kerry County Council	Annascaul PWSS 002D	Other	WR	3	Part	16/07/2010	22/11/2012
Kerry County Council	Cé Bhréannain PWSS 015D	Other	WR	6	Part	16/07/2010	14/12/2012
Cork County Council	Glashaboy	Lead	WR	190	Part	28/07/2010	
Galway County Council	Tully-Tullycross	Coliform Bacteria	BN	325	Full	13/08/2010	28/05/2012
Longford County Council	NEWTOWNCASHEL	Inadequate Disinfection	BN	120	Part	05/09/2011	
Cork County Council	Gortnaskehy	Inadequate Disinfection	BN	35	Full	01/10/2011	24/02/2012
Fingal County Council	Leixlip	Copper	WR	840	Part	23/10/2011	
Limerick County Council	FOYNES/SHANNON ESTUARY PUB DWS	Precautionary - no exceedance confirmed	WR	1,481	Full	19/01/2012	09/02/2012

WSA	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
Limerick County Council	PALLASKENRY/KILDIMO PUB DWS	Precautionary - no exceedance confirmed	BN	775	Full	20/01/2012	09/02/2012
Roscommon County Council	Ballinlough/Loughglynn	Cryptosporidium	BN	3,500	Full	03/02/2012	02/03/2012
Limerick County Council	ADARE PUB DWS	Other	WR	64	Part	15/02/2012	21/03/2012
Dublin City Council	Vartry-Ballymore Eustace	E. coli	WR	100	Part	01/03/2012	08/03/2012
Sligo County Council	Killaraght Public Water Supply	Cryptosporidium	BN	110	Full	01/03/2012	09/03/2012
Roscommon County Council	Boyle/Ardcarne	Cryptosporidium	BN	1,700	Full	01/03/2012	09/03/2012
Roscommon County Council	Boyle	Cryptosporidium	BN	4,300	Full	01/03/2012	09/03/2012
Monaghan County Council	Smithboro	E. coli	BN	5	Part	18/04/2012	03/05/2012
Limerick County Council	ABBEYFEALE PUB DWS	E. coli	BN	40	Part	01/05/2012	31/07/2012
South Tipperary County Council	Templetney Borehole	Inadequate Disinfection	BN	20	Part	03/05/2012	
Roscommon County Council	Castlerea Urban	Cryptosporidium	BN	1,800	Full	23/05/2012	24/08/2012
Limerick County Council	ARDAGH PUB DWS	E. coli	BN	584	Full	08/06/2012	15/06/2012
Limerick County Council	South West Regional PUB DWS	Precautionary - no exceedance confirmed	BN	2,984	Full	08/06/2012	12/06/2012
Limerick County Council	Carrigeen PUB DWS	Precautionary - no exceedance confirmed	BN	50	Full	08/06/2012	22/03/2013
Roscommon County Council	Castlerea Regional	Precautionary - no exceedance confirmed	BN	2,600	Full	09/06/2012	12/06/2012

WSA	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
South Tipperary County Council	Tipperary UDC	E. coli	BN	50	Part	15/06/2012	06/07/2012
Offaly	Dunkerrin P.W.S.	E. coli	BN	30	Part	18/06/2012	06/07/2012
North Tipperary County Council	Toomevara	E. coli	BN	543	Full	22/06/2012	13/07/2012
Cork County Council	Kealkill	Cryptosporidium	BN	330	Part	25/06/2012	04/07/2012
Roscommon County Council	NERWSS - Strokestown/Elphin	Cryptosporidium	BN	3,000	Full	04/07/2012	01/08/2012
Roscommon County Council	Castlerea Regional	Precautionary - no exceedance confirmed	BN	3,443	Full	04/07/2012	
Wicklow County Council	Grangecon Public Supply	Precautionary - no exceedance confirmed	WR	50	Full	12/07/2012	
Wexford County Council	Castledockrell	Nitrate	WR	80	Full	16/07/2012	31/07/2013
Cavan County Council	Ballyhaise P.W.S.	Coliform Bacteria	BN	600	Full	18/07/2012	27/07/2012
Dublin City Council	Vartry-Ballymore Eustace	Odour	WR	20	Part	19/07/2012	13/09/2012
Dublin City Council	Vartry-Ballymore Eustace	Coliform Bacteria	WR	4,200	Part	03/08/2012	07/08/2012
Lyre Clonakility	Cork County Council	Precautionary - no exceedance confirmed	BN	18	Full	03/08/2012	10/08/2012
Dublin City Council	Leixlip-Stillorgan	Coliform Bacteria	BN	180	Part	05/08/2012	15/08/2012
Dublin City Council	Vartry-Ballymore Eustace	Coliform Bacteria	BN	1,400	Part	07/08/2012	16/08/2012
Clonmel Poulavanogue	South Tipperary County Council	E. coli	BN	5,000	Full	14/08/2012	16/08/2012
Waterford County Council	Stradbally	Colour	BN	500	Full	16/08/2012	21/08/2012

WSA	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
Wexford County Council	Clonroche	E. coli	BN	1,150	Full	30/08/2012	04/09/2012
Cavan County Council	Killeshandra P.W.S.	Coliform Bacteria	BN	420	Full	30/08/2012	05/09/2012
Laois County Council	Graigcullen PWS	Precautionary - no exceedance confirmed	BN	2,200	Full	25/09/2012	01/10/2012
Limerick County Council	FOYNES/SHANNON ESTUARY PUB DWS	Coliform Bacteria	BN	1	Part	01/10/2012	05/10/2012
Waterford County Council	Ballysaggart	Turbidity (at WTW)	BN	80	Full	11/10/2012	26/10/2012
Roscommon County Council	Boyle	Cryptosporidium	BN	4,300	Full	26/10/2012	05/11/2012
Sligo County Council	Killaraght Public Water Supply	Cryptosporidium	BN	128	Full	26/10/2012	06/11/2012
Laois County Council	Mountmellick 1 PWS	Lead	WR	1	Part	14/11/2012	
Galway County Council	Mid-Galway	Precautionary - no exceedance confirmed	BN	2,083	Part	20/11/2012	12/12/2012
Mayo County Council	Ballycastle WSS	E. coli	BN	523	Full	05/12/2012	08/12/2012

Note: Some notices indicated to be active at the end of 2012, above, may have been rescinded between the end of 2012 and the date of publication of this report.

APPENDIX IV - SUMMARY OF MONITORING CARRIED OUT IN 2012

Table 1. Total Number of Water Supply Zones (WSZs) Monitored and Samples Analysed for All Parameters in Public Water Supplies in 2012.

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						
E. coli	928	7	**99.2**	10236	7	**99.9**
Enterococci	675	6	**99.1**	1945	6	**99.7**
Chemical Parameters						
1,2-dichloroethane	631	0	**100**	1178	0	**100**
Antimony	522	2	**99.6**	1092	26	**97.6**
Arsenic	572	0	**100**	1156	0	**100**
Benzene	626	0	**100**	1162	0	**100**
Benzo(a)pyrene	573	0	**100**	1026	0	**100**
Boron	535	0	**100**	1050	0	**100**
Bromate	619	0	**100**	1108	0	**100**
Cadmium	627	0	**100**	1230	0	**100**
Chromium	627	0	**100**	1232	0	**100**
Copper	645	1	**99.8**	1356	1	**99.9**
Cyanide	490	0	**100**	925	0	**100**
Fluoride	675	24	**96.4**	3090	31	**99.0**
Lead	740	13	**98.2**	2230	15	**99.3**
Mercury	572	0	**100**	1098	0	**100**
Nickel	643	2	**99.7**	1251	2	**99.8**
Nitrate	765	5	**99.3**	4078	5	**99.9**
Nitrite (at tap)	692	0	**100**	4978	0	**100**
Nitrites (at WTW)	88	1	**98.9**	603	1	**99.8**
PAH	568	0	**100**	1013	0	**100**
Pesticides - Total	612	1	**99.8**	1085	1	**99.9**
Selenium	519	1	**99.8**	1030	1	**99.9**
Tetrachloroethene & Trichloroethene	636	0	**100**	1188	0	**100**
Trihalomethanes(Total)	645	96	**85.1**	1374	179	**87.0**
Indicator Parameters						
Aluminium	705	46	**93.5**	7799	91	**98.8**
Ammonium	931	9	**99.0**	10374	18	**99.8**
Chloride	635	0	**100**	1203	0	**100**
Clostridium Perfringens	691	18	**97.4**	8388	27	**99.7**
Coliform Bacteria	930	104	**88.8**	10235	173	**98.3**
Colony Count @ 22Â°C	638	22	**96.6**	1397	22	**98.4**
Colour	931	103	**88.9**	10496	237	**97.7**
Conductivity	922	0	**100**	10804	0	**100**
Iron	771	66	**91.4**	6618	150	**97.7**
Manganese	651	27	**95.9**	2272	35	**98.5**
Odour	881	45	**94.9**	9929	187	**98.1**
Oxidisability	1	0	**100**	1	0	**100**
pH	931	204	**78.1**	10684	467	**95.6**
Sodium	635	0	**100**	1223	0	**100**
Sulphate	627	0	**100**	1186	0	**100**
Taste	758	11	**98.6**	8322	85	**99.0**
Total Organic Carbon	572	23	**96.0**	1118	25	**97.8**
Turbidity (at tap)	931	25	**97.3**	10441	32	**99.7**
Turbidity (at WTW)	161	37	**77.0**	1735	70	**96.0**
Radioactivity						
Total Indicative Dose	3	0	**100**	24	0	**100**
Tritium	5	0	**100**	26	0	**100**

Table 2. Total Number of Water Supply Zones (WSZs) Monitored and Samples Analysed for All Parameters in Public Group Water Schemes in 2012.

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						
E. coli	602	1	**99.8**	1464	1	**99.9**
Enterococci	101	0	**100**	113	0	**100**
Chemical Parameters						
1,2-dichloroethane	68	0	**100**	69	0	**100**
Antimony	58	0	**100**	59	0	**100**
Arsenic	67	0	**100**	69	0	**100**
Benzene	68	0	**100**	69	0	**100**
Benzo(a)pyrene	87	0	**100**	88	0	**100**
Boron	58	0	**100**	59	0	**100**
Bromate	109	0	**100**	131	0	**100**
Cadmium	67	0	**100**	69	0	**100**
Chromium	67	0	**100**	69	0	**100**
Copper	87	0	**100**	89	0	**100**
Cyanide	58	0	**100**	59	0	**100**
Fluoride	177	3	**98.3**	327	3	**99.1**
Lead	111	0	**100**	137	0	**100**
Mercury	66	0	**100**	68	0	**100**
Nickel	87	0	**100**	89	0	**100**
Nitrate	224	0	**100**	461	0	**100**
Nitrite (at tap)	333	0	**100**	739	0	**100**
Nitrites (at WTW)	71	0	**100**	158	0	**100**
PAH	67	0	**100**	68	0	**100**
Pesticides - Total	67	0	**100**	68	0	**100**
Selenium	57	0	**100**	58	0	**100**
Tetrachloroethene & Trichloroethene	68	0	**100**	69	0	**100**
Trihalomethanes(Total)	102	29	**71.6**	131	52	**60.3**
Indicator Parameters						
Aluminium	471	19	**96.0**	1082	21	**98.1**
Ammonium	601	16	**97.3**	1455	18	**98.8**
Chloride	67	0	**100**	69	0	**100**
Clostridium Perfringens	554	2	**99.6**	1283	2	**99.8**
Coliform Bacteria	602	29	**95.2**	1464	31	**97.9**
Colony Count @ 22Â℃	65	0	**100**	67	0	**100**
Colour	604	22	**96.4**	1474	29	**98.0**
Conductivity	579	0	**100**	1412	0	**100**
Iron	380	14	**96.3**	853	15	**98.2**
Manganese	191	2	**99.0**	353	2	**99.4**
Odour	563	32	**94.3**	1373	39	**97.2**
Oxidisability	1	0	**100**	1	0	**100**
pH	604	13	**97.8**	1471	19	**98.7**
Sodium	67	0	**100**	69	0	**100**
Sulphate	67	0	**100**	69	0	**100**
Taste	422	0	**100**	997	0	**100**
Total Organic Carbon	67	1	**98.5**	77	1	**98.7**
Turbidity (at tap)	604	2	**99.7**	1473	2	**99.9**
Turbidity (at WTW)	74	6	**91.9**	174	6	**96.6**
Radioactivity						
Total Indicative Dose	0	0		0	0	
Tritium	0	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 2012.

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						
E. coli	408	26	**93.6**	1614	29	**98.2**
Enterococci	251	9	**96.4**	307	9	**97.1**
Chemical Parameters						
1,2-dichloroethane	238	0	**100**	247	0	**100**
Antimony	237	0	**100**	246	0	**100**
Arsenic	239	0	**100**	248	0	**100**
Benzene	238	0	**100**	246	0	**100**
Benzo(a)pyrene	238	0	**100**	243	0	**100**
Boron	235	0	**100**	244	0	**100**
Bromate	238	2	**99.2**	247	2	**99.2**
Cadmium	238	0	**100**	247	0	**100**
Chromium	239	0	**100**	248	0	**100**
Copper	243	1	**99.6**	275	1	**99.6**
Cyanide	235	0	**100**	241	0	**100**
Fluoride	235	0	**100**	282	0	**100**
Lead	250	0	**100**	361	0	**100**
Mercury	237	0	**100**	245	0	**100**
Nickel	240	1	**99.6**	248	1	**99.6**
Nitrate	338	0	**100**	846	0	**100**
Nitrite (at tap)	322	0	**100**	1000	0	**100**
Nitrites (at WTW)	9	0	**100**	16	0	**100**
PAH	237	0	**100**	242	0	**100**
Pesticides - Total	238	1	**99.6**	245	1	**99.6**
Selenium	235	0	**100**	244	0	**100**
Tetrachloroethene & Trichloroethene	238	0	**100**	247	0	**100**
Trihalomethanes(Total)	239	16	**93.3**	272	17	**93.8**
Indicator Parameters						
Aluminium	330	9	**97.3**	1089	16	**98.5**
Ammonium	408	4	**99.0**	1588	13	**99.2**
Chloride	240	1	**99.6**	250	3	**98.8**
Clostridium Perfringens	328	13	**96.0**	1211	14	**98.8**
Coliform Bacteria	408	90	**77.9**	1614	114	**92.9**
Colony Count @ 22Â℃	247	12	**95.1**	254	12	**95.3**
Colour	408	38	**90.7**	1626	58	**96.4**
Conductivity	408	0	**100**	1600	0	**100**
Iron	332	11	**96.7**	1024	15	**98.5**
Manganese	290	13	**95.5**	616	15	**97.6**
Odour	391	10	**97.4**	1517	13	**99.1**
Oxidisability	0	0		0	0	
pH	408	31	**92.4**	1626	56	**96.6**
Sodium	241	1	**99.6**	252	1	**99.6**
Sulphate	237	0	**100**	245	0	**100**
Taste	324	0	**100**	1087	0	**100**
Total Organic Carbon	230	9	**96.1**	299	9	**97.0**
Turbidity (at tap)	408	7	**98.3**	1636	8	**99.5**
Turbidity (at WTW)	21	1	**95.2**	28	1	**96.4**
Radioactivity						
Total Indicative Dose	0	0		0	0	
Tritium	0	0		0	0	

Table 4. Total Number of Water Supply Zones (WSZs) Monitored and Samples Analysed for All Parameters in Small Private Supplies in 2012.

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						
E. coli	1303	147	**88.7**	2036	173	**91.5**
Enterococci	583	61	**89.5**	857	64	**92.5**
Chemical Parameters						
1,2-dichloroethane	22	0	**100**	23	0	**100**
Antimony	57	0	**100**	67	0	**100**
Arsenic	108	2	**98.1**	135	2	**98.5**
Benzene	23	0	**100**	24	0	**100**
Benzo(a)pyrene	21	0	**100**	21	0	**100**
Boron	54	0	**100**	64	0	**100**
Bromate	21	0	**100**	22	0	**100**
Cadmium	149	0	**100**	186	0	**100**
Chromium	147	0	**100**	184	0	**100**
Copper	365	5	**98.6**	417	5	**98.8**
Cyanide	20	0	**100**	20	0	**100**
Fluoride	32	0	**100**	40	0	**100**
Lead	543	1	**99.8**	689	1	**99.9**
Mercury	19	0	**100**	19	0	**100**
Nickel	149	0	**100**	186	0	**100**
Nitrate	891	13	**98.5**	1280	15	**98.8**
Nitrite (at tap)	1030	4	**99.6**	1560	4	**99.7**
PAH	21	0	**100**	21	0	**100**
Nitrites (at WTW)	0	0		0	0	
Pesticides - Total	29	0	**100**	29	0	**100**
Selenium	56	0	**100**	66	0	**100**
Tetrachloroethene & Trichloroethene	23	0	**100**	24	0	**100**
Trihalomethanes(Total)	22	0	**100**	23	0	**100**
Indicator Parameters						
Aluminium	448	13	**97.1**	797	15	**98.1**
Ammonium	1208	22	**98.2**	1839	31	**98.3**
Chloride	252	5	**98.0**	272	7	**97.4**
Clostridium Perfringens	633	35	**94.5**	914	39	**95.7**
Coliform Bacteria	1307	434	**66.8**	2042	527	**74.2**
Colony Count @ 22Â℃	128	10	**92.2**	158	11	**93.0**
Colour	1243	68	**94.5**	1907	86	**95.5**
Conductivity	1202	4	**99.7**	1827	4	**99.8**
Iron	937	83	**91.1**	1436	96	**93.3**
Manganese	640	86	**86.6**	847	94	**88.9**
Odour	1106	22	**98.0**	1668	23	**98.6**
Oxidisability	5	0	**100**	5	0	**100**
pH	1242	229	**81.6**	1906	296	**84.5**
Sodium	134	22	**83.6**	168	30	**82.1**
Sulphate	24	0	**100**	24	0	**100**
Taste	373	1	**99.7**	610	2	**99.7**
Total Organic Carbon	18	1	**94.4**	18	1	**94.4**
Turbidity (at tap)	1239	61	**95.1**	1900	65	**96.6**
Turbidity (at WTP)	0	0		0	0	
Radioactivity						
Total Indicative Dose	1	0	**100**	1	0	**100**
Tritium	1	0	**100**	1	0	**100**

APPENDIX V - MICROBIOLOGICAL, 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	*Escherichia coli* (*E. coli*)	0	No./100 ml	The *E. coli* 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	*Enterococci*	0	No./100 ml	*Enterococci* 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.	
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	Note 2

	Parameter	Parametric Value	Unit	Comments	Notes
				water. Under certain conditions, bromate may also be formed in concentrated hypochlorite solutions used to disinfect water (WHO, 2004).	
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
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.	Note 3

	Parameter	Parametric Value	Unit	Comments	Notes
				Nickel compounds are carcinogenic and metallic nickel is possibly carcinogenic.	
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 (methaemaglobinemia). 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 methaemaglobinemia 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 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	Trihalomethanes (THMs) are derivatives of the simplest organic compound - methane, CH_4 - in which 3 of the hydrogen atoms are substituted by halogen atoms. The principal halogens are fluorine (F_2), chlorine (Cl_2), bromine (Br_2) and iodine (I_2), 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 *chloroform* ($CHCl_3$), *bromodichloromethane* ($CHBrCl_2$), *dibromochloromethane* ($CHBr_2Cl$) and *bromoform* ($CHBr_3$). 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 ($CHCl_3$). 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. 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	Note 10

	Parameter	Parametric Value	Unit	Comments	Notes
				carcinogen although the Committee on Toxicology has concluded "*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".* 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 "*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*".	
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
Indicator Parameters					
29	Aluminium	200	µg/l	Aluminium is present 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: *"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".*	
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	*Clostridium perfringens* (incl spores)	0	No/100 ml	*Clostridium perfringens* is a member of the bacterial intestinal flora of humans and therefore serves as an indicator of faecal pollution. The spores of *Clostridium perfringens* 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}	Conductivity is a measure of the ability of water to conduct an electrical current, therefore conductivity is related to the ionic	Note

	Parameter	Parametric Value	Unit	Comments	Notes
			at 20 ^{0}C	content of the water.	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
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 0_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			

	Parameter	Parametric Value	Unit	Comments	Notes
43	Colony count 22^0C	No abnormal change		This is the number of organisms per millilitre when the water is stored at 22^0C. 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 known 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 change		This is a measure of the organic carbon in water. Sudden or significant changes in the level of TOC in the treated water can indicate problems with the water supply.	Note 15
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 *Cryptosporidium* 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 *Cryptosporidium* 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 [nitrate]/50 + [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 10,000m^3 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.

An Ghníomhaireacht um Chaomhnú Comhshaoil

Is í an Gníomhaireacht um Chaomhnú Comhshaoil (EPA) comhlachta reachtúil a chosnaíonn an comhshaol 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 príomh-nithe a bhfuilimid gníomhach leo ná comhshaol 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 comhshaol i mbaol:

- áiseanna dramhaíola (m.sh., líonadh talún, loisceoirí, stáisiúin aistrithe 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 peitreail;
- scardadh dramhuisce;
- dumpáil mara.

FEIDHMIÚ 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 comhordú a dhéanamh ar líonra forfheidhmithe 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 chomhshaol mar thoradh ar a ngníomhaíochtaí.

MONATÓIREACHT, ANAILÍS AGUS TUAIRISCIÚ AR AN GCOMHSHAOL

- Monatóireacht ar chaighdeán aeir agus caighdeáin aibhneacha, locha, uiscí taoide agus uiscí talaimh; leibhéil agus sruth aibhneacha a thomhas.
- Tuairisciú neamhspleách chun cabhrú le rialtais náisiúnta agus áitiúla cinntí 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 caighdéan aeir agus uisce, athrú aeráide, bithéagsúlacht, teicneolaíochtaí comhshaoil).

MEASÚNÚ STRAITÉISEACH COMHSHAOIL

- Ag déanamh measúnú ar thionchar phleananna agus chláracha ar chomhshaol na hÉireann (cosúil le pleananna 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 gcomhshaol 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 Guaiseacha 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 comhshaol na hÉireann a chosaint. Tá an eagraíocht á bhainistiú ag Bord lánaimseartha, ar a bhfuil Príomhstiúrthóir agus ceithre Stiúrthóir.

Tá obair na Gníomhaireachta ar siúl trí ceithre Oifig:

- An Oifig Aeráide, Ceadúnaithe agus Úsáide Acmhainní
- An Oifig um Fhorfheidhmiúchán 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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