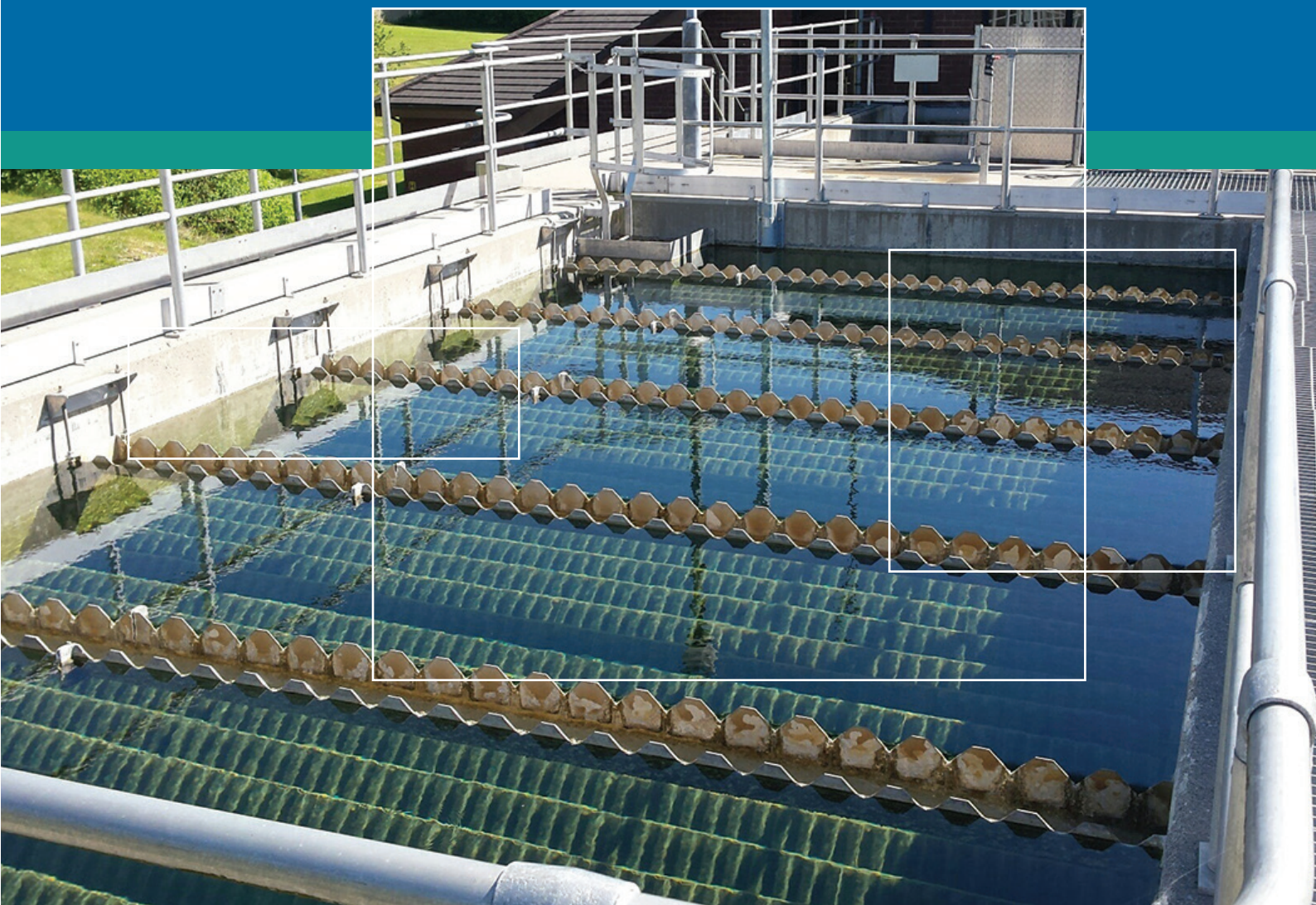


# Drinking Water Report for Public Supplies 2017



## ENVIRONMENTAL PROTECTION AGENCY

The Environmental Protection Agency (EPA) is responsible for protecting and improving the environment as a valuable asset for the people of Ireland. We are committed to protecting people and the environment from the harmful effects of radiation and pollution.

### The work of the EPA can be divided into three main areas:

**Regulation:** *We implement effective regulation and environmental compliance systems to deliver good environmental outcomes and target those who don't comply.*

**Knowledge:** *We provide high quality, targeted and timely environmental data, information and assessment to inform decision making at all levels.*

**Advocacy:** *We work with others to advocate for a clean, productive and well protected environment and for sustainable environmental behaviour.*

## Our Responsibilities

### Licensing

We regulate the following activities so that they 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, cement manufacturing, power plants*);
- intensive agriculture (*e.g. pigs, poultry*);
- the contained use and controlled release of Genetically Modified Organisms (*GMOs*);
- sources of ionising radiation (*e.g. x-ray and radiotherapy equipment, industrial sources*);
- large petrol storage facilities;
- waste water discharges;
- dumping at sea activities.

### National Environmental Enforcement

- Conducting an annual programme of audits and inspections of EPA licensed facilities.
- Overseeing local authorities' environmental protection responsibilities.
- Supervising the supply of drinking water by public water suppliers.
- Working with local authorities and other agencies to tackle environmental crime by co-ordinating a national enforcement network, targeting offenders and overseeing remediation.
- Enforcing Regulations such as Waste Electrical and Electronic Equipment (WEEE), Restriction of Hazardous Substances (RoHS) and substances that deplete the ozone layer.
- Prosecuting those who flout environmental law and damage the environment.

### Water Management

- Monitoring and reporting on the quality of rivers, lakes, transitional and coastal waters of Ireland and groundwaters; measuring water levels and river flows.
- National coordination and oversight of the Water Framework Directive.
- Monitoring and reporting on Bathing Water Quality.

### Monitoring, Analysing and Reporting on the Environment

- Monitoring air quality and implementing the EU Clean Air for Europe (CAFÉ) Directive.
- Independent reporting to inform decision making by national and local government (*e.g. periodic reporting on the State of Ireland's Environment and Indicator Reports*).

### Regulating Ireland's Greenhouse Gas Emissions

- Preparing Ireland's greenhouse gas inventories and projections.
- Implementing the Emissions Trading Directive, for over 100 of the largest producers of carbon dioxide in Ireland.

### Environmental Research and Development

- Funding environmental research to identify pressures, inform policy and provide solutions in the areas of climate, water and sustainability.

### Strategic Environmental Assessment

- Assessing the impact of proposed plans and programmes on the Irish environment (*e.g. major development plans*).

### Radiological Protection

- Monitoring radiation levels, assessing exposure of people in Ireland to ionising radiation.
- Assisting in developing national plans for emergencies arising from nuclear accidents.
- Monitoring developments abroad relating to nuclear installations and radiological safety.
- Providing, or overseeing the provision of, specialist radiation protection services.

### Guidance, Accessible Information and Education

- Providing advice and guidance to industry and the public on environmental and radiological protection topics.
- Providing timely and easily accessible environmental information to encourage public participation in environmental decision-making (*e.g. My Local Environment, Radon Maps*).
- Advising Government on matters relating to radiological safety and emergency response.
- Developing a National Hazardous Waste Management Plan to prevent and manage hazardous waste.

### Awareness Raising and Behavioural Change

- Generating greater environmental awareness and influencing positive behavioural change by supporting businesses, communities and householders to become more resource efficient.
- Promoting radon testing in homes and workplaces and encouraging remediation where necessary.

### Management and structure of the EPA

The EPA is managed by a full time Board, consisting of a Director General and five Directors. The work is carried out across five Offices:

- Office of Environmental Sustainability
- Office of Environmental Enforcement
- Office of Evidence and Assessment
- Office of Radiation Protection and Environmental Monitoring
- Office of Communications and Corporate Services

The EPA is assisted by an Advisory Committee of twelve members who meet regularly to discuss issues of concern and provide advice to the Board.



# Drinking Water Report for Public Supplies 2017

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# DRINKING WATER QUALITY PUBLIC SUPPLIES



For more information:  
[www.epa.ie](http://www.epa.ie) and [www.water.ie](http://www.water.ie)



<http://www.epa.ie/water/dw/quality>

## Key findings for 2017

### Quality of Public Water Supplies

- The quality of drinking water in public supplies remains high
- Microbiological compliance is 99.9%
- Chemical compliance is 99.6%
- Half of all boil water notices issued in 2017 were short-term notices, in place for less than 30 days

### Main Issues Affecting Water Quality

- High levels of disinfection by-products
- Persistent pesticide failures in some supplies
- Large numbers of lead pipe connections in properties

### Progress in 2017

- EPA Remedial Action List down from 99 supplies in 2016 to 77 supplies at the end of 2017
- Disinfection upgrades were completed at 81 drinking water treatment plants
- Irish Water completed almost 25,000 Drinking Water Safety Plan hazard assessments in 2017

### Action Required

- Continue to upgrade disinfection treatment under the National Disinfection Strategy
- Replace lead pipework in public buildings and private homes
- Put Drinking Water Safety Plans in place to protect drinking water supplies into the future



## 1 Introduction

This report is about the quality of drinking water in public water supplies during 2017. The information in the report is based on the assessment of monitoring results reported to the EPA by Irish Water, and on the EPA's enforcement activities.

A drinking water supply includes the abstraction, treatment, storage and distribution of water from the water source to the consumer's taps. In 2017, Ireland had 883 public water supplies serving [1.3 million households](#)<sup>1</sup>.

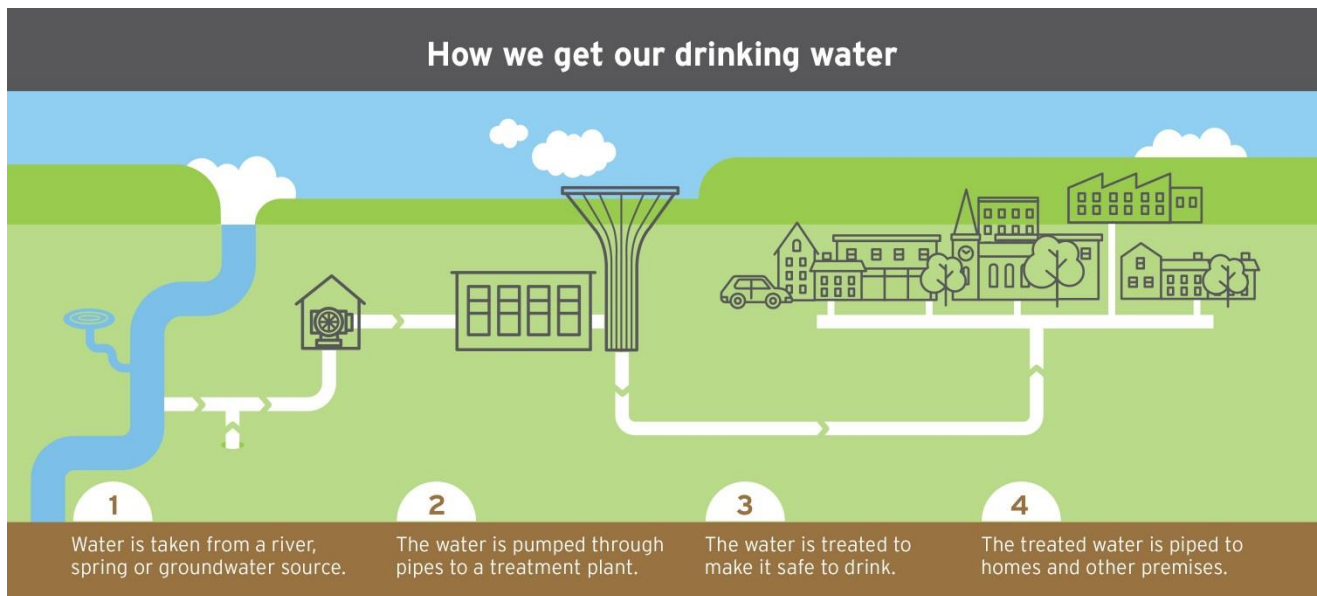


Figure 1: How do we get our drinking water?

### Who does what?

**Irish Water** is responsible for providing and developing public water services, and ensuring drinking water quality meets the standards in the Drinking Water Regulations.

The **Environmental Protection Agency (EPA)** is the drinking water regulator, responsible for enforcing the Drinking Water Regulations.

The **Health Service Executive (HSE)** is responsible for public health and must be consulted by Irish Water where there is a failure to meet the standards in the Drinking Water Regulations, or where there is a public health risk.

The **Commission for Regulation of Utilities (CRU)** is the economic regulator for public water services, responsible for ensuring that Irish Water operate in an economic and efficient manner.

### How do I find out about my drinking water?

Customers that get their drinking water from a public water supply can find out more about their drinking water quality from the Irish Water website, [www.water.ie](https://www.water.ie)<sup>2</sup>.

<sup>1</sup> CSO, Census 2016

<sup>2</sup> <https://www.water.ie/water-supply/water-quality/>

## What are the priorities for drinking water?

The EPA has identified the most important issues which should be addressed on a national level, to protect and improve public drinking water supplies. The table below lists these priority issues and the actions required to improve water supplies. More information on these actions will be discussed later in the report.

**Table 1: National priorities for drinking water supplies**

Priority Issue	Actions
Keep water free of harmful bacteria (disinfection)	To prevent people from needing to boil their water, Irish Water should continue to upgrade their disinfection systems under the National Disinfection Programme. When people are required to boil their water, Irish Water are responding quickly to ensure the boil water notice is in place for as short a time as possible.
Minimise harmful disinfection by-products (trihalomethanes)	Harmful chemicals (trihalomethanes) can be formed when natural matter in water, such as rotting vegetation, reacts with chlorine during the disinfection process. To minimise this, Irish Water are working to ensure that their treatment systems remove as much natural matter as possible from their drinking water sources.
Eliminate lead from our water pipes	Lead is harmful to our health. Irish Water have replaced all public drinking water mains that were made from lead. Public bodies should assess public buildings (schools, hospitals, libraries) for lead pipes and fittings and replace any lead pipework found. Private home owners should be encouraged to replace lead pipework in their homes or businesses.
Prevent pesticides from entering our waters	Pesticides should not be present in drinking water sources. Irish Water are working with other responsible organisations to protect drinking water sources from contamination with pesticides and promote responsible use of pesticides.
Manage risks to our public water supplies	To ensure a safe supply of drinking water, Irish Water have started to prepare a Drinking Water Safety Plan for every public water supply. This involves identifying all the risks in a supply and outlining actions to avoid or reduce the risks.
Ensure all water treatment plants are effective	The EPA's Remedial Action List is a list of all public water supplies in need of remedial action. Irish Water have prepared action programmes, with completion dates, for all public water supplies on the EPA's Remedial Action List <sup>3</sup> . Irish Water should continue to progress the action programmes to make sure completion dates are met.

<sup>3</sup> One exception to this is Lough Talt, where planning permission difficulties mean Irish Water cannot give a completion date right now.

## 2 Drinking water quality in public supplies

This section of the report presents the EPA's findings on drinking water quality in 2017.

### How is water quality assessed?

Irish Water carry out drinking water quality monitoring. They prepare **annual monitoring programmes** to ensure that a specific number of samples are taken at planned times throughout the year and at planned locations in the distribution network. These samples are taken from taps in homes and businesses. The EPA audits Irish Water's monitoring programmes to ensure that the monitoring is satisfactory. Monitoring results submitted to the EPA by Irish Water must be accredited, which means the laboratories analysing the samples must meet certain standards in their analysis methods.

Irish Water submitted around 170,000 test results for 2017 to the EPA. The EPA refers to these results as the '**annual monitoring returns**'. Each test result gives information on the quality of the drinking water at the point in time at which it was taken. Test results must comply with the standards set out in the Drinking Water Regulations<sup>4</sup>.

The samples are tested for a wide range of substances, known as 'parameters'. Three categories of parameters are monitored:

- Microbiological parameters, which include the bacteria *E. coli* and *Enterococci*;
- Chemical parameters, which are monitored to protect public health; and
- Indicator parameters, which give information on the management of the treatment process, as well as the look, taste and smell of the water.

You can find an explanation of each of the parameters described in the report at:

<http://www.epa.ie/pubs/advice/drinkingwater/parameterappendix.html>.

Since 2017, Irish Water have also been required under the [Radioactive Substances in Drinking Water Regulations](#)<sup>5</sup> to monitor radioactivity parameters in public water supplies. This monitoring is separate from the annual monitoring returns and is part of a six-year surveillance monitoring programme that started in 2017. The EPA's Office of Radiation Protection and Environmental Monitoring, carries out this monitoring and provide the results to Irish Water. The EPA will continue to carry out this monitoring over the next five years.

In 2017, 238 public water supplies were analysed for total indicative dose and radon. No failures were found.

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<sup>4</sup> European Union (Drinking Water) Regulations 2014, S.I. No. 122 of 2014, as amended

<sup>5</sup> European Union (Radioactive Substances in Drinking Water) Regulations 2016, S.I. 160 of 2016

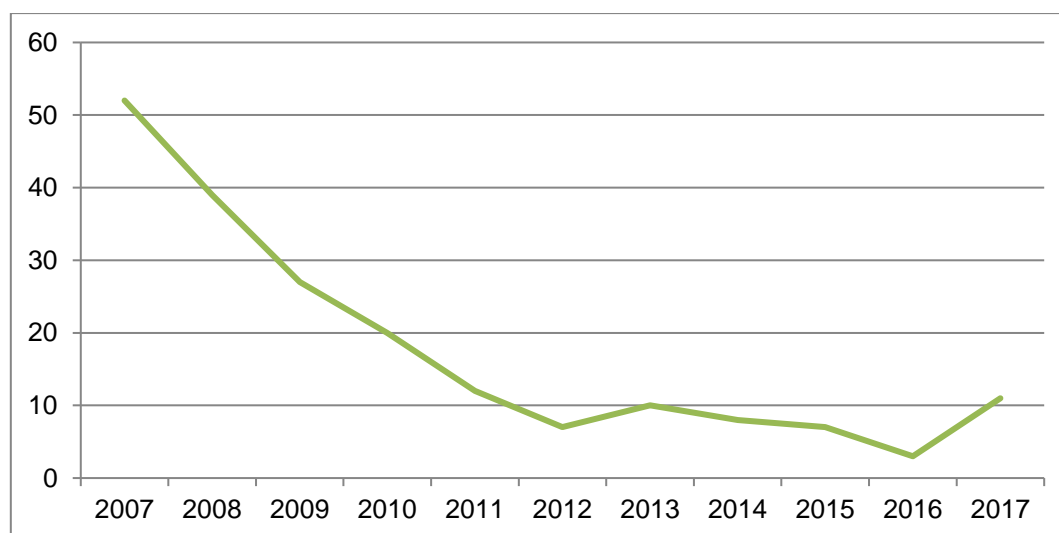
## Water quality in 2017

Water quality across each of the three parameter categories has remained consistent since Irish Water became responsible for public water supplies in 2014. There has been a slight decrease in microbiological quality from 2016 to 2017 and a slight increase in chemical quality.

**Table 2: Overall compliance for public water supplies**

Parameter Categories	2014	2015	2016	2017
Microbiological parameters	99.90%	99.92%	99.94%	99.88%
Chemical parameters	99.44%	99.39%	99.47%	99.55%
Indicator parameters	99.25%	99.05%	98.82%	98.91%

Microbiological parameters are the most important health indicators of drinking water quality, particularly *E. coli*. If *E. coli* is found in drinking water, it can mean that the disinfection treatment process is not working properly or that contamination has entered either the water reservoir or distribution pipes, after treatment. During 2017, 11 samples (in 11 supplies) failed the standard for *E. coli* in the **annual monitoring returns**. This is an increase from 2016 when only three supplies failed the *E. coli* standard. Four samples failed due to problems with disinfection treatment, three samples failed due to contamination at the consumers tap and the four remaining failures were thought to be due to sampling errors. Since 2007 however, the overall number of supplies with *E. coli* failures has significantly reduced from 52 to 11. One sample (in one supply) was found to be contaminated with *Enterococci* in 2017.



**Figure 2: Trend in the number of public water supplies where *E. coli* was detected**

Lead, trihalomethanes and pesticides continue to be the main chemical water-quality parameters of concern. Appendix 1 lists the number of samples analysed and the number failing to meet the standards. The EPA's SAFER (Secure Archive for Environmental Research Data) webpage contains all monitoring results from 2000-2017 and information on water supplies for each county at: <http://erc.epa.ie/safer/resourcelisting.jsp?oID=10206&username=EPA%20Drinking%20Water>.

## What happens when there is a water quality failure?

When Irish Water are carrying out water quality monitoring, and they find a microbiological or chemical failure, they must notify the EPA and investigate why the failure happened. As part of the investigation, Irish Water will consult with the HSE, to check if the failure might impact on people's health. The EPA will oversee the investigation to ensure that a satisfactory solution is found and Irish Water will keep the EPA informed throughout the investigation.



### Irish Water consult with HSE

Irish Water consult with the HSE early in the investigation and the HSE advise if the water quality failure could impact on people's health. The HSE may advise Irish Water to issue a boil water notice and/or water restriction notice on a supply, if it is thought that drinking or using the water might endanger people's health. If this is the case, Irish Water must inform consumers as quickly as possible. When the cause of the failure is fixed, Irish Water consult the HSE again and the notice is removed, letting the public know that the water is safe to drink or use again. Notices can apply to all or part of a supply and how long they last will depend on how long it takes to fix the problem. Sometimes Irish Water will issue a notice even when no water quality failure has been found. They will do this if they are concerned that a problem in the supply *might* cause a failure. These notices are 'precautionary'.

### Boil water notices

**During 2017**, 42 boil notices were in place in 17 counties affecting 21,657 people. This was a significant reduction from the 83,044 people affected by boil notices in 2016. Precautionary boil notices were put in place on seven supplies in Co. Waterford following Storm Ophelia, which hit Ireland in October 2017. These precautionary notices affected 875 people and were put in place due to power failures caused by the storm. The notices were lifted 10 days later, after sampling confirmed there was no long-term impact to water quality.

**At the end of 2017**, seven boil notices were in place affecting 41 people. This is a reduction in both the number of boil notices and the population affected, compared to the end of 2016. At that time 10 boil notices were in place affecting 5,654 people. The reduction in numbers is because of improvements made by Irish Water to water supplies. Irish Water extended the Lough Mask supply in 2017 to replace the Ballinlough/Loughglynn supply, which lifted a boil water notice for over 3,400 people, and they improved disinfection treatment at several other supplies.

In the introduction to this report, we stated that one of the main priorities is to keep water free of harmful bacteria, and the action linked to this was to prevent long-term boil notices. A long-term boil notice is one that is in place on a supply for longer than 30 days. Of the 42 boil notices in place during 2017, more than half (23 notices) were short-term notices and were lifted within one month. Seven were long-term notices that were in place for longer than one year.

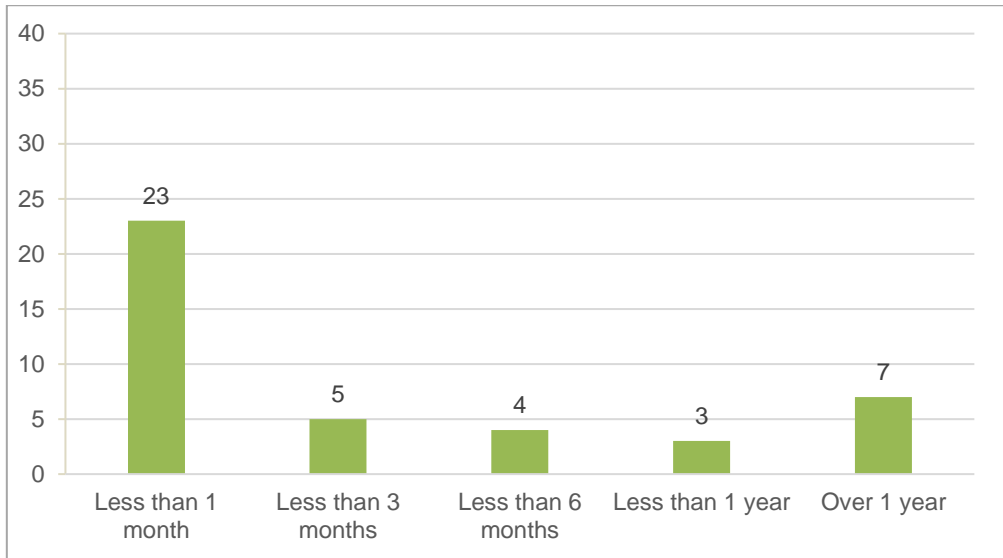


Figure 3: Number of boil notices in place during 2017 and how long the boil notice was in place

### **Water restrictions**

During 2017, four water restriction notices were in place in three counties affecting 233 people. This is a reduction from 11 water restrictions affecting 1,380 people during 2016. **At the end of 2017**, three water restriction notices were in place affecting 68 people. A water restriction generally means that people are advised not to use the water for drinking and are advised to use bottled water instead.

A summary of all boil notices and water restrictions in place and lifted in 2017 is provided in Appendix 3.

### **Irish Water notify the EPA**

Irish Water must notify the EPA as soon as a water quality failure is found when they are carrying out the monitoring for the ‘**annual monitoring returns**’. In addition to the annual monitoring returns, Irish Water also carry out ‘**operational monitoring**’ to make sure a treatment plant is operating correctly, and ‘**investigative monitoring**’ when investigating a problem or complaint. This monitoring is **not** part of the annual monitoring returns. This can mean that more failures can be notified to the EPA than are reported in the annual monitoring returns.

The important point to note is that if a failure is found during this additional operational or investigative monitoring, it must also be notified to the EPA and investigated by Irish Water.

Compliance with the Drinking Water Regulations is based on an assessment of the **annual monitoring returns only**.

During 2017, Irish Water notified the EPA of 878 drinking water quality failures, up from 854 in 2016. This was mainly due to an increase in the number of pesticide failures.

**Table 3: Number of public water supplies where failures to meet the microbiological or chemical standards were notified to the EPA in 2017**

Parameter	No. of supplies with failures in the 2017 annual monitoring returns	No. of supplies with additional operational or investigative failures in 2017	Total number of supplies with failures reported to the EPA in 2017
<i>E. coli</i>	11	9	20
<i>Enterococci</i>	1	0	1
Arsenic	0	2	2
Benzo(a)pyrene	1	0	1
Copper	3	0	3
Fluoride	9	2	11
Lead	See Section 4		
Nickel	4	2	6
Nitrate	2	1	3
PAH	0	2	2
Pesticides (individual)	0	48	48
Pesticides (Total)	4	2	6
Selenium	1	1	2
Tetrachloroethene & Trichloroethene	1	0	1
Trihalomethanes (Total)	42	31	73

Here is an example of how the total number of supplies with failures reported to the EPA is calculated: During 2017 Irish Water found *E. coli* failures in **11** supplies when they were carrying out the annual monitoring. Irish Water also carried out operational monitoring and investigative monitoring in 2017 and found *E. coli* failures at **9** additional supplies during this monitoring. All failures had to be reported to the EPA and in total Irish Water reported *E. coli* failures at **20** supplies (11 plus 9) to the EPA in 2017.

### **Other water quality failures notified to the EPA**

*Cryptosporidium* is a parasite that is found in human or animal waste and if present in drinking water can cause persistent diarrhoea. The Drinking Water Regulations do not require *Cryptosporidium* monitoring to be carried out. However, because of the risk to health from *Cryptosporidium*, the EPA has produced guidance on [Cryptosporidium monitoring](#)<sup>6</sup> and has asked Irish Water to submit *Cryptosporidium* results as part of the 'annual monitoring returns'. In 2017 *Cryptosporidium* was detected in 17 public water supplies (12 in 2016). Adequate treatment is required at all water supplies where *Cryptosporidium* has been identified as a risk. The EPA's Remedial Action List includes 21 supplies that have inadequate treatment for *Cryptosporidium*.

<sup>6</sup> Available at <http://www.epa.ie/pubs/advice/drinkingwater/epadrinkingwateradvisenote-advisenoten9.html>

### 3 Water quality investigations and EPA enforcement actions

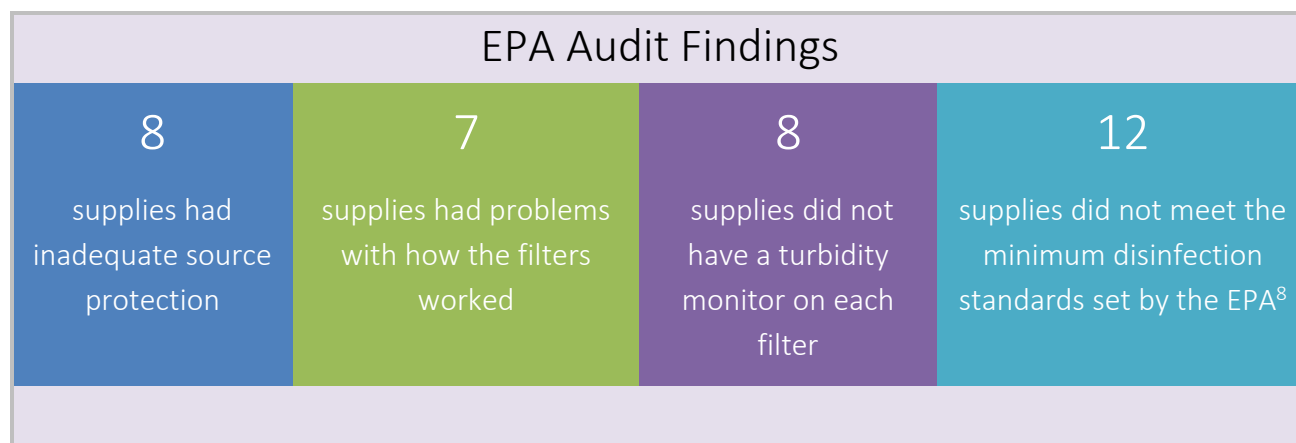
The EPA is the drinking water quality regulator for public water supplies and works to ensure that drinking water supplied by Irish Water meets the standards of the Drinking Water Regulations. Irish Water must notify the EPA of any water quality failures and the EPA then oversees Irish Water's investigation and solution or 'remedial action' in response to the failure. As part of the EPA's role in water quality investigations, we may:

- Audit drinking water supplies
- Issue legal Directions
- Take legal Prosecutions
- Put a supply on the EPA Remedial Action List

#### EPA audits in 2017

During 2017, the EPA carried out 51 audits (Appendix 5) of public water supplies across 18 local authority areas. These were a mixture of 28 scheduled audits and 23 reactive audits. Reactive audits are carried out to follow up on water quality failures as they happen and scheduled audits are mainly used to check that remedial actions have been carried out, or as spot checks on supplies that have not had any water quality failures. The EPA also carried out three audits of Irish Water's monitoring programmes in three counties. The EPA issues audit reports to Irish Water and publishes them on the [EPA website](#)<sup>7</sup>. During an audit, the inspector may look at some or all the following aspects of a supply: protection of the water source; treatment capacity; treatment process; distribution network.

Here is a summary of the main compliance issues identified across the 51 audits:



Poor source protection measures can lead to the contamination of the source water. Supplies with inadequate source protection that do not have a treatment barrier are at risk of having *Cryptosporidium* in the supply. Poor operation of filters and high turbidity in water after the filters means that if *Cryptosporidium* is present in the source water, it is also likely to be in the treated water and may pose a risk to human health.

<sup>7</sup> Available at <http://www.epa.ie/water/dw/dwaudits/>

<sup>8</sup> Available at <http://www.epa.ie/pubs/advice/drinkingwater/epadrinkingwateradvicenoteadvicenoteno3.html>



Of the 12 supplies with inadequate disinfection, two of those had no disinfection monitor or alarm, and seven supplies had monitors and alarms that were not working at the time of the audit. Without a working disinfection monitor and alarm, water treatment plant operators cannot know if disinfection is working correctly. Of the 20 supplies with *E. coli* failures notified to the EPA in 2017, seven supplies had issues with their disinfection not working correctly.

### **EPA Directions in 2017**

The EPA may issue a Direction to Irish Water under the Drinking Water Regulations where there is a risk to human health or where remedial action is required. A Direction is a legally binding instruction to Irish Water to fix a water quality issue. Examples of cases where the EPA has issued Directions include the following:

- There is no chlorine monitor or alarm in place.
- There have been persistent water quality failures and Irish Water have not acted or not acted quickly enough to improve water quality.
- Irish Water have not provided information to the EPA when asked for it.

The EPA issued nine legally binding Directions to Irish Water during 2017. We also monitored progress on Directions issued prior to 2017. Appendix 2 gives a summary of these directions.

### **EPA Prosecutions in 2017**

The EPA may take a prosecution against Irish Water where we consider that a Direction has not been complied with. In September 2017, the EPA began legal proceedings against Irish Water for six supplies in Donegal<sup>9</sup>. The EPA had issued Directions to Irish Water because of persistent trihalomethane failures in these supplies. The cases were heard in April 2018.

### **EPA Remedial Action List**

The Remedial Action List (RAL), first prepared by the EPA in 2008, is a list of public water supplies in need of significant corrective action, usually at the treatment plant. Public water supplies are added to the RAL for one or more of the following reasons:

- Persistent failure to comply with the standards for priority parameters, for example, *E. coli*, trihalomethanes, aluminium, turbidity.
- Inadequate treatment, for example, where there is no treatment other than chlorination for a surface water supply.
- Monitoring results or compliance checks by the EPA indicate a lack of operational control at the supply's treatment plant.
- The Health Service Executive identify a supply where improvements are required.

In 2017, the EPA started to add supplies to the RAL for persistent pesticide problems.

The EPA has identified the preparation and completion of action programmes for RAL supplies as one of the priority actions required to protect our drinking water. The EPA updates the RAL every three months. When Irish Water have demonstrated that the supply is safe and secure, a supply can be removed from the RAL.

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<sup>9</sup> The six Donegal supplies were: Cashilard, Gortahork-Falcarragh, Fintown, Greencastle, Portnoo Nairn and Rathmullan.

## Remedial Action Progress

The first RAL prepared by the EPA in 2008 identified 339 public water supplies (representing 36% of public water supplies) that required remedial action. The number of supplies on the RAL is steadily decreasing every year and, at the end of 2017, there were 77 schemes on the RAL, serving 686,109 people. Appendix 4 shows the situation at the end of 2017; this is summarised as follows:

- 292 (87%) of the original 339 supplies were removed from the RAL by the end of 2017 (Figure 4).
- Over the period 2008 – 2017, 153 supplies were added to the original RAL. Of these, 123 had been removed, and 30 remained on the RAL at the end of 2017.
- 11 supplies were added to the RAL in 2017. These supplies were added to the RAL for failure to meet the trihalomethane standard, persistent pesticide problems and inadequate treatment for *Cryptosporidium*. 33 RAL supplies serving 214,789 people had remedial works completed in 2017.
- 77 supplies were on the RAL at the end of 2017, supplying water to 686,109 consumers (Figure 5).

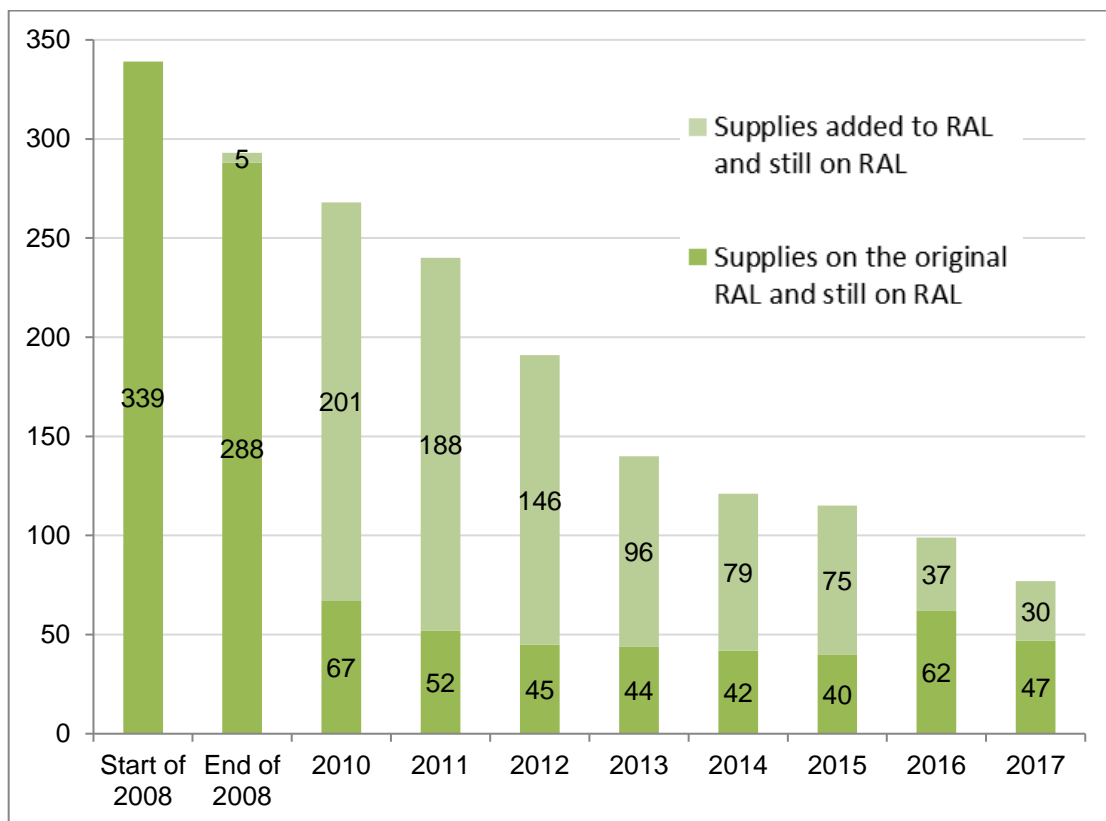


Figure 4: Breakdown of number of public supplies on the original RAL and added to the RAL

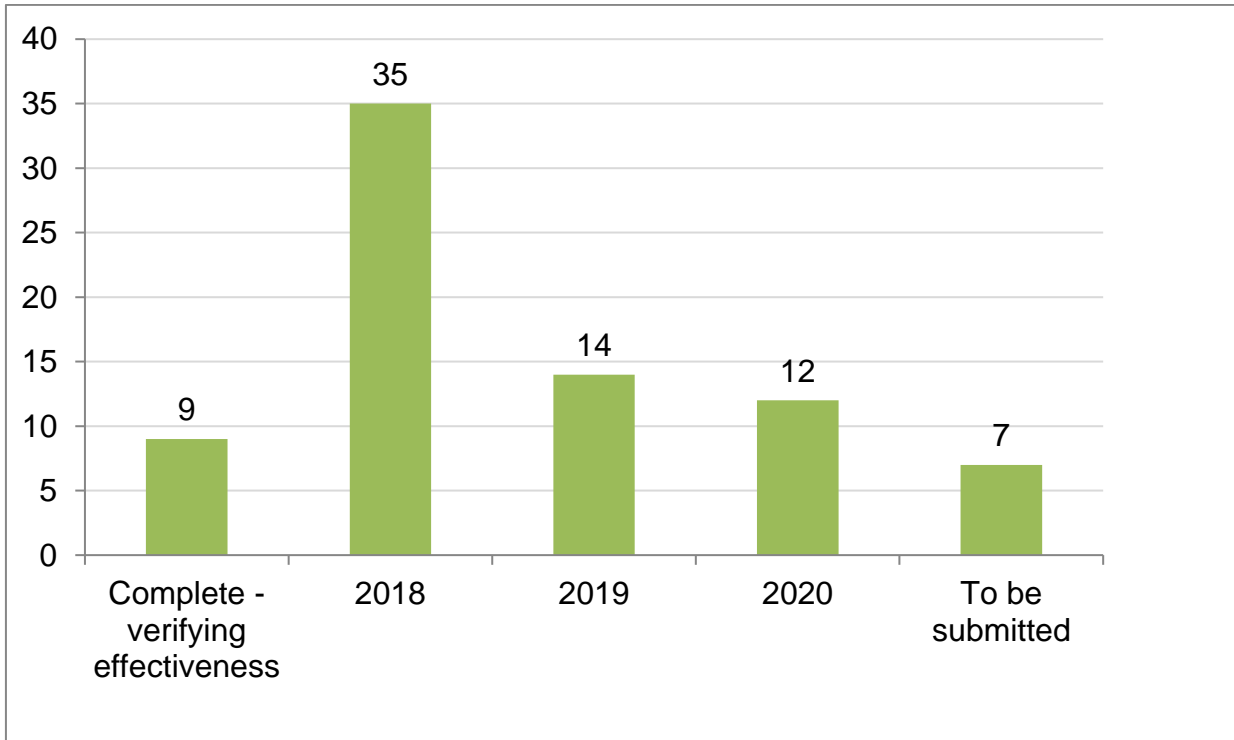
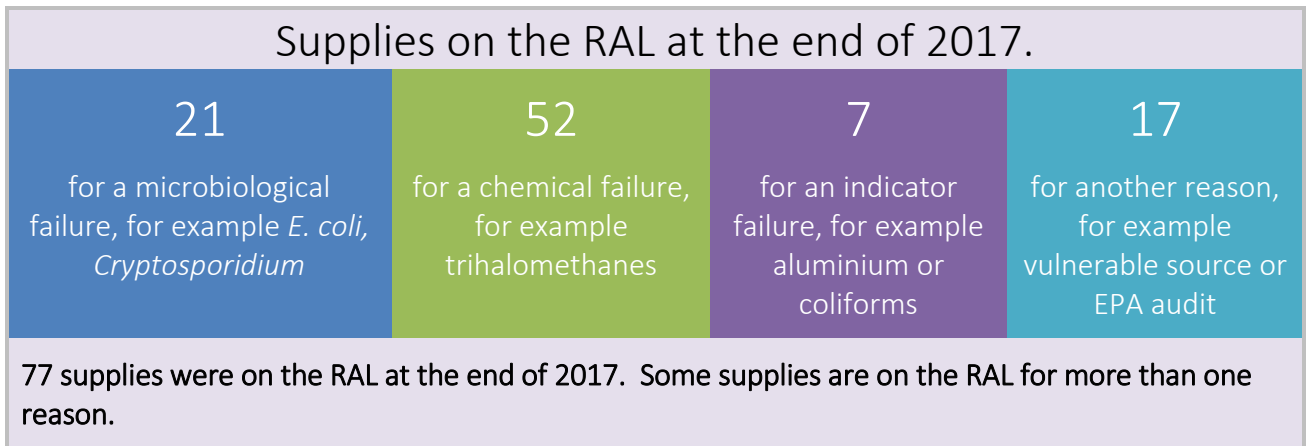


Figure 5: RAL completion dates provided by Irish Water in December 2017

Irish Water had provided completion dates for all but seven RAL supplies by the end of 2017. Four supplies without completion dates were supplies added to the RAL at the end of 2017, and completion dates were submitted by Irish Water for these supplies at the beginning of 2018. One exception to this is the Lough Talt supply in County Sligo, where planning permission difficulties mean Irish Water have no completion date for the supply. Irish Water submit progress reports to the EPA every three months and a summary is published on the EPA website at:

<http://www.epa.ie/pubs/reports/water/drinking/>.

Appendix 4 gives a breakdown of the supplies on the RAL in each county along with anticipated completion dates as provided by Irish Water in December 2017.



## **4 Preventing water quality failures from happening**

The EPA's primary focus is on overseeing Irish Water's reaction to water quality failures, however we also want Irish Water to take actions to prevent water quality failures from happening in the first place.

The EPA has identified several priority issues affecting drinking water quality, and has recommended that Irish Water take a strategic national approach to these issues with the aim of preventing water quality failures. Irish Water, as a national utility, can implement programmes to take consistent action on these issues on a national level. As outlined in the Table 1 of this report, priority issues for drinking water are:

- Disinfection
- Trihalomethanes
- Lead
- Pesticides
- Drinking Water Safety Plans

Drinking Water Safety Plans examine the entire supply from water source to consumers tap and so will be discussed first.

## Drinking Water Safety Plans

Drinking Water Safety Plans are a proactive approach to protecting drinking water supplies. Drinking water should be **safe**. This means it should meet the relevant water quality standards at the tap. But it should also be **secure**, that is, there should be a system in place to identify all the things that could go wrong in a supply, and take action to prevent these things from happening.

When something goes wrong in a supply, it can have an impact on the water being supplied to the consumer, for example, it could result in a supply being cut off, or the need for a consumer to boil their water. Drinking Water Safety Plans are used to ensure that a supply is both safe and secure. A Drinking Water Safety Plan identifies:

- all the things that could go wrong (hazards);
- how serious it would be if it did go wrong (severity); and
- how likely it is that it could go wrong (likelihood).

An example of a hazard is where a disinfection dosing pump breaks down and the caretaker does not know about it. If undisinfecting water reaches the consumer's tap and there is bacteria in the water the severity of the hazard could be high for the consumer. They may get ill. If there is an alarm on the disinfection system, the likelihood of the pump breaking down without the caretaker knowing is low. It is critical that alarms are in place and always working properly.

Drinking Water Safety Plans identify the hazard, severity and likelihood at each step in the water supply process, from the water source to the consumer's tap. Figure 6 below presents the steps involved in the drinking water supply process.



Figure 6: Steps in the drinking water supply process

Once the severity and likelihood of each hazard has been determined, it is possible to calculate the risk. Risks can be low, moderate, high or very high. The next step is to take actions to reduce the risks at each water supply, and make the supply as secure as possible.

Irish legislation does not require water suppliers to prepare and implement Drinking Water Safety Plans. However, such plans are recommended by the World Health Organisation, and Irish Water are adopting this approach. This means that Irish Water are carrying out assessments of all public water supplies. They assess and calculate the risk of any hazards occurring, using the severity and likelihood information. Irish Water have identified 173 different hazards which need to be assessed at each of the 883 public water supplies.

The table below provides information on the number of Drinking Water Safety Plan risk assessments carried out by Irish Water in the last three years.

**Table 4: Drinking Water Safety Plan hazard assessments complete**

	2015	2016	2017
Number of supplies that had assessments carried out	151	422	316
Number of hazard assessments carried out	4,336	10,082	24,879

By carrying out these assessments, Irish Water can make sure that investment is focused on the areas where the risks to the supply are greatest. The EPA will be monitoring Irish Water's progress in carrying out the assessments and taking measures to reduce risks at public supplies.

The EPA has published guidance to assist Irish Water in developing [Drinking Water Safety Plans](#)<sup>10</sup>.

<sup>10</sup> Available at <http://www.epa.ie/pubs/advice/drinkingwater/epadrinkingwateradvicenote-advicenoteno8.html>

## Disinfection

Disinfection is the most important step of the water treatment process. It makes our water supplies safe from bacteria and parasites such as *E. coli* and *Cryptosporidium*, which can cause illness. The number of supplies with *E. coli* failures reported to the EPA in 2017 increased to 20 supplies, compared with 12 in 2016. The 20 supplies are made up of 11 supplies with failures under the ‘annual monitoring returns’ and nine supplies with failures under ‘operational monitoring’ or ‘investigative monitoring’. Irish Water reported that disinfection was not working correctly at seven of the 20 supplies with *E. coli* failures in 2017, an increase from two supplies in 2016. It is very important that Irish Water continue to undertake improvements to disinfection systems across the country to ensure that the quality of drinking water is safeguarded.

In 2016, Irish Water prepared a draft National Disinfection Strategy to address deficiencies in disinfection of public water supplies. The Strategy outlines the standard specifications for disinfection systems that should be in place in all water treatment plants. The Strategy is accompanied by a [National Disinfection Programme](#)<sup>11</sup>. The Programme is split over two phases:

- Phase 1 - Water Treatment Plant Assessment

Irish Water assess the condition and performance of the existing disinfection systems at water treatment plants across the country. This determines the improvements needed to ensure that the treatment plant disinfection process meets the requirements.

- Phase 2 – Water Treatment Plant Upgrade Works

Irish Water carry out the necessary improvements to areas such as chemical storage and dosing, ultraviolet (UV) disinfection systems, monitoring and alarm systems.



Figure 7: UV disinfection system

<sup>11</sup> Available at <https://www.water.ie/projects-plans/national-projects/national-disinfection-programme/>

Irish Water provide updates to the EPA every three months on progress with the implementation of the National Disinfection Programme. During 2017, water treatment plant assessments were concentrated in counties: Carlow, Kilkenny, Wexford and Limerick. The upgrade works were concentrated in counties: Clare, Kerry, Donegal, Kildare, Longford, Dun Laoghaire Rathdown, Waterford, Mayo and Sligo.

At the end of 2017, Irish Water had assessed 435 individual water treatment plants and upgrade works had commenced at 137 water treatment plants. Upgrade works were complete at 81 water treatment plants. There is a total of 834 water treatment plants in the programme. Irish Water have stated that the National Disinfection Programme will continue during 2018. The current programme is scheduled for completion by the end of June 2019.

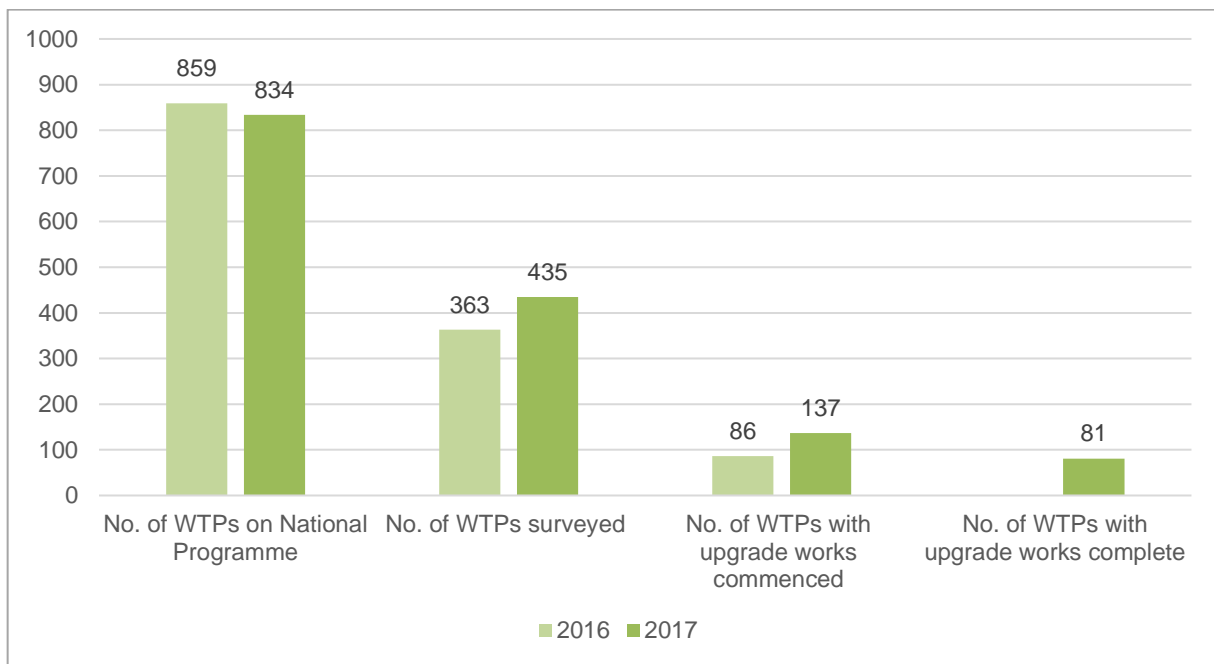


Figure 8: Progress made at water treatment plants (WTPs) under the National Disinfection Programme by the end of 2016 and 2017.



### Trihalomethanes (THMs)

Trihalomethanes (THMs) form when natural organic matter in the water source, such as rotting vegetation, reacts with chlorine used in the disinfection treatment process. The standard for THMs in drinking water is 100 µg/l. The challenge for Irish Water is to minimise the amount of THMs in drinking water, while still ensuring that disinfection is effective.

During 2017, Irish Water notified the EPA of 73 supplies across 21 counties that failed the standard for THMs. In 2016, there were 90 supplies across 21 counties with failures.

At the end of 2017, 52 supplies serving 392,209 people were on the EPA Remedial Action List for THM issues. This compares to 464,718 people at the end of 2016.

Irish Water have developed action plans for all supplies with THM issues on the RAL and submit progress reports to the EPA every three months. The action plans outline any measures or treatment process upgrades that Irish Water are putting in place to achieve compliance with the THMs standard, without compromising disinfection. Irish Water have indicated that action plans will be completed in all supplies by 2020. One exception to this is the Lough Talt supply in County Sligo, where planning permission difficulties mean Irish Water have no completion date for the supply.

The European Commission started a pilot infringement case against Ireland in 2015, (ref 7554/2015/ENVI) due to the number of public water supplies failing to meet the THMs standard. The European Commission is expected to make a decision on the infringement proceedings and a letter of formal notice will be delivered to the Department of Housing, Planning and Local Government when this happens.

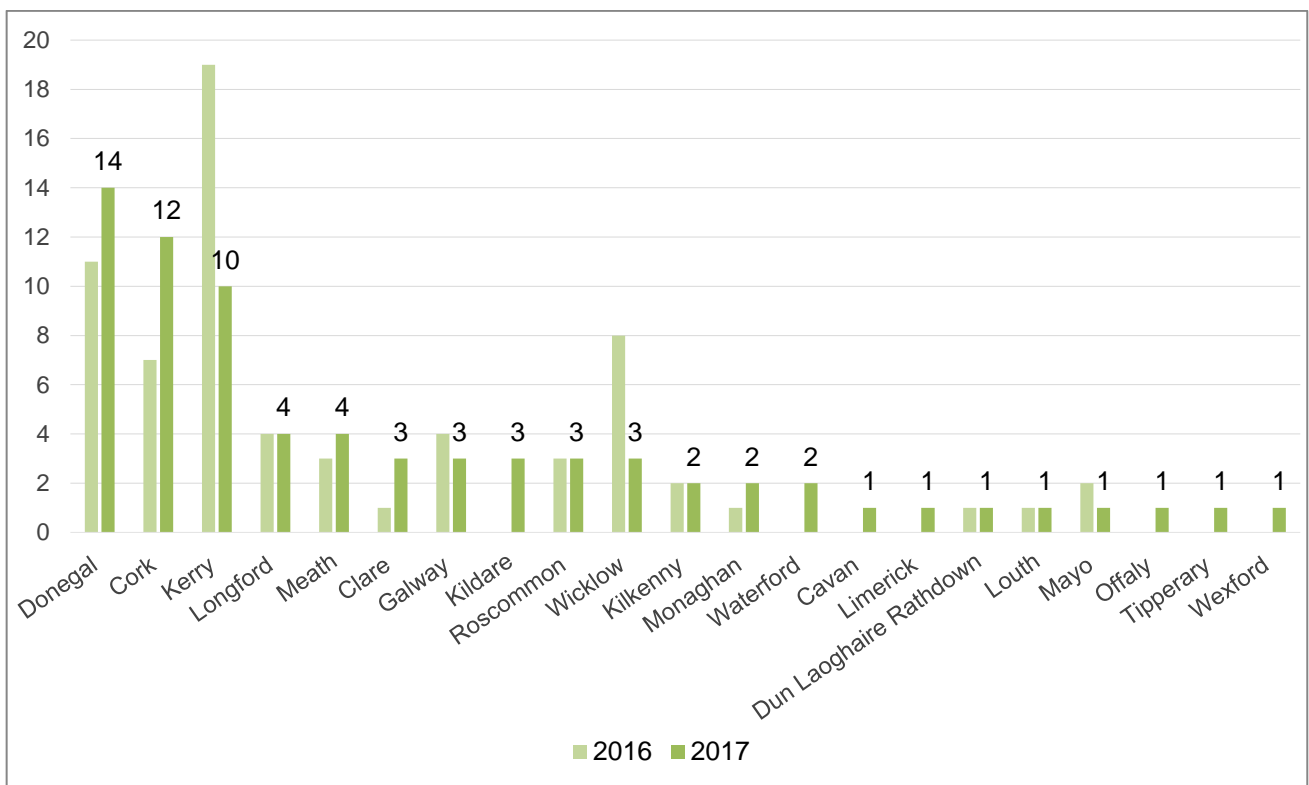


Figure 9: Number of notified THM failures in public water supplies, by county, in 2017

## Lead

Lead is found in drinking water when it dissolves from lead pipework, mains connections and plumbing fittings. The standard for lead in drinking water is 10 µg/l.

The Irish Government published a [National Lead Strategy](#)<sup>12</sup> in June 2015. The strategy reflects the fact that lead in drinking water is both the responsibility of water suppliers and property owners. Irish Water, as the water supplier for public water supplies, are responsible for lead pipework in the water distribution network. This is known as public-side lead. Property owners are responsible for lead plumbing in their buildings and inside their property boundary. This is known as private-side lead. The strategy sets out actions to reduce people's exposure to lead from drinking water, and these actions are reported on by the Department of Housing, Planning and Local Government.

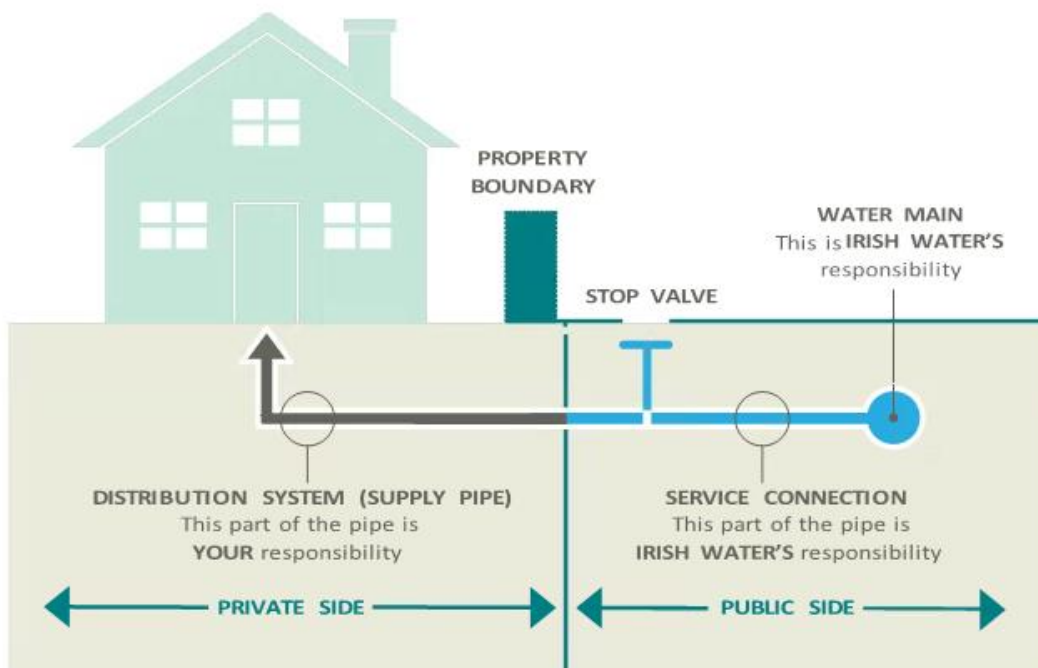


Figure 10: Responsibility for water distribution systems

In May 2017, after public consultation, Irish Water published its [Lead in Drinking Water Mitigation Plan](#)<sup>13</sup> which sets out what Irish Water are going to do to reduce public-side lead.

The goal of both the National Strategy and the Mitigation Plan is the removal of all lead pipework. Irish Water estimate that there are 180,000 lead service connections of which:

- 140,000 are service connections from water mains which run under the roads; and
- 40,000 are backyard service connections, where lead pipes run through backyards serving a number of houses.

<sup>12</sup>Available at <http://www.housing.gov.ie/sites/default/files/migrated-files/en/Publications/Environment/Water/FileDownload%2C41733%2Cen.pdf>

<sup>13</sup> Available at <https://www.water.ie/projects-plans/national-projects/lead-mitigation-plan/>

Irish Water aims to remove all public-side lead pipework by 2026. It is the responsibility of a property owner to remove any lead pipework within the property. Other actions are being taken to reduce people's exposure to lead in the meantime. A summary of the actions taken in 2017 is provided below.

### Main Actions carried out in 2017

- Irish Water completed their expanded lead monitoring programme. This involved taking 36,000 water samples from homes and other premises across the country during 2016 and 2017, and analysing them for lead. This will allow Irish Water to identify the areas where lead is the greatest problem and target those areas for action.
- Irish Water issued 1,334 advice letters to consumers where a sample from their premises failed to meet the lead standard. They also produced a [YouTube video](#)<sup>14</sup> on the causes and solutions to lead in drinking water.
- Irish Water continued to carry out works to replace lead pipes and connections. Figure 11 shows that only a small number of lead pipes and connections were replaced during 2017. Irish Water report that new contracts are in place to speed up replacements in 2018. The EPA is concerned at the low numbers of replacements given Irish Water's target date of 2026 for the removal of lead pipework within the public network.
- Irish Water introduced ortho-phosphate dosing at Clareville, Co. Limerick in November 2016. Ortho-phosphate coats the inside of the water distribution pipework and reduces the amount of lead that dissolves into the drinking water. Before ortho-phosphate dosing started at Clareville, 5% of properties failed to meet the standard for lead. One year into the project the compliance rate has improved to just under 2% of properties failing to meet the lead standard.

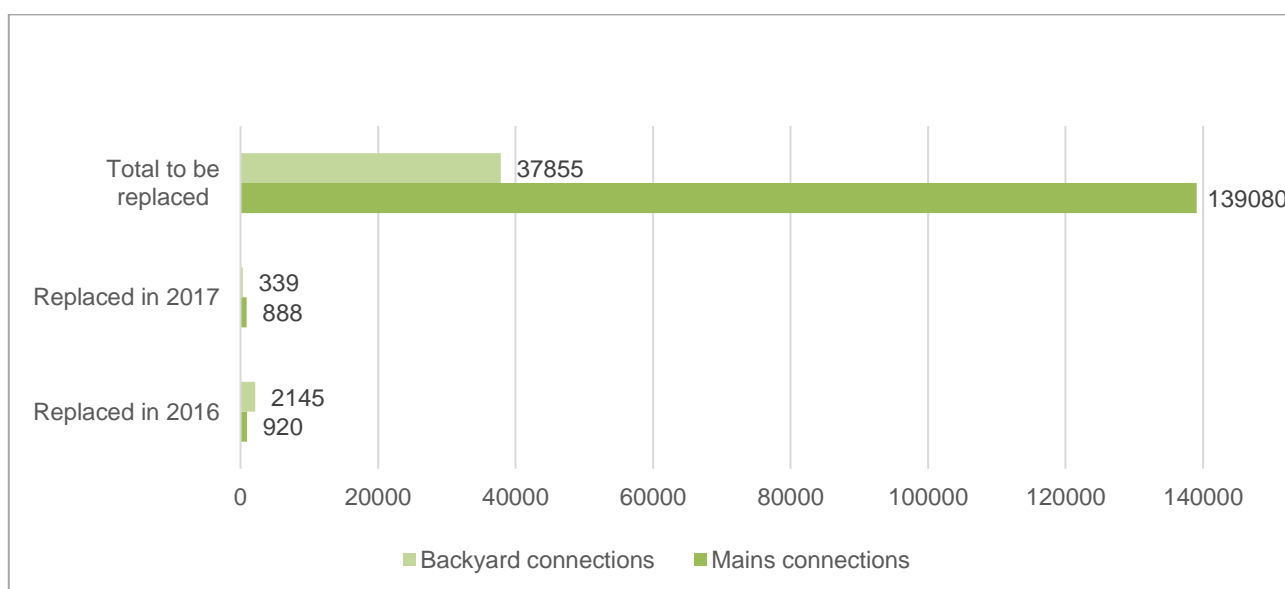


Figure 11: Number of lead connections replaced in 2016 and 2017 as a proportion of the total to be replaced

<sup>14</sup> [https://www.youtube.com/watch?v=QuhfNgcJL\\_A](https://www.youtube.com/watch?v=QuhfNgcJL_A)

## Pesticides

The term 'Pesticides' includes a wide range of products, but in Ireland, it is herbicides that pose the greatest threat to drinking water. The most commonly found pesticide is MCPA<sup>15</sup> which is used for rush control in grassland. Pesticide products should not be present in drinking water and the Drinking Water Regulations set the following standards:

**Table 5: Pesticide standards.**

Parameter	Standard
Pesticides (individual)	0.10 µg/l
Aldrin, dieldrin, heptachlor, heptachlor epoxide	0.030 µg /l
Pesticides – Total	0.50 µg/l

The standards are set considerably below levels which would impact on people's health. To meet these standards requires great care when using pesticide products in the environment, and particularly near drinking water sources.

In 2016, Irish Water began a programme of monitoring all public supplies for 21 pesticides most likely to be found in Irish waters. The programme highlighted an issue of widespread and, in a small number of supplies, persistent failures to meet the pesticide standards.

Where pesticide failures are detected, the EPA requires:

- An inspection of the area local to the treatment plant or abstraction point for any obvious, nearby source of contamination;
- A programme of sampling to investigate the incident;
- Catchment-based investigations and awareness raising activities, if the problem persists.

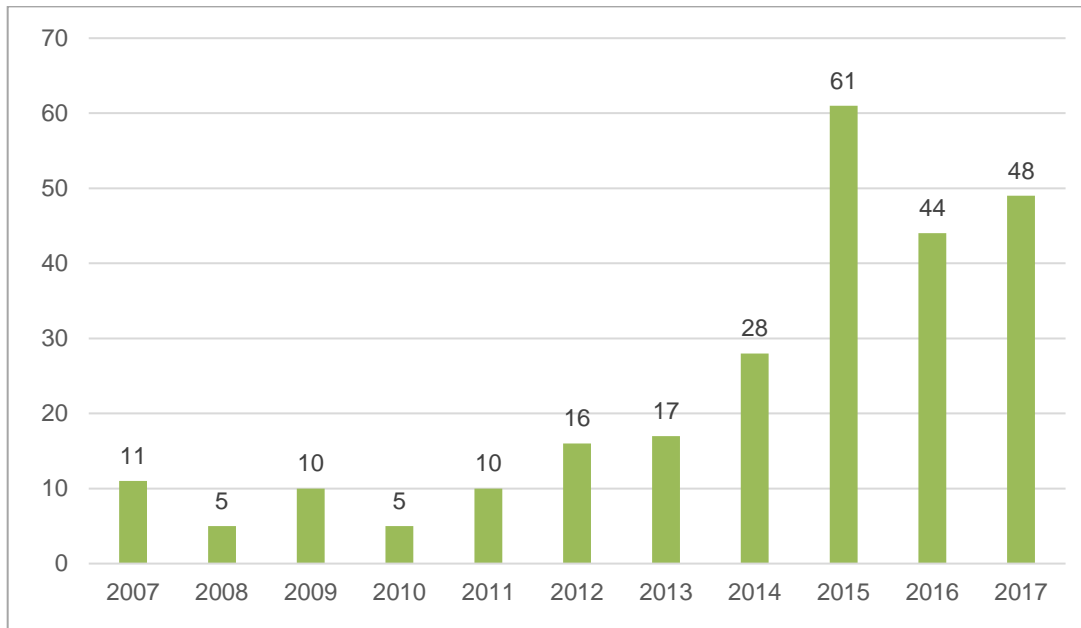
A National Pesticide and Drinking Water Action Group, led by the Department of Agriculture, Food and the Marine, meets every three months to support catchment-based actions and allow different interest groups come together to respond to the issue of pesticides in drinking water. The group includes representatives from Irish Water, local authorities, the farming community and pesticide manufacturers and suppliers.

The following is a summary of what Irish Water's pesticide monitoring programme found in 2017:

- At the end of 2017, the EPA was investigating 53 supplies serving over 660,000 people due to failures to meet the pesticide standard. This is down from 63 supplies affecting 900,000 at the end of 2016.
- Of the 53 supplies being investigated by the EPA, 48 supplies had failures during 2017. The remaining five supplies had no failures during 2017 but had failures in 2016. However, not enough samples were taken to confirm that the issue was resolved.

<sup>15</sup> 2-methyl-4-chlorophenoxyacetic acid

- Persistent failures were identified in four of the 48 supplies during 2017. The four supplies were, Listowel Regional, Co. Kerry, Kilkenny City (Troyswood), Co. Kilkenny, Abbeyfeale, Co. Limerick and Longford Central, Co. Longford. The EPA issued Directions to Irish Water in relation to each of these supplies during 2017.
- The remaining 44 supplies were found to have either once-off failures or non-persistent failures. Irish Water are carrying out increased sampling in these supplies to investigate the extent of the pesticide problem.
- Almost 80% of all failures detected are of the herbicide MCPA, commonly used to control rushes in grassland.



**Figure 12: Number of public water supplies with reported pesticide failures**

Irish Water are now using a consistent method of responding to pesticide failures in all parts of the country. This approach involves communicating and working with the members of the National Pesticide and Drinking Water Action group and communicating with pesticide users through local media. However, a National Pesticides Strategy should be developed to include the actions that are to be taken when communicating and working with pesticide users does not resolve the problem.

## Water quality contaminants in the future - microplastics

Microplastics are a newly identified contaminant in water sources, including drinking water sources, across the world. Microplastics are very tiny (<5mm) pieces of plastic which can come from a variety of different materials including:

- everyday cosmetics such as toothpaste and exfoliating cream (microbeads);
- synthetic clothes, such as fleece jackets and sportswear (microfibres); and
- larger pieces of plastic such as plastic bottles, which breakdown into microplastic pieces.

As microplastics are an emerging water quality issue, the impact of them on people's health has not yet been fully assessed and determined. There is currently no water quality standard for microplastics in the Drinking Water Regulations. However, the EPA is keeping a close eye on European and Irish research in this area, and there may be a standard set in the future.

### EPA research

In June 2017, the EPA published a research report, titled "[Scope, Fate, Risks and Impacts of Microplastic Pollution in Irish Freshwater Systems](#)<sup>16</sup>". The research was carried out by the Marine and Freshwater Research Centre at Galway-Mayo Institute of Technology, and identified some of the main sources of microplastics in Ireland. These include plastic manufacturing and recycling industries, landfills, wastewater treatment plants, septic tanks. The EPA is currently funding a further research project on microplastics in water, "[Impacts of Microplastics on the Irish Fresh Water Environment](#)<sup>17</sup>". The project started in March 2017 and is due to be completed by March 2020.

In 2018 the EPA launched a new [research call](#)<sup>18</sup> looking for researchers to carry out several new research projects over the next few years. One of these projects will look at the potential health impacts of microplastics, and the call will stay open until 27<sup>th</sup> June 2018.

### Legislation

In March 2017, the Department of Housing, Planning, Community and Local Government launched a public consultation on proposed legislation to ban plastic microbeads in certain cosmetic and cleaning products. The above EPA research projects will assist the Irish Government in deciding on future actions that should be taken to protect our water quality from the impacts of microplastic pollution.

<sup>16</sup> <http://www.epa.ie/pubs/reports/research/water/research210.html>

<sup>17</sup> <http://erc.epa.ie/smartsimple/displayProject.php?projectCode=2016-W-MS-23>

<sup>18</sup>

[http://www.epa.ie/pubs/reports/research/opencalls/currentcalldocuments/2018\\_Call\\_Technical\\_Description\\_Sustainability.pdf](http://www.epa.ie/pubs/reports/research/opencalls/currentcalldocuments/2018_Call_Technical_Description_Sustainability.pdf)

## BT Young Scientist Project on Microplastics in Drinking Water

In January 2018, the EPA awarded first prize to three young scientists from Coláiste Iognáid in County Galway at the BT Young Scientist and Technology Awards, for their project on microplastics in drinking water. Their project was called, “Think Before You Drink: Microplastics”.

The students took drinking water samples at 23 primary schools in Galway and analysed those samples for microplastics. They found that 22 schools had drinking water that contained microplastics and the average level of microplastics in the water was slightly above the European average. The students also found that almost three quarters of the microplastics found were microfibres, which can come from washing synthetic clothes.



Figure 13: BT Young Scientist award winning project by students from Coláiste Iognáid, County Galway

## Section 4: Concluding remarks and recommended actions

### Conclusions and recommendations on national priorities

#### Priority Issue: Keep water free of harmful bacteria (Disinfection)

##### Actions in 2017

Irish Water completed upgrades at 81 locations under the National Disinfection Programme. At the end of the year, 21 public water supplies serving over 135,000 people still did not have adequate treatment for *Cryptosporidium*. All these supplies are on the Remedial Action List (RAL).

All public water supplies were monitored for *E. coli*, except for one supply in Tipperary, Kilgarvan Quay. Irish Water notified the EPA of *E. coli* failures in 11 public water supplies under the 2017 'annual monitoring returns'.

The population affected by a boil water notice at the end of 2017 was over 5,500 less than population affected at the end of 2016. Over half of all boil notices in place during 2017 were short-term notices, in place for less than one month.

##### Recommended Actions

Irish Water should continue to upgrade their disinfection systems under the National Disinfection Programme. Where urgent issues are identified e.g. no disinfection alarm in place, they should continue to be responded to immediately.

#### Priority Issue: Minimise harmful disinfection by-products (Trihalomethanes)

##### Actions in 2017

The number of supplies reporting trihalomethane (THM) failures remains high, with 52 supplies on the RAL for persistent THM failures in 2017.

Irish Water have indicated that all action programmes for supplies on the 2017 RAL will be complete by 2020. One exception to this is the Lough Talt supply in County Sligo, where planning permission difficulties mean Irish Water have no completion date for the supply.

##### Recommended Actions

Irish Water should continue to progress the work they are carrying out on supplies on the RAL with THM problems. It is critical to ensure that natural matter is removed through appropriate treatment, to prevent THM formation and achieve compliance with the THM standard.



## Priority Issue: Eliminate lead from our pipes

### Actions in 2017

In 2017, Irish Water continued to raise awareness and provide advice to consumers on lead in drinking water through advice letters and a YouTube video. Irish Water completed their expanded lead monitoring programme which will allow them to identify the areas worst affected by lead in drinking water.

Irish Water's progress on replacing lead service connections has been slow. Householders and public bodies have also been slow to replace lead pipes within their buildings.

### Recommended Actions

Householders need to be actively encouraged to replace private side lead plumbing. Public bodies need to complete the assessment and action plans for removing lead pipework from public buildings such as hospitals and schools, and from local authority housing.

## Priority Issue: Prevent pesticides from entering our waters

### Actions in 2017

The National Pesticide and Drinking Water Action Group continues to support a catchment based approach to the reduction of pesticides in drinking water.

In 2017, the EPA issued Directions to Irish Water for four supplies that had persistent pesticide failures.

### Recommended Actions

Irish Water is using a standardised approach to dealing with pesticides in drinking water across the country, however the EPA has informed Irish Water that there needs to be National Pesticides Strategy to formalise this approach. The resources available from the National Pesticides and Drinking Water Action Group should be utilised as much as possible in developing activities in catchments. Treatment options for pesticides should be considered where catchment-based activities prove unsuccessful in reducing pesticide exceedances in drinking water.

## Priority Issue: Manage risks to our public water supplies

### Actions in 2017

Irish Water have committed to the Drinking Water Safety Plan approach to protecting drinking water supplies.

Irish Water carried out 24,879 hazard assessments at 316 drinking water supplies in 2017. This is double the number of hazard assessments carried out in 2016.

### Recommended Actions

Irish Water should use the hazard assessments to focus investment on areas where the risks to supplies are the greatest.

## Priority Issue: Ensure all water treatment plants are effective

### Actions in 2017

The number of supplies on the RAL at the end of 2017 was 77. This number was 99 at the end of 2016. All RAL supplies have a completion date in place, except for the Lough Talt supply. Planning permission difficulties for the Lough Talt supply mean that Irish Water cannot provide a completion date for this supply.

### Recommended Actions

Continued commitment is required to progress action programmes for supplies on the Remedial Action List and to meet stated completion dates.

## Concluding Remarks

Many people benefitted from improvements to their water supplies in 2017. Irish Water completed remedial works at 33 supplies during 2017. Where a new boil water notice had to be issued in 2017, Irish Water acted quickly to ensure that the notice was in place for as short as time as possible.

*E. coli* failures detected under the annual monitoring returns increased slightly in 2017, and four of the failures were related to problems with the disinfection treatment. Irish Water's National Disinfection Strategy is addressing deficiencies in disinfection across all public water supplies. It is important that Irish Water continue to make improvements under this strategy. The overall trend of *E. coli* failures has been decreasing since 2007.

Trihalomethanes, lead and pesticides are the most significant issues for chemical compliance in public water supplies.

The priority issues identified by the EPA and discussed throughout this report can be viewed under the umbrella of the Drinking Water Safety Plan approach. This approach assesses all the things that could go wrong in a water supply (hazards) from the source to the tap and aims to reduce the risk of the hazard occurring by taking preventative actions. Only by implementing such an approach can we be sure that our public water supplies are protected.

Irish Water, as a national utility, can take actions on the priority issues on a national level. Continued and sustained investment in Ireland's public water sector will be essential if Irish Water are to complete works to remove all 77 supplies from the Remedial Action List and to ensure the delivery of safe and secure water to all consumers.

## Appendices

[Appendix 1](#) lists monitoring results and compliance rates for public water supplies

[Appendix 2](#) lists the status of EPA Directions at end of 2017

[Appendix 3](#) lists Boil Notices and Water Restriction Notices in place on Public Water Supplies during 2017.

[Appendix 4](#) lists the details of Remedial Action List supplies for each county or area

[Appendix 5](#) lists, for each county or area, the microbiological and chemical compliance rates in public water supplies, the number of boil notice and water restrictions, and selected enforcement information (audits, directions, RAL).

## Appendix 1: Public Water Supplies – Zones Monitored and Samples Analysed in 2017

Parameter	No. of Zones Monitored	No of Zones with Exceedances	% of Zones Complying	No. of Samples Analysed	No. of Samples Exceeding	% of Samples Complying
<b>Microbiological</b>						
<i>E. coli</i>	845	11	<b>98.7</b>	8872	11	<b>99.9</b>
<i>Enterococci</i>	650	1	<b>99.8</b>	1100	1	<b>99.9</b>
<b>Chemical</b>						
1,2-dichloroethane	597	0	<b>100</b>	1008	0	<b>100</b>
Antimony	547	0	<b>100</b>	940	0	<b>100</b>
Arsenic	599	0	<b>100</b>	1013	0	<b>100</b>
Benzene	598	0	<b>100</b>	1025	0	<b>100</b>
Benzo(a)pyrene	600	1	<b>99.8</b>	1031	1	<b>99.9</b>
Boron	540	0	<b>100</b>	927	0	<b>100</b>
Bromate	598	0	<b>100</b>	1016	0	<b>100</b>
Cadmium	652	0	<b>100</b>	1093	0	<b>100</b>
Chromium	652	0	<b>100</b>	1093	0	<b>100</b>
Copper	653	3	<b>99.5</b>	1098	3	<b>99.7</b>
Cyanide	548	0	<b>100</b>	942	0	<b>100</b>
Fluoride	647	9	<b>98.6</b>	1155	10	<b>99.1</b>
Lead	655	17	<b>97.4</b>	1106	18	<b>98.4</b>
Mercury	598	0	<b>100</b>	1016	0	<b>100</b>
Nickel	653	4	<b>99.4</b>	1098	5	<b>99.5</b>
Nitrate	657	2	<b>99.7</b>	1512	2	<b>99.9</b>
Nitrite (at tap)	657	0	<b>100</b>	2003	0	<b>100</b>
PAH	600	0	<b>100</b>	1024	0	<b>100</b>
Pesticides - Total	653	4	<b>99.4</b>	1106	5	<b>99.5</b>
Selenium	598	1	<b>99.8</b>	1011	1	<b>99.9</b>
Tetrachloroethene & Trichloroethene	597	1	<b>99.8</b>	1006	1	<b>99.9</b>
Total Trihalomethanes	657	42	<b>93.6</b>	1114	64	<b>94.3</b>
<b>Indicator</b>						
Aluminium	688	37	<b>94.6</b>	6414	68	<b>98.9</b>
Ammonium	845	6	<b>99.3</b>	8830	12	<b>99.9</b>
Chloride	653	0	<b>100</b>	1102	0	<b>100</b>
<i>Clostridium perfringens</i>	711	14	<b>98.0</b>	7326	14	<b>99.8</b>
Coliform Bacteria	845	56	<b>93.4</b>	8874	80	<b>99.1</b>
Colony Count @ 22°C	652	14	<b>97.9</b>	1097	14	<b>98.7</b>
Colour	492	27	<b>94.5</b>	3655	59	<b>98.4</b>
Conductivity	845	0	<b>100</b>	8848	0	<b>100</b>
Iron	839	55	<b>93.4</b>	8375	87	<b>99.0</b>
Manganese	654	20	<b>96.9</b>	1509	26	<b>98.3</b>
Odour	845	60	<b>92.8</b>	8761	201	<b>97.7</b>
pH	845	170	<b>79.9</b>	8853	385	<b>95.7</b>
Sodium	652	1	<b>99.8</b>	1098	1	<b>99.9</b>
Sulphate	652	0	<b>100</b>	1099	0	<b>100</b>
Taste	833	25	<b>96.9</b>	8532	56	<b>99.3</b>
Total Organic Carbon	649	7	<b>98.9</b>	1092	7	<b>99.4</b>
Turbidity (at tap)	845	12	<b>98.6</b>	8853	14	<b>99.8</b>

Appendix 2: Status of Directions at end of 2017

EPA directions issued during 2017 – reason for issue and status at end of 2017.

Area/ County	Supply	Reason for Direction	Issue Date	Status at end of 2017
Dun Laoghaire/ Rathdown	DLR Zone 2	Inadequate disinfection	28/08/2017	Irish Water had complied with the direction
Dun Laoghaire/ Rathdown	DLR Zone 6	Inadequate disinfection	11/08/2017	
Kildare	Ardcarraig/ Clogherinkoe	Inadequate disinfection	14/07/2017	
Louth	South Louth/East Meath	Failure to submit requested information	30/08/2017	
Kerry	Listowel Regional	Persistent pesticide failures	15/05/2017	
Kilkenny	Kilkenny City (Troyswood)	Persistent pesticide failures	14/11/2017	The date in the direction has not yet been reached. Compliance will be determined after the due date
Limerick	Abbeyfeale	Persistent pesticide failures	14/11/2017	
Longford	Longford Central	Persistent pesticide failures	14/11/2017	
Waterford	Stradbally	To implement action programme to address aluminium failures	20/02/2017	Direction deadline passed, further enforcement action not currently being pursued due to verified progress with necessary works

## Directions issued prior to 2017 - reason for issue and status at end of 2017.

Area/County	Supply	Reason for Direction	Issue Date	Status at end of 2017
Donegal	Letterkenny	Noncompliance with Trihalomethane standard	11/04/2016	Action Programme being implemented by Irish Water
Galway	Inishmore Cregacareen	Noncompliance with Trihalomethane standard	29/05/2015	
Kilkenny	Inistiogue	Noncompliance with Trihalomethane standard /Lack of Response from Irish Water	05/06/2015	
Waterford	LCB Lismore	Noncompliance with Trihalomethane standard	06/06/2015	
Clare	Carron	UV disinfection not in compliance with EPA standards	14/07/2016	Date in the Direction has passed.
Dublin	Ballyboden/Ballymore Eustace	No action programme/failure to adhere to RAL dates	05/06/2015	Enforcement action not currently being considered due to verified progress with works
Sligo	Lough Gill (Cairns Hill)	Noncompliance with Trihalomethane standard and inadequate Cryptosporidium barrier.	14/03/2013	Direction deadline passed. Further enforcement action not considered due to verified completion of works after Direction deadline
Donegal	Owenteskna/Kilcar	Noncompliance with Trihalomethane standard	20/01/2015	Direction not complied with - enforcement action under consideration
Donegal	Cashilard*	Noncompliance with Trihalomethane standard	11/12/2014	
Donegal	Gortahork-Falcarragh*	Noncompliance with Trihalomethane standard	11/12/2014	

Area/County	Supply	Reason for Direction	Issue Date	Status at end of 2017
Donegal	Fintown*	Noncompliance with Trihalomethane standard	11/12/2014	
Donegal	Greencastle*	Noncompliance with Trihalomethane standard	11/12/2014	
Donegal	Portnoo Narin*	Noncompliance with Trihalomethane standard	11/12/2014	
Donegal	Rathmullan*	Non-compliance with Trihalomethane standard	11/04/2016	
Sligo	Lough Talt	Non-compliance with Trihalomethane standard	03/12/2014	
Cork	Kealkill	Non-compliance with Trihalomethane standard	05/06/2015	The deadline in the directions has not yet been reached. Compliance will be determined after the due date.
Cork	Drimoleague	Non-compliance with Trihalomethane standard	05/06/2015	

\*EPA began legal proceedings against Irish Water in relation to these supplies in September 2017.



### Appendix 3: Boil Notices and Water Restrictions in place on Public Water Supplies during 2017

Area/County	Scheme Name	Reason	Boil Notice (BN) / Water Restriction (WR)	Population Affected	Affecting Full Or Part Of Supply	Date Notice Issued	Date Notice Lifted
Clare	Carron PWS	Inadequate Disinfection	BN	59	Full	06/11/2017	08/11/2017
Clare	Turlough PWS	Cryptosporidium	BN	500	Full	05/07/2016	30/01/2017
Cork	Millstreet	Cryptosporidium	BN	2,235	Full	19/05/2017	14/06/2017
Cork	Minane Bridge	Manganese	WR	155	Full	20/07/2017	04/08/2017
Donegal	FINTOWN	Cryptosporidium	BN	373	Full	02/06/2017	10/07/2017
Dun Laoghaire Rathdown	DLR Zone 2	Coliform Bacteria	BN	3	Part	15/08/2017	13/03/2018
Dun Laoghaire Rathdown	DLR Zone 2	Coliform Bacteria	BN	3	Part	29/08/2017	09/02/2018
Galway	Kilkerrin/Moylough	Turbidity (at WTW)	BN	1,532	Full	28/06/2017	06/07/2017
Galway	Williamstown PWS	Turbidity (at WTW)	BN	986	Full	23/08/2017	01/09/2017
Kildare	Ardcarraig Clogherinkoe	E. coli	BN	80	Full	16/06/2017	10/10/2017
Kilkenny	Callan PWS	Inadequate Disinfection	BN	10	Part	25/08/2017	19/09/2017
Limerick	Abbeyfeale PWS	E. coli	BN	12	Part	06/10/2017	07/12/2017
Limerick	Cappamore Foileen Public Water Supply	PAH	WR	6	Part	27/10/2017	
Limerick	Loughill PWS	Inadequate Disinfection	BN	18	Part	07/05/2015	31/05/2017
Limerick	Newcastle West PWS	PAH	WR	60	Part	24/06/2016	
Louth	South Louth & East Meath	Coliform Bacteria	BN	40	Part	01/08/2017	14/12/2017
Meath	Baltrasna	E. coli	BN	9	Full	22/12/2014	
Offaly	Banagher PWS	E. coli	BN	3,552	Full	12/07/2017	16/07/2017
Offaly	Birr PWS	E. coli	BN	3,912	Part	12/07/2017	16/07/2017
Offaly	Dunkerrin PWS	E. coli	BN	882	Part	12/07/2017	16/07/2017
Roscommon	Ballinlough/Loughglynn	Cryptosporidium	BN	3,427	Full	20/01/2016	21/12/2017
Sligo	Kilsellagh Public Water Supply	Coliform Bacteria	BN	5	Part	12/10/2017	
Tipperary	Dundrum Regional	E. coli	BN	100	Part	18/10/2016	11/09/2017
Tipperary	Galtee Regional	Precautionary - no exceedance confirmed	BN	636	Part	16/05/2017	19/05/2017
Tipperary	Kilcash	Inadequate Disinfection	BN	184	Part	22/05/2017	26/05/2017

Area/County	Scheme Name	Reason	Boil Notice (BN) / Water Restriction (WR)	Population Affected	Affecting Full Or Part Of Supply	Date Notice Issued	Date Notice Lifted
Tipperary	Templetney/Brackford Bridge PWS	Inadequate Disinfection	BN	20	Part	03/05/2012	02/05/2017
Waterford	Ballydermody	Nitrate	WR	2	Full	12/12/2013	
Waterford	Ballysaggart	Precautionary - no exceedance confirmed	BN	32	Full	17/10/2017	27/10/2017
Waterford	Carrowgarriff	Precautionary - no exceedance confirmed	BN	75	Full	17/10/2017	27/10/2017
Waterford	Castlereagh	Precautionary - no exceedance confirmed	BN	13	Full	17/10/2017	26/10/2017
Waterford	Clashmore	Precautionary - no exceedance confirmed	BN	378	Full	17/10/2017	26/10/2017
Waterford	Feddans	Precautionary - no exceedance confirmed	BN	34	Full	28/09/2017	06/10/2017
Waterford	Garravoone	Precautionary - no exceedance confirmed	BN	100	Full	17/10/2017	26/10/2017
Waterford	Kilmacthomas	Precautionary - no exceedance confirmed	BN	300	Part	15/02/2017	24/02/2017
Waterford	Knockalisheen	Inadequate Disinfection	BN	168	Full	16/10/2017	26/10/2017
Waterford	Modeligo	Precautionary - no exceedance confirmed	BN	177	Full	17/10/2017	26/10/2017
Waterford	Nire	Precautionary - no exceedance confirmed	BN	12	Part	13/08/2014	
Waterford	Nire	Precautionary - no exceedance confirmed	BN	100	Full	17/10/2017	26/10/2017
Waterford	Ring/Helvick/Seaview	Coliform Bacteria	BN	1,104	Full	14/07/2016	14/02/2017
Waterford	Scrothea	Coliform Bacteria	BN	3	Part	16/10/2014	12/01/2018
Waterford	Scrothea	Coliform Bacteria	BN	5	Part	10/11/2017	11/12/2017
Wexford	Ballinvegga	E. coli	BN	12	Full	04/04/2017	05/05/2017
Wexford	Bree	E. coli	BN	400	Full	12/07/2017	19/07/2017
Wexford	Chestnut Grove	E. coli	BN	28	Full	05/09/2017	20/12/2017

Area/County	Scheme Name	Reason	Boil Notice (BN) / Water Restriction (WR)	Population Affected	Affecting Full Or Part Of Supply	Date Notice Issued	Date Notice Lifted
Wexford	Glynn	E. coli	BN	132	Part	05/07/2017	28/07/2017
Wicklow	Johnstown South (Arklow) Public Supply	Coliform Bacteria	BN	6	Full	04/06/2015	

This is a list of boil notices and water restrictions that were /are the responsibility of either Irish Water or both Irish Water and the property owner to resolve\*. See section 2.2 for general information on boil notices and water restrictions.

Appendix 4: Details of Remedial Action List Supplies for each County or Area (as of December 2017)

County	No. of Supplies on RAL		Progress on Completion of Remedial Works				
	Original RAL	RAL at the end of 2017	Works Completed	To be completed in 2018	To be completed in or after 2019	To be completed in or after 2020	No Timeframe for Completion
Cork	38	12	0	5	4	1	2
Kerry	41	11	2	8	0	0	1
Donegal	33	8	0	8	0	0	0
Wicklow	22	8	1	0	0	7	0
Clare	9	5	2	0	3	0	0
Kilkenny	7	5	0	2	1	1	1
Limerick	12	4	0	1	1	0	2
Longford	5	4	0	1	3	0	0
Tipperary	20	3	2	0	0	1	0
Waterford	18	3	1	1	1	0	0
Galway	34	2	0	2	0	0	0
Meath	8	2	0	2	0	0	0
Roscommon	10	2	0	2	0	0	0
Cavan	10	1	0	1	0	0	0
Cork City	1	1	0	0	0	1	0
Dublin City	1	1	0	1	0	0	0
Dun Laoghaire Rathdown	0	1	0	0	0	1	0
Louth	3	1	0	0	1	0	0
Monaghan	12	1	1	0	0	0	0
Sligo	8	1	0	0	0	0	1
Wexford	4	1	0	1	0	0	0
Carlow	4	0	n/a	n/a	n/a	n/a	n/a
Fingal	0	0	n/a	n/a	n/a	n/a	n/a
Galway City	1	0	n/a	n/a	n/a	n/a	n/a
Kildare	0	0	n/a	n/a	n/a	n/a	n/a
Laois	8	0	n/a	n/a	n/a	n/a	n/a

County	No. of Supplies on RAL		Progress on Completion of Remedial Works				
	Original RAL	RAL at the end of 2017	Works Completed	To be completed in 2018	To be completed in or after 2019	To be completed in or after 2020	No Timeframe for Completion
Leitrim	2	0	n/a	n/a	n/a	n/a	n/a
Limerick City	1	0	n/a	n/a	n/a	n/a	n/a
Mayo	15	0	n/a	n/a	n/a	n/a	n/a
Offaly	8	0	n/a	n/a	n/a	n/a	n/a
South Dublin	0	0	n/a	n/a	n/a	n/a	n/a
Waterford City	1	0	n/a	n/a	n/a	n/a	n/a
Westmeath	3	0	n/a	n/a	n/a	n/a	n/a

## Appendix 5: Quality and Enforcement Information for Public Supplies by County or Area for 2017

County/ Area <sup>6</sup>	Public Supplies <sup>1</sup>		Parameter Compliance (%)		Boil Notices <sup>2</sup>		Water Restrictions <sup>3</sup>		Directions <sup>4</sup>	Audits <sup>5</sup>
	Number	Population	Microbiological	Chemical	Number	Population affected	Number	Population Affected	Number Issued	Number
Carlow	14	38,135	100	99.6						2
Cavan	16	32,916	100	99.5						
Clare	18	86,055	99.6	99.8	2	559				3
Cork	177	304,621	100	99.3	1	2,235	1	155		9
Cork City	1	127,548	99.5	100						
Dun Laoghaire-Rathdown	7	196,572	100	99.7	2	6			2	1
Donegal	34	150,085	100	99.2	1	373				6
Dublin City	6	496,788	100	99.9						2
Fingal	2	283,368	100	100						
Galway	40	106,508	100	99.7	2	2,518				2
Galway City	1	73,377	100	100						
Kerry	52	134,825	100	99.1					1	
Kildare	10	206,062	99.7	99.7	1	80			1	3
Kilkenny	23	66,282	100	99.5	1	10			1	
Laois	26	55,375	100	100						
Leitrim	3	22,885	100	98.4						0
Limerick	37	173,191	100	99.8	2	30	2	66	1	1
Longford	6	34,152	100	98.9					1	1
Louth	11	128,839	100	99.2	1	40			1	
Mayo	22	84,666	100	99.8						1
Meath	57	134,325	100	99.1	1	9				2
Monaghan	10	29,194	100	99						2
Offaly	21	55,811	98.6	99.9	3	8,346				4
Roscommon	14	58,695	100	99	1	3,427				1
Sligo	7	66,457	100	98.3	1	5				
South Dublin	4	267,667	100	100						
Tipperary	51	142,457	99.6	100	4	940				3
Waterford	101	84,330	100	99.7	14	2,501	1	2	1	5
Westmeath	4	77,675	100	100						
Wexford	49	101,862	98.8	99.7	4	572				3
Wicklow	59	117,827	100	99.7	1	6				

<sup>1</sup> Full list of public supplies available at <http://www.epa.ie/pubs/advice/drinkingwater/publicdrinkingwatersupplies/>; <sup>2</sup> boil notice and water restriction numbers included above refer to notices that were the responsibility of either Irish Water or both Irish Water and the property owner to resolve. <sup>3</sup> Water Restrictions excludes advice issued to consumers in respect of lead. <sup>4</sup>Further information in Section 3.5; <sup>5</sup>Totals do not include monitoring programme audits. Audit reports available at <http://www.epa.ie/pubs/advice/drinkingwater/audits/>; <sup>6</sup>Drinking Water Monitoring results and water supply details for each year since 2000 for each county is available at [http://erc.epa.ie/safer/resourcelisting.jsp?oID=10206&username=EPA%20Drinking%20Water.](http://erc.epa.ie/safer/resourcelisting.jsp?oID=10206&username=EPA%20Drinking%20Water.;);

## AN GHNÍOMHAIREACHT UM CHAOMHNÚ COMHSHAOIL

Tá an Gníomhaireacht um Chaomhnú Comhshaoil (GCC) freagrach as an gcomhshaoil a chaomhnú agus a fheabhsú mar shócmhainn luachmhar do mhuintir na hÉireann. Táimid tiomanta do dhaoine agus don chomhshaoil a chosaint ó éifeachtaí díobhálacha na radaíochta agus an truaillithe.

## Is féidir obair na Gníomhaireachta a roinnt ina trí phríomhréimse:

**Rialú:** Déanaimid córais éifeachtacha rialaithe agus comhlionta comhshaoil a chur i bhfeidhm chun torthaí maithe comhshaoil a sholáthar agus chun díriú orthu siúd nach gcloíonn leis na córais sin.

**Eolas:** Soláthraimid sonraí, faisnéis agus measúnú comhshaoil atá ar ardchaighdeán, spriocdhírithé agus tráthúil chun bonn eolais a chur faoin gcinnteoireacht ar gach leibhéal.

**Tacaíocht:** Bímid ag saothrú i gcomhar le grúpaí eile chun tacú le comhshaoil atá glan, táirgiúil agus cosanta go maith, agus le hiompar a chuirfidh le comhshaoil inbhuanaithe.

## Ár bhFreagrachtaí

### Ceadúnú

Déanaimid na gníomhaíochtaí seo a leanas a rialú ionas nach ndéanann siad dochar do shláinte an phobail ná don chomhshaoil:

- saoráidí dramháiola (*m.sh. láithreáin líonta talún, loisceoirí, stáisiúin aistrithe dramháiola*);
- gníomhaíochtaí tionsclaíoch ar scála mór (*m.sh. déantúsaíocht cógaisíochta, déantúsaíocht stroighne, stáisiúin chumhachta*);
- an dionalmhaíocht (*m.sh. muca, éanlaith*);
- úsáid shrianta agus scaoileadh rialaithe Orgánach Géinmhodhnaithe (*OGM*);
- foinsí radaíochta ianúcháin (*m.sh. trealamh x-gha agus radaiteiripe, foinsí tionsclaíochta*);
- áiseanna móra stórála peitрил;
- scardadh dramhuisce;
- gníomhaíochtaí dumpála ar farraige.

### Forfheidhmiú Náisiúnta i leith Cúrsaí Comhshaoil

- Clár náisiúnta iniúchtaí agus cigireachtaí a dhéanamh gach bliain ar shaoráidí a bhfuil ceadúnas ón nGníomhaireacht acu.
- Maoirseacht a dhéanamh ar fhreagrachtaí cosanta comhshaoil na n-údarás áitiúil.
- Caighdeán an uisce óil, arna sholáthar ag soláthraithe uisce phoiblí, a mhaoirsiú.
- Obair le húdarás áitiúla agus le gníomhaireachtaí eile chun dul i ngleic le coireanna comhshaoil trí chomhordú a dhéanamh ar líonra forfheidhmiúcháin náisiúnta, trí dhírú ar chiontóirí, agus trí mhaoirsiú a dhéanamh ar leasúchán.
- Cur i bhfeidhm rialachán ar nós na Rialachán um Dhramhthrealamh Leictreach agus Leictreonach (DTLL), um Shrian ar Shubstaintí Guaiseacha agus na Rialachán um rialú ar shubstaintí a ídíonn an ciseal ózóin.
- An dlí a chur orthu siúd a bhreiseann dlí an chomhshaoil agus a dhéanann dochar don chomhshaoil.

### Bainistíocht Uisce

- Monatóireacht agus tuairiscí a dhéanamh ar cháilíocht aibhneacha, lochanna, uisce idirchriosacha agus cósta na hÉireann, agus screamhuiscí; leibhéil uisce agus sruthanna aibhneacha a thomhas.
- Comhordú náisiúnta agus maoirsiú a dhéanamh ar an gCreat-Treoir Uisce.
- Monatóireacht agus tuairiscí a dhéanamh ar Cháilíocht an Uisce Snámha.

## Monatóireacht, Anailís agus Tuairiscí ar an gComhshaoil

- Monatóireacht a dhéanamh ar cháilíocht an aeir agus Treoir an AE maidir le hAer Glan don Eoraip (CAFÉ) a chur chun feidhme.
- Tuairiscí neamhspleách le cabhrú le cinnteoireacht an rialtais náisiúnta agus na n-údarás áitiúil (*m.sh. tuairiscíu tréimhsiúil ar staid Chomhshaoil na hÉireann agus Tuarascálacha ar Tháscairí*).

## Rialú Astaíochtaí na nGás Ceaptha Teasa in Éirinn

- Fardail agus réamh-mheastacháin na hÉireann maidir le gáis cheaptha teasa a ullmhú.
- An Treoir maidir le Trádáil Astaíochtaí a chur chun feidhme i gcomhair breis agus 100 de na táirgeoirí dé-ocsaíde carbóin is mó in Éirinn.

## Taighde agus Forbairt Comhshaoil

- Taighde comhshaoil a chistiú chun brúnna a shainiú, bonn eolais a chur faoi bheartais, agus réitigh a sholáthar i réimsí na haeraíde, an uisce agus na hinbhuanaitheachta.

## Measúnacht Straitéiseach Timpeallachta

- Measúnacht a dhéanamh ar thionchar pleananna agus clár beartaithe ar an gcomhshaoil in Éirinn (*m.sh. mórphleananna forbartha*).

## Cosaint Raideolaíoch

- Monatóireacht a dhéanamh ar leibhéil radaíochta, measúnacht a dhéanamh ar nochtadh mhuintir na hÉireann don radaíocht ianúcháin.
- Cabhrú le pleananna náisiúnta a fhorbairt le haghaidh éigeandálaí ag eascairt as taismí núicléacha.
- Monatóireacht a dhéanamh ar fhorbairtí thar lear a bhaineann le saoráidí núicléacha agus leis an tsábháilteacht raideolaíochta.
- Sainseirbhísí cosanta ar an radaíocht a sholáthar, nó maoirsiú a dhéanamh ar sholáthar na seirbhísí sin.

## Treoir, Faisnéis Inrochtana agus Oideachas

- Comhairle agus treoir a chur ar fáil d'earnáil na tionsclaíochta agus don phobal maidir le hábhair a bhaineann le caomhnú an chomhshaoil agus leis an gcosaint raideolaíoch.
- Faisnéis thráthúil ar an gcomhshaoil ar a bhfuil fáil éasca a chur ar fáil chun rannpháirtíocht an phobail a spreagadh sa chinnteoireacht i ndáil leis an gcomhshaoil (*m.sh. Timpeall an Tí, léarscáileanna radóin*).
- Comhairle a chur ar fáil don Rialtas maidir le hábhair a bhaineann leis an tsábháilteacht raideolaíoch agus le cúrsaí práinnfhreagartha.
- Plean Náisiúnta Bainistíochta Dramháiola Guaisí a fhorbairt chun dramháil ghuaiseach a chosc agus a bhainistiú.

## Múscailt Feasachta agus Athrú Iompraíochta

- Feasacht chomhshaoil níos fearr a ghiniúint agus dul i bhfeidhm ar athrú iompraíochta dearfach trí thacú le gnóthais, le pobail agus le teaghlaigh a bheith níos éifeachtúla ar acmhainní.
- Tástáil le haghaidh radóin a chur chun cinn i dtithe agus in ionaid oibre, agus gníomhartha leasúcháin a spreagadh nuair is gá.

## Bainistíocht agus struchtúr na Gníomhaireachta um Chaomhnú Comhshaoil

Tá an gníomhaíocht á bainistiú ag Bord lánaimseartha, ar a bhfuil Ard-Stiúrthóir agus cúigear Stiúrthóirí. Déantar an obair ar fud cúig cinn d'Oifigí:

- An Oifig um Inmharthanacht Comhshaoil
- An Oifig Forfheidhmithe i leith cúrsaí Comhshaoil
- An Oifig um Fianaise is Measúnú
- Oifig um Chosaint Radaíochta agus Monatóireachta Comhshaoil
- An Oifig Cumarsáide agus Seirbhísí Corparáideacha

Tá Coiste Comhairleach ag an nGníomhaireacht le cabhrú léi. Tá dáréag comhaltaí air agus tagann siad le chéile go rialta le plé a dhéanamh ar ábhair inní agus le comhairle a chur ar an mBord.



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