



Feidhmeannacht na Seirbhíse Sláinte
Health Service Executive

Management of Initial Notification of a Drinking Water Issue of Potential Danger to Human Health

This document is designed to provide guidance to staff of the Health Service Executive (HSE) who work with Irish Water and with the Local Authorities in relation to the initial notification of a drinking water issue of potential danger to human health.

This document is a work in progress and will be reviewed as necessary.

July 2016



Feidhmeannacht na Seirbhíse Sláinte
Health Service Executive

Document Purpose	To provide guidance to HSE staff who work with Irish Water and with the Local Authorities in relation to the initial notification of a drinking water issue of potential danger to human health	Document Developed By	HSE National Drinking Water Group
Revision Number	1	Document Approved By	Dr Kevin Kelleher, AND Public Health and Child Health Mr Dave Molloy, AND Environmental Health
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Contents

- Algorithm A – Notification and Initial Consultation Process for a Drinking Water Issue (DWI) first identified by Local Authority 3**
- Algorithm B – Notification and Initial Consultation Process for a Drinking Water Non-Compliance first identified by HSE Environmental Health Service 4**
- Algorithm C – Notification and Initial Consultation Process when HSE Public Health first identifies cases of Human Illness which may be associated with a Drinking Water Source 5**

- Definitions / Glossary 6

- 1. Introduction 8**

- 2. Roles and Responsibilities 9**
 - 2.1 Irish Water 9
 - 2.2 Local Authorities 9
 - 2.3 Health Service Executive..... 9
 - 2.3.1 Environmental Health Service 9
 - 2.3.2 Departments of Public Health..... 10
 - 2.3.3 HSE Laboratories 11
 - 2.3.4 HSE National Drinking Water Group 12
 - 2.4 Drinking Water (Quality) Liaison Committees/Groups 12
 - 2.5 Environmental Protection Agency 12

- 3. Drinking Water Issues of Potential Danger to Human Health 13**
 - 3.1 Definition of Drinking Water Issue 13
 - 3.2 Drinking Water Issue of Potential Danger to Human Health 13
 - 3.3 Drinking Water Issue requiring discussion between Environmental Health and Public Health 13

- 4. Legislation 15**
 - 4.1 Drinking Water..... 15
 - 4.1.1 Duties of suppliers 15
 - 4.1.2 Monitoring 15
 - 4.1.3 Consultation with, and agreement of, the HSE 16
 - 4.1.4 Directions/Departures 16
 - 4.1.5 Notification to Consumers 16
 - 4.1.6 Temporary Take-Over of Waterworks 16
 - 4.2 Health Protection 16
 - 4.3 Food Hygiene 17

- 5. Communication Processes 18**
 - 5.1 Robust Communication System 18
 - 5.2 Interagency Initial Communication Process – Who to contact 18

5.3	Interagency Initial Communication Process - Documentation	19
5.4	HSE Initial Communication Process - Environmental Health and Public Health.....	20
5.5	Ongoing Communication	21
5.6	Closing out an issue	21
6.	Incident Response Team (IRT)	22
7.	Outbreak Control Team (OCT)	23
8.	Laboratories and Accreditation.....	24
9.	Protection of Consumer	25
9.1	Restriction of Use	25
9.2	Information for Consumers.....	26
9.2.1	Infant Formula	26
9.2.2	Private Household Wells	27
9.3	Water from Tankers and Bowsers.....	27
10.	Communications with Public, Media, other Health Professionals.....	28
10.1	Communications with Public and other Health Professionals	28
10.2	Communication with Media	28
11.	Criteria for Lifting a Notice.....	29
	Appendix 1: Drinking Water (Quality) Liaison Committees/Groups	30
	Appendix 2: Guidance on when a Drinking Water Issue may not Pose a Danger to Human Health....	31
	Appendix 3: Contact Details	32
	References	33

Algorithm A – Notification and Initial Consultation Process for a Drinking Water Issue (DWI) first identified by Local Authority / Irish Water

Drinking Water Issue (DWI)*

Refer to Section 5 for details



LA (and/or **IW** for public supply) to carry out a risk assessment (**RA**) to determine if the drinking water issue (**DWI**) is of potential danger to human health

YES



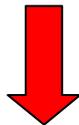
LA Notify **HSE** *immediately*

- First point of contact is usually **PEHO**
- **Telephone contact essential**
- Provide information on drinking water source to **HSE** to inform discussion (as per Table 3, Section 5.3), preferably by email

NO



No consultation required with **HSE**



EHS to carry out a risk assessment (**RA**) to determine if need to consult with **PH**

YES



EHS and **PH** discuss **DWI**

- **EHS** and **PH** agree advice to go to **LA/IW**
- Either to email the advice to **LA**
- Both **EHS** and **PH** to be **copied** in this email

NO



EHS provide **HSE** advice to **LA** and confirm with email to **LA**

Where an issue requires on-going communication between the water services authority and the HSE, the communication process should be tailored to the needs of the specific issue.

***DWI (Drinking Water Issue)**

For definition of Drinking Water Issue, please see Definitions/Glossary section

Abbreviations

DWI: Drinking Water Issue; **EHS**: Environmental Health Service; **HSE**: Health Service Executive; **IW**: Irish Water; **LA**: Local Authority; **PEHO**: Principal Environmental Health Service; **PH**: Public Health; **RA**: Risk Assessment

Algorithm B – Notification and Initial Consultation Process for a Drinking Water Non-Compliance first identified by HSE Environmental Health Service

Non-compliance first identified by **HSE EHS** (while carrying out compliance sampling for LA/IW or drinking water sampling under food safety legislation)

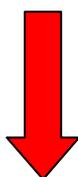
Refer to Section 5 for details

EHS to inform the **LA** of the non-compliance having due regard to Article 7 of Regulation (EC) 882/2004.

LA to provide information on drinking water source to **HSE** to inform discussion (as per Table 3, Section 5.3), preferably by email

EHS and **LA** (and/or **IW** for public supply) to carry out a risk assessment (**RA**) to determine if the **DWI*** is of potential danger to human health

YES



NO



No need for further communication by **LA / IW** with **HSE** re this **DWI** unless further information is obtained to change **RA**

EHS to carry out a risk assessment (**RA**) to determine if need to consult with **PH**

YES



EHS and **PH** discuss **DWI**

- **EHS** and **PH** agree advice to go to **LA/IW**
- Either to email the advice to **LA**
- Both **EHS** and **PH** to be **copied** in this **email**

NO



EHS provide **HSE** advice to **LA** and confirm with email to **LA**.

Where an issue requires on-going communication between the water services authority and the HSE, the communication process should be tailored to the needs of the specific issue.

***DWI (Drinking Water Issue)**

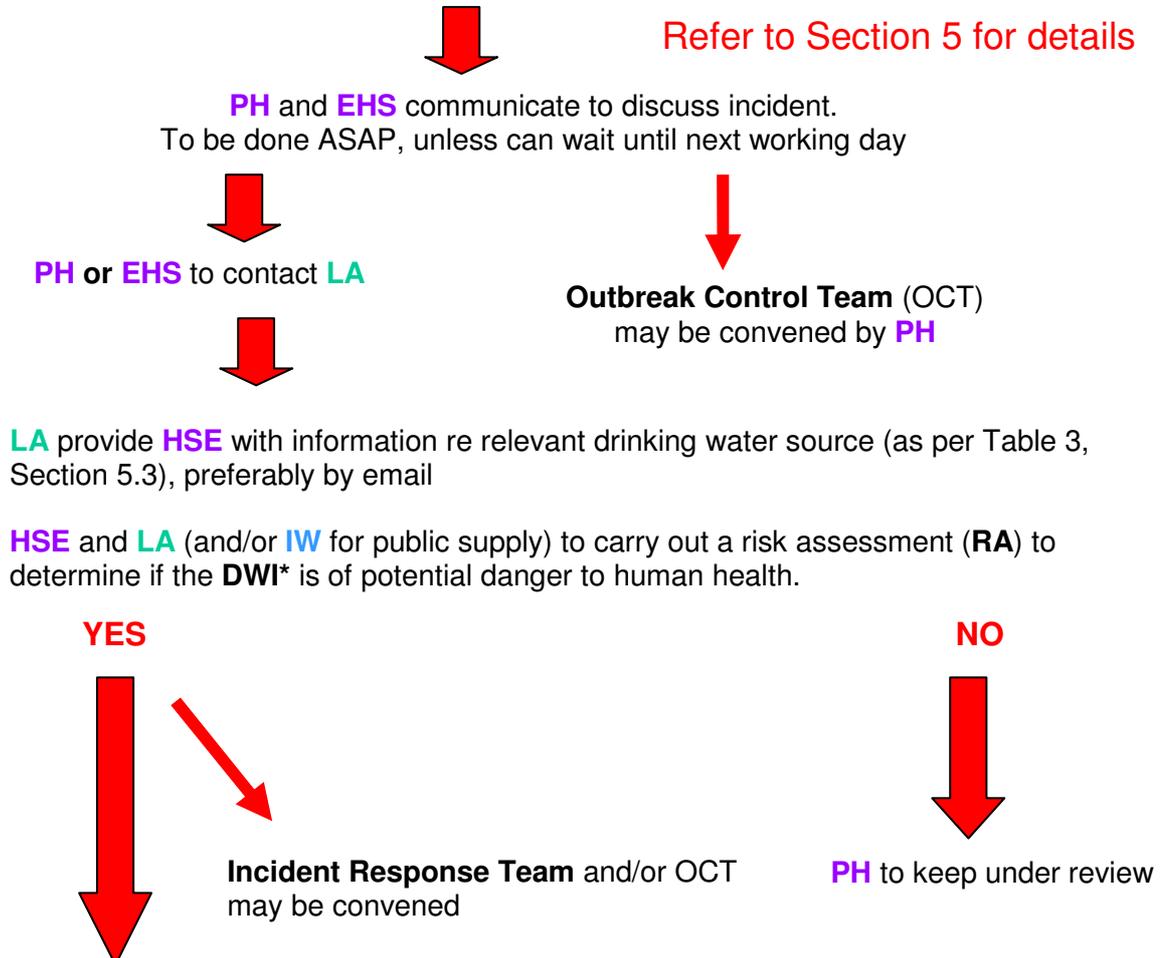
For definition of Drinking Water Issue, please see Definitions/Glossary section

Abbreviations

DWI: Drinking Water Issue; **EHS:** Environmental Health Service; **HSE:** Health Service Executive; **IW:** Irish Water; **LA:** Local Authority; **PEHO:** Principal Environmental Health Service; **PH:** Public Health; **RA:** Risk Assessment

Algorithm C – Notification and Initial Consultation Process when HSE Public Health first identifies cases of Human Illness which may be associated with a Drinking Water Source

Human illness first identified by **HSE PH** which may be associated with a drinking water source



EHS and **PH** discuss **DWI**

- **EHS** and **PH** agree advice to go to **LA/IW**
- Either to email the advice to **LA**
- Both **EHS** and **PH** to be **copied** in this **email**

Where an issue requires on-going communication between the water services authority and the HSE, the communication process should be tailored to the needs of the specific issue.

*DWI (Drinking Water Issue)

For definition of Drinking Water Issue, please see Definitions/Glossary section

Abbreviations

DWI: Drinking Water Issue; **EHS**: Environmental Health Service; **HSE**: Health Service Executive; **IW**: Irish Water;
LA: Local Authority; **PEHO**: Principal Environmental Health Service; **OCT**: Outbreak Control Team
PH: Public Health; **RA**: Risk Assessment

Definitions / Glossary

AND	Assistant National Director
CCMA	County and City Managers' Association
DPH	Director of Public Health
Drinking Water Issue	Includes (a) any non-compliance of a microbiological, chemical or indicator parametric value as defined by the drinking water regulations; (b) where there are cases of human illness, or the possibility of human illness, which are, or may be, related to a drinking water source or (c) an event of possible relevance to drinking water quality, such as burst pipe, a pollution incident, a disinfection failure, a breakdown at a water treatment plant or other drinking water plant failure
Drinking Water Incident	<p>(As defined by EPA) Any event detected by routine compliance monitoring or routine operational monitoring, or any other event that was not necessarily detected by routine compliance or operational monitoring and has occurred because of something that has happened in the catchment, at the treatment works or in the distribution system, that:</p> <ul style="list-style-type: none">• appears to have caused illness in the community as a result of the water supplied; or• because of its effect, or likely effect, on the sufficiency or quality of the water supplied, gives rise to, or is likely to give rise to, a significant risk to the health of persons to whom water is supplied; or• has caused, or is likely to cause, significant concern to persons to whom the water is supplied; or• has attracted, or is likely to attract, significant local or national publicity
DWIRP	Drinking Water Incident Response Plan, i.e. a plan prepared by a Local Authority to document the procedures, processes and information to support the management of a drinking water incident
EHO	Environmental Health Officer
EPA	Environmental Protection Agency
HPSC	Health Protection Surveillance Centre
HSE	Health Service Executive
Irish Water	Irish Water is responsible for the operation of public water and wastewater services. It took over this responsibility from the Local Authorities on 1st January 2014.
IRT	Incident Response Team

MOH	Medical Officer of Health
OCT	Outbreak Control Team
PEHO	Principal Environmental Health Officer
SLA	Service Level Agreement
SMO	Senior Medical Officer
SPHM	Specialist in Public Health Medicine
Water services authority	In relation to this document, this term refers to Irish Water or a Local Authority, as relevant
Water Supplier	Any person supplying water intended for human consumption

1. Introduction

This document is designed to provide guidance to staff of the Health Service Executive (HSE) who work with water services authorities (i.e. Irish Water or the Local Authorities, as relevant) in relation to drinking water issues of potential danger to human health. It sets out a framework of communication within the HSE and between the HSE and the water service authorities on the initial notification of an issue.

The overall priority in managing drinking water issues of potential danger to human health is to protect the health of the public in a timely manner using best available evidence, expertise and resources.

In 2010, a document entitled '*Guidelines proposed by the Health Service Executive as a template document between the Health Service Executive and Water Services Authorities* for dealing with Exceedences and Incidents in Water Supplies*' was developed by the HSE National Drinking Water Group, in consultation with the County and City Managers' Association (CCMA).¹

It was intended that such document:

- (a) would facilitate a standardised national framework for the interdisciplinary management of drinking water exceedences and incidents,
- (b) could be used as a template by HSE and Water Services Authorities to develop procedures for the interdisciplinary management of exceedences and incidents, if such procedures had not already been developed, and
- (c) could be used as a guide for Appendix A5 in each Water Services Authorities' Drinking Water Incident Response Plan (DWIRP).

In 2016, the above document was revised by the HSE National Drinking Water Group, following consultation with Irish Water and CCMA in 2014, to take account of:

- (a) changes in governance structures within public water service providers, and
- (b) feedback, mainly by way of a survey, from key personnel with managerial and operational experience in the HSE Environmental Health Service, the HSE Departments of Public Health and the Local Authorities who used the 2010 document.²

This document deals with drinking water issues in both public and private drinking water supplies. Therefore, communication between the HSE and the Local Authorities may relate to an issue where the Local Authority is either:

- (a) acting as an agent of Irish Water in relation to public supplies, or
- (b) acting in a supervisory capacity to private suppliers.

In some areas, the Environmental Health Service continues to provide a drinking water compliance monitoring service, on an agency basis, to individual Local Authorities / Irish Water. This service is not addressed in this document, except where a drinking water issue of potential danger to human health is first identified by the Environmental Health Service while operating this contract.

This document should be considered a 'work in progress' and will be reviewed as necessary.

¹ Water Services Authorities, under the 2010 document, were the 34 City and County Councils / Local Authorities who, up to the end of 2013, were responsible for the provision and monitoring of public drinking water supplies in their areas. In 2014, Irish Water took over responsibility for all public drinking water supplies. The Local Authorities now act as agents of Irish Water with regard to public drinking water supplies. The Local Authorities continue to have a supervisory role in relation to private group water schemes and other private supplies.

2. Roles and Responsibilities

2.1 Irish Water

From January 2014, Irish Water took over responsibility for the provision all public drinking water supplies in Ireland and the monitoring of such supplies.³

The Local Authorities are continuing to perform a key role in the operational management and monitoring of public water supplies under service level agreements (SLAs) with Irish Water and will therefore, for public water supplies, be acting as an agent of Irish Water.

Irish Water will lead the management of media and consumer communications for drinking water incidents in public supplies.

2.2 Local Authorities

The Local Authorities are continuing to perform a key role in the operational management and monitoring of public water supplies under SLAs with Irish Water. They continue to have a supervisory role over private group water schemes and other private supplies, as per the 2014 Regulations.⁴

For the present, for the purposes of managing drinking water issues of potential danger to human health, the HSE will continue to work at operational level with Local Authority staff for both public and private supplies.

In the event of a non-compliance with the parametric values, the Local Authorities are responsible for preparing a notification for submission to the Environmental Protection Agency (EPA). This notification is then sent to the EPA by the Local Authority / Irish Water.

2.3 Health Service Executive

The Environmental Health Service and the Departments of Public Health are the two main services within the HSE with whom water services authorities interact in relation to drinking water.

In addition, HSE laboratories have a role in providing analysis of clinical samples and, in some laboratories, analysis of water samples, and in providing microbiological expertise for the management of some drinking water issues (see Section 2.3.3).

2.3.1 Environmental Health Service

The Environmental Health Service nationally is headed by the Assistant National Director (AND) - Environmental Health. The AND reports to the National Director - Health and Wellbeing.

Reporting to the AND are four Regional Chief Environmental Health Officers. There are 37 local Departments of Environmental Health. This service is delivered by a team of Environmental Health Officers (EHOs), under the management of the Principal Environmental Health Officer (PEHO), who in turn reports to a Regional Chief Environmental Health Officer.

Some local Environmental Health Service functional /local areas include two Local Authority areas, e.g. Carlow-Kilkenny, Laois-Offaly, Sligo-Leitrim among others.

Conversely a number of Local Authority areas encompass more than one local Environmental Health Service office e.g. Cork, Dublin and Tipperary.

In addition to providing advice to the water services authorities under the Drinking Water Regulations, in conjunction with Departments of Public Health as necessary, the Environmental Health Service provides the following services relevant to drinking water:

- draws up risk based water sampling programmes and monitoring of drinking water quality at food premises served by private water supplies to verify supply potability, in accordance with food safety legislation and takes appropriate enforcement action under food safety legislation where such water quality presents a food safety risk;
- collaborates with Departments of Public Health in the investigation of cases of suspected waterborne illnesses, such as VTEC, by sampling drinking water supplies, especially private wells;
- offers advice and guidance to the public on drinking water contamination, remedial measures etc;
- in some areas, carries out drinking water compliance monitoring services, on an agency basis, for Local Authorities / Irish Water;
- investigates and processes complaints or concerns raised by the public in respect of drinking water;
- investigates complaints of incidents with potential to cause danger to human health which may be related to environmental contamination;
- carries out risk assessments and risk management in relation to drinking water issues;
- supports the public in accessing laboratory testing services for water samples, provides guidance on the interpretation of laboratory results and provides advice, usually in respect of private wells or private group water schemes.

2.3.2 Departments of Public Health

There are eight Departments of Public Health which operate at a regional level and each provides advice to more than one Local Authority and more than one Environmental Health Department. Each department is headed by the Director of Public Health (DPH). The eight DPHs report nationally to the Assistant National Director (AND) – Public Health and Child Health. At national level, the AND – Public Health and Child Health reports to the National Director – Health and Wellbeing.

Departments of Public Health consist of a multidisciplinary team, which can include Specialists in Public Health Medicine (SPHMs), Senior Medical Officers (SMOs), Surveillance Scientists, Infection Prevention/Communicable Disease Control Nurses, Researchers and Information Officers.

The DPHs and SPHMs are designated as Medical Officers of Health (MOHs) in relation to the region covered by their departmental, under Health Acts 1947 to 1953, the Health (Duties of Officers) Order 1949, the Infectious Diseases Regulations 1981 and the Health Act 2004.^{5,6,7,8,9}
(See Section 4.2 and <http://www.irishstatutebook.ie/eli/1981/si/390/made/en/print>).

The Assistant National Director - Public Health and Child Health is the MOH in relation to the whole country.

The Infectious Diseases Regulations 1981 assigns a duty to the MOH to investigate and control infectious diseases (see Section 4.2). Under this legislation and the Health (Duties of Officers) Order, the MOH is also required to collate information about actual and potential dangers to human health and to advise on such matters. This includes the provision of advice to the Local Authorities regarding environmental health issues.

As part of these roles, Departments of Public Health provide the following services relevant to drinking water:

- surveillance of communicable diseases, including the identification of illness in an individual or groups which may be related to drinking water;
- investigation and public health management of cases and outbreaks of communicable disease, and chairing the outbreak control team;
- investigation of complaints of illness or incidents with potential to cause danger to human health which may be related to environmental contamination;
- risk assessment and risk management in relation to drinking water issues;
- risk communication (with vulnerable groups, public, media, councillors, professional groups);
- under the Framework for Major Emergency Management¹⁰, public health medical specialists provide advice, information and re-assurance, where appropriate, to exposed individuals and communities; play a key role in the short and long term monitoring and management of those exposed; play a role in communicating with the media and, where appropriate, join the HSE support team at the Local Co-ordination Centre.

2.3.3 HSE Laboratories

There are three categories of HSE laboratories relevant to drinking water: (a) clinical laboratories, (b) the Official Food Microbiology Laboratories (OFMLs) and Public Analyst's Laboratories and (c) reference laboratories.

As part of these roles, the laboratory services contribute the following services relevant to drinking water:

- laboratory data to support surveillance of communicable diseases which may be related to drinking water;
- laboratory support for investigation and public health management of cases and outbreaks of communicable disease related to drinking water, including participation in outbreak control team;
- laboratory support for investigation of drinking water incidents or complaints of illness which may be related to water contamination;
- advisory services to support the appropriate selection of samples and testing, and interpretation of results.

The network of clinical laboratories in hospitals throughout the country contributes to the detection of human waterborne infection. This information contributes to surveillance for waterborne infection in humans through the process of laboratory notification of infectious disease to the Departments of Public Health.

The national network of OFMLs and Public Analyst's Laboratories provide accredited analytical services for drinking water which help to provide assurance that drinking water complies with regulatory requirement and which may allow detection of non-compliances and systems failures before there is an impact on human health.

Laboratory analysis of water plays an important role during a confirmed or suspected drinking water issue in defining the nature of the problem and subsequently in providing a measure of assurance that actions to address the problem have been effective.

Both clinical laboratories and OFMLs may submit organisms detected in samples or the primary samples to National Reference Laboratory Services for additional specialised analysis. In some instances, water samples may be dispatched directly to a National Reference Laboratory Service by the Environmental Health Service.

2.3.4 HSE National Drinking Water Group

Within the HSE, the National Drinking Water Group is the interdisciplinary forum to support best practice and promote competence among HSE personnel who have a role in the protection of public health in relation to drinking water. This group does not have executive powers or functions. It has representatives from the Environmental Health, Public Health, Health Protection Surveillance Centre (HPSC), Microbiology and Public Analyst Laboratory services. It reports to both the Assistant National Director - Public Health and Child Health and the Assistant National Director - Environmental Health.

2.4 Drinking Water (Quality) Liaison Committees/Groups

It is recommended that a Drinking Water Liaison Committee be set up in each drinking water operational area to facilitate interdisciplinary and interagency work. It is recommended that this committee meet at least twice yearly.

See Appendix 1 for suggested objectives and membership of such committees.

A report detailing all non-compliant results (Tables A, B and C) from regulated supplies, whether or not notified to the HSE, should be reviewed at the Drinking Water Liaison Committee meetings. In addition, all open files (Irish Water, Local Authority, HSE, EPA) and other relevant issues should be reviewed.

2.5 Environmental Protection Agency

The 2014 Regulations provide the EPA with supervisory powers for public water supplies.⁴ The EPA can direct Irish Water to improve the management or quality of a public water supply. Under the Regulations, Irish Water must notify the EPA of drinking water non-compliances or risk to public health from a public water supply. The EPA supervises the performance of Irish Water and of Local Authorities' monitoring function under the regulations and may issue a direction, as it considers necessary, to ensure that Irish Water and the Local Authorities are complying with their obligations under the regulations⁴.

The EPA has published a handbook on the implementation of the regulations to provide guidance to water suppliers. It also publishes water treatment manuals, advice notes to provide practical guidance to water suppliers, and an annual report on drinking water quality in Ireland. (<http://www.epa.ie/water/dw/>)

3. Drinking Water Issues of Potential Danger to Human Health

3.1 Definition of Drinking Water Issue

The term 'drinking water issue', as used in this document, covers:

- any non-compliance of a microbiological, chemical or indicator parametric value as defined by the drinking water regulations⁴ or
- where there are cases of human illness, or the possibility of human illness, which are, or may be, related to a drinking water source or
- an event of possible relevance to drinking water quality, such as a burst pipe, a pollution incident, a disinfection failure, a breakdown at a water treatment plant or other drinking water plant failure

The European Union (Drinking Water) Regulations 2014 set out the microbiological (Table A), chemical (Table B) and indicator (Table C) parametric values with which a drinking water sample should comply.⁴ Non-compliance with such values requires an investigation.

3.2 Drinking Water Issue of Potential Danger to Human Health

Not all drinking water issues have a potential to be a danger to human health. Water services authority staff conduct a risk assessment in order to identify the subset of drinking water issues which may indicate a potential danger to human health.

Appendix 2 provides guidance to water services authority staff as to when a drinking water issue may not pose such a danger.

3.3 Drinking Water Issue requiring discussion between Environmental Health and Public Health

Within the HSE, some drinking water issues may be managed solely by the Environmental Health Service.

When a drinking water issue is notified to the Environmental Health Service by the water services authority, the Environmental Health Service should initially carry out a risk assessment in order to identify if the issue requires the involvement of Public Health.

Table 1 provides guidance to the Environmental Health Service and Departments of Public Health on issues where both should communicate in relation to the HSE advice to the water service authority.

Where relevant, either the Environmental Health Service or Public Health should liaise directly with relevant HSE laboratory services as early as possible to ensure that the laboratory can deliver support as required.

Table 1: Situations where EHS and PH should communicate before providing HSE advice to a water services authority in relation to a drinking water issue

- Any non-compliance of microbiological parameters (Table A);
- Any identification of cryptosporidium oocysts in drinking water;
- An initial non-compliance of a chemical parameter (Table B);
- Persistent or recurrent non-compliance of a chemical parameter (Table B) without remedial action having been agreed or, if agreed, without it having been acted upon;
- Any incident where a number of human cases of gastrointestinal illness are identified which could be related to a drinking water source;
- Any instance of multiple unsatisfactory non-compliant results of indicator parameters (Table C);
- Two consecutive unacceptable turbidity results;
- When the HSE becomes aware of an unsatisfactory treatment plant audit
- Any notification to the Departments of Public Health, or complaint/s from the public, of a number of cases of human illness which could be related to a source of drinking water;
- Any incident involving, or possibly involving, drinking water which requires activation of the Major Emergency Plan.

4. Legislation[†]

4.1 Drinking Water

4.1.1 Duties of suppliers

The European Union (Drinking Water) Regulations 2014 (S.I. 122 of 2014)⁴ 4(1) requires that water suppliers ensure that the water provided is wholesome and clean and meets the requirements of the Regulations, except where a departure has been granted.

4.1.2 Monitoring

The EU regulations⁴ prescribe the quality standards to be applied, and related supervision and enforcement procedures, in relation to supplies of drinking water. This includes requirements as to:

- minimum sampling frequency
- methods of analysis
- the provision of information to consumers and related matters.

A supervisory authority shall ensure that additional monitoring is carried out on a case-by-case basis of substances or micro-organisms for which no parametric value has been specified if there is reason to suspect that such substances or micro-organisms may constitute a potential danger to human health [Regulation 7(10)].

In addition, as allowed by the EU regulations, the EPA has stated in its handbooks, that there may be circumstances when increased frequency of monitoring of particular parameters in particular supplies may be necessary^{11,12}.

Also, risk assessment, as per legislation, may indicate the need for more frequent monitoring, and may also indicate the need to monitor when a water supply is likely to be most vulnerable to contamination.

In January 2014, Irish Water took over responsibility for all public water supplies.³ The EPA has supervisory authority for public water supplies.⁴

Private suppliers (i.e. private group water schemes, private commercial suppliers and where water is supplied to the public or as part of a commercial activity) are responsible for relevant monitoring of their supplies.⁴ Local Authorities are the supervisory authority in relation to such private supplies. The EPA can supervise the performance of Local Authorities' monitoring functions under the EU Regulations [Regulation 7(12)].⁴

Some individual or small private supplies are exempt from legislative supervision. However, Local Authorities are responsible for notifying the population served by an exempted supply of the fact that the regulations do not apply to such supply and of actions that can be taken to protect human health from any water contamination [Regulation 14(1)].⁴

[†] This section should be read in conjunction with the relevant legislation.

4.1.3 Consultation with, and agreement of, the HSE

Under the EU Drinking Water Regulations [Regulation 9 (1)], a water services authority, acting as a provider of public drinking water supplies or as a supervisory authority, is required to determine whether a supply constitutes a potential danger to human health and to take such action as is necessary to protect human health.⁴

The water service authority is obliged, in doing so, to consult with the HSE and to get the agreement of the HSE on the actions to be taken to protect human health.

4.1.4 Directions/Departures

A supervisory authority may issue a direction, “subject to agreement with the HSE”, where water intended for human consumption constitutes, or may constitute, a risk to human health [Regulation 9(2)].⁴

Supervisory authorities may also issue directions under Regulations 6(3), 7(6), 10(4)(a), 12(1), 13(3) and 16(1) where agreement with the HSE is not required.⁴

In addition, the EPA may issue a direction, under Regulation 7(12), to a Local Authority to ensure that it is complying with its obligation as a supervisory authority.⁴

Such directions are legally binding.

Supervisory authorities may grant a departure from the parametric values “subject to agreement with the HSE” [Regulation 11(1)].⁴

4.1.5 Notification to Consumers

Where a water services authority, in consultation with the HSE, considers that a water supply constitutes a potential danger to human health, it should, subject to agreement with the HSE, ensure that consumers are notified promptly and provided with appropriate advice [Regulation 9(1)(b)]. Where remedial action is taken in relation to a water supply, the water supplier shall ensure that consumers are informed of such action, save where the supervisory authority considers the non-compliance with the parametric value to be trivial in nature or extent [Regulation 10(9)].⁴

Where a non-compliance in drinking water, or risk of non-compliance, is in a premises which is not part of a commercial or public activity, the water services authority or the Local Authority, as supervisor, shall inform consumers [Regulation 6(5)(b)] and advise consumers and affected premises’ owners of any possible remedial action which could be taken by them [Regulations 6(5)(a)(i) and 6 (5)(b)].

4.1.6 Temporary Take-Over of Waterworks

The 2007 Water Services Act allows for the temporary take-over of the operation or management of a waterworks by Local Authorities (section 91).¹³

4.2 Health Protection

The Medical Officer of Health (MOH) has the responsibility and authority to investigate and control infectious diseases and outbreaks, under the Health Acts

1947 and 1953; Infectious Disease Regulations 1981 and subsequent amendments to these regulations.^{5,6,8}

In particular, Article 11 of Infectious Disease Regulations 1981 (S.I. 390 of 1981) states: *“on becoming aware, whether from a notification or intimation under these Regulations or otherwise, of a case or a suspected case of an infectious disease or of a probable source of infection with such a disease, a Medical Officer of Health, or a Health Officer on the advice of a Medical Officer of Health, shall make such enquiries and take such steps as are necessary or desirable for investigating the nature and source of such infection, for preventing the spread of such infection and for removing conditions favourable to such infection.”*⁸

Article 19 of the above Regulations states: *“a person who refuses to comply with a requirement or direction given or a request for information made in pursuance of any of the provisions of these Regulations shall be guilty of a contravention of these Regulations.”*⁸

A MOH should, therefore, investigate a probable source of infection in a drinking water source and take such steps as to prevent the spread of infection and to remove conditions favourable to such infection.

In addition, if a MOH is investigating an outbreak of human illness which is, or may be, linked to a drinking water source, there is an obligation to investigate so as to prevent the spread of infection.

Under the Health (Duties of Officers) Order 1949, a MOH is obliged to inform him/herself in relation to the health of the population in a Local Authority area and to advise the Local Authority in relation to the health of the people.⁷

4.3 Food Hygiene

The Environmental Health Service has a supervising role regarding water supplied to food businesses under their remit from a food safety perspective. A potable supply of water must be provided in all food businesses as required by European Communities (Hygiene of Foodstuffs) Regulations 2006 (S.I. 369 of 2006) and subsequent amendments to these regulations. S.I. 369 of 2006 gives effect to Regulation (EC) No. 852/2004 on hygiene of foodstuffs.

The EHS can take appropriate enforcement action under the Food Safety Authority of Ireland Act 1998 and other food safety legislation where such water quality presents a food safety risk.

5. Communication Processes

5.1 Robust Communication System

Water services authorities, HSE Environmental Health Service and HSE Departments of Public Health should each have a timely interdisciplinary and interagency communication system in place regarding drinking water issues. This communication process should be sufficiently robust to deal with leave, including unplanned leave, and should not rely solely on email communication or voicemail messages, unless it has been agreed that such messages will be dealt with in a timely fashion.

For public water supplies, the HSE has requested from the water services authorities that there is one water services authority contact point for the HSE in relation to the initial notification, consultation and agreement of initial actions about a drinking water issue. In the interest of timeliness of communication in relation to an initial notification, the HSE would prefer that the Local Authority would continue to be this contact point. If the contact point is the Local Authority, the HSE understands that the Local Authority will communicate this initial discussion to Irish Water.

Where an issue requires more than an initial notification, consultation and immediate actions, the communication process becomes more complex. This document does not deal with a more complex communication process and further work is required between the HSE, Irish Water, the Local Authorities and the EPA as to how such a process might best be managed.

In relation to private supplies, the contact point will be the relevant Local Authority.

The contact details of relevant personnel within each agency/service should be recorded (see Appendix 3) and shared with the other agency. Clear lines of communication between the laboratory services and the HSE Environmental Health Service and HSE Departments of Public Health are likewise necessary.

5.2 Interagency Initial Communication Process – Who to contact

Any drinking water issue, when first identified as posing a potential danger to human health, should be notified to the other agency (water services authority or HSE, as relevant) immediately by phone.

If a drinking water issue of potential danger to human health is first identified by the water services authority, the initial first point of contact by the water services authority with the HSE would most usually be the PEHO. If such an issue is considered to be a potential danger to human health requiring consultation with Public Health, the Environmental Health Service should contact Public Health. See Algorithm A.

If the Environmental Health Service first identifies a non-compliance when either working in an agency capacity for the water services authority in compliance monitoring, or from water sampling under food safety legislation, the Environmental Health Service will usually make contact with the relevant water services authority as agreed between both agencies and having due regard to Article 7 of Regulation (EC) 882/2004. If such an issue is considered to be a potential danger to human health

requiring consultation with Public Health, the Environmental Health Service should contact Public Health. See Algorithm B and Table 2.

If Public Health first identifies cases of gastrointestinal illness which may be associated with a drinking water source, Public Health will liaise with the Environmental Health Service and the issue will be discussed with the relevant water services authority to decide if there is a possibility that drinking water may be the cause of the human illness. See Algorithm C and Table 2.

If a HSE laboratory first identifies a possible drinking water issue, e.g. analysis of water or through cases of gastrointestinal illness, it will inform the Environmental Health Service and/or the Department of Public Health, as appropriate in the circumstances. See Table 2.

Table 2: Drinking Water Issue first identified by HSE – Who to contact

<p>ENVIRONMENTAL HEALTH (<i>Non-compliance identified</i>)</p> <p>↓</p> <ul style="list-style-type: none"> • Inform relevant water services authority • Discuss with SPHM where consultation with Public Health required 	<p>PUBLIC HEALTH (<i>Suspect water-borne illness identified</i>)</p> <p>↓</p> <ul style="list-style-type: none"> • Inform PEHO • Liaise with water services authority 	<p>HSE LABORATORY (<i>Possible drinking water issue identified</i>)</p> <p>↓</p> <ul style="list-style-type: none"> • Inform PEHO and/or SPHM, as appropriate
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5.3 Interagency Initial Communication Process – Documentation

When a water service authority consults with the HSE in relation to a drinking water issue of potential danger to human health, it is the responsibility of the water services authority to investigate the issue, to propose solutions to protect human health and to get agreement with the HSE to the proposed solutions.

An initial verbal notification from the water services authority to the HSE should be followed up with an email confirmation of the notification. This email should include relevant details of the drinking water source, as per Table 3 below, including proposed actions to further investigate, to protect human health and/or to resolve, or to start to resolve, the issue. This information will assist in the consultation process.

Any proposed actions are to be agreed by the water services authority with the HSE. This agreement should be recorded in writing.

In some situations, the actions are initially agreed verbally. However, such verbal agreement should be followed up by an email from the HSE as to its agreement with the proposed actions.

Table 3: Checklist – Information, as relevant, for water services authority to communicate with HSE to aid Water Services Authority / HSE consultation

- Details of any non-compliance/s, date sample/s taken, validity and representativeness of sampling point, name of water supply and location of sampling point on supply, free residual chlorine, results from other locations on same supply and at water treatment plant, if available, etc
- Historic water quality testing data e.g. other relevant parameters?
- Was the treatment process operating normally when the sample was taken?
- Initial assessment of cause of the incident? e.g. damage to water main, illegal discharge etc
- Details of water supply e.g. water source (such as if surface or groundwater?), history of supply, type of treatment works, population served, any known vulnerable clients/settings, any recent work, any recent problems
- How is treated water stored (reservoirs, towers, tanks, bowsers etc)?
- For incidents at a works or a service reservoir, an estimate of time required for contaminants/organisms to reach consumers and, where relevant, any remedial measure, such as removing assets from supply, rezoning or high velocity flushing, which may affect these time estimates.
- Actions taken to date, whether or not consumers notified and details of this notification, if additional sampling is underway
- Further proposed actions
- Any media awareness?
- When cases or complaints of human illness are the initial cause of concern, the association of such cases with a drinking water supply

5.4 Initial Communication Process - Environmental Health and Public Health

If either the Environmental Health Service or the Department of Public Health becomes aware of a drinking water issue of potential danger to human health which requires communication with the other HSE service, this should be communicated as soon as possible, unless it is assessed that communication can wait until the next working day.

In relation to Section 3.3, if a SPHM has been consulted for advice by the Environmental Health Service and if joint HSE advice is required to be given to the water services authority, the email back to the water services authority from the HSE should be first agreed with the SPHM. The subsequent email to the water services authority should be copied to the SPHM.

Where a PEHO does not need to consult with a SPHM about a drinking water issue, there is no need to copy the SPHM in emails relevant to the issue, having due regard to Section 3.3.

If a SPHM is the main liaison person with the water services authority, the PEHO should be copied in relevant emails.

5.5 Ongoing Communication

Where an issue requires on-going communication between the water services authority and the HSE, the communication process will be tailored to the needs of the specific issue. This process should be addressed in more detail in further work between the HSE, Irish Water, the Local Authorities and the EPA.

For ongoing communication within the HSE, if a SPHM has been consulted on an issue but the PEHO is mainly following up, the SPHM should be kept informed of the on-going situation. Likewise, if a PEHO has been involved in an issue but the SPHM is mainly following up, the PEHO should be kept informed of the on-going situation.

5.6 Closing out an issue

Once an issue has been notified to the HSE by the water services authority or vice versa, it would be good practice if the issue was officially closed by the relevant agency and this closure communicated to key personnel involved in the issue. This closure could occur at a relevant Drinking Water Liaison Committee meeting (see Section 2.4), at an Incident Response Team meeting (see Section 6) or at an Outbreak Control Team meeting (see Section 7), as appropriate.

6. Incident Response Team (IRT)

If a drinking water issue is of sufficient seriousness and complexity, an IRT will be convened, and chaired, by the Local Authority or by Irish Water (as relevant). It is likely that any issue which requires an interagency discussion could be considered by an IRT.

For a less serious or complex issue, this discussion could occur by teleconference. Teleconferencing is more likely to work effectively when the various professionals are already familiar with each other, such as through the Drinking Water Liaison Committee meetings.

The purpose of the IRT is to ensure co-ordinated investigation, management and control of an incident.

If the initial risk assessment indicates immediate action is required to protect human health, this action should be taken prior to convening the IRT.

The IRT terms of reference include the following:

- review the evidence of the incident and the results of epidemiological and chemical/microbiological investigations;
- decide on control measures and determine the necessary commitment of personnel and resources;
- make on-going arrangements for informing the public, including vulnerable groups and key settings;
- decide when the incident is finished;
- prepare an incident report containing recommendations for future action.

In the event of an outbreak of infectious disease where a drinking water source is suspected to be a cause of the illness, the HSE may request that the water services authority convene an IRT. Where a HSE Outbreak Control Team (OCT) is also convened, the OCT will liaise with the IRT, and vice versa, as appropriate.

The IRT may vary in size depending on the severity and complexity of the issue. Additional expertise may be required and others may be co-opted as appropriate. Typically membership would comprise some or all of the following:

Local Authority / Irish Water

Director of Services
Senior Engineer
Senior Executive Engineer
Water Services Chemist
Area Engineer
Irish Water Representative
Others as appropriate e.g. Public Relations

HSE

Medical Officer of Health/SPHM
Senior Medical Officer
Principal Environmental Health Officer
Senior Environmental Health Officer
Surveillance Scientist
Consultant Microbiologist
Others as appropriate

Minutes should be taken at all IRT meetings and draft minutes agreed at subsequent meetings or as agreed.

7. Outbreak Control Team (OCT)

Outbreaks, or possible outbreaks, of infectious disease may come to the attention of Departments of Public Health by means of:

- complaints from members of the public (either directly or indirectly from the Environmental Health Service);
- statutory notifications of infectious disease from medical practitioners or clinical directors of medical laboratories;
- surveillance of infectious diseases.

The role of the OCT is to:

- Determine if an outbreak exists
- Investigate the outbreak
- Implement control measures
- Communicate with the public, other professionals, the media, etc, as necessary
- Produce an outbreak report, including lessons learned.

When an outbreak, or possible outbreak, is identified, the MOH will convene and chair an OCT. Core membership will always include Public Health Medicine and Environmental Health, and will generally include Clinical Microbiology.

When it is suspected that the outbreak, or possible outbreak, could be linked to drinking water, the relevant water services authority is consulted.

Minutes should be taken at all OCT meetings and draft minutes agreed at subsequent meetings or as agreed.

The OCT will produce an outbreak report. This report is signed off by the OCT. As this report may contain potentially identifiable personal health information, parts of the report may remain confidential and not accessible under Freedom of Information legislation.

Depending on the circumstances, the water services authority may also convene an IRT. On occasion, the OCT itself may request that an IRT be called. It is agreed that this request will be facilitated by the Local Authority / Irish Water. If an IRT is convened, the OCT will liaise with the IRT and will likely have a number of common members with the IRT.

8. Laboratories and Accreditation

Laboratories providing analytical services for water should be accredited to the ISO 17025 standard (or equivalent). The scope of accreditation of the laboratory should reflect the range services provided. It is reasonable to use non-accredited analysis as a basis for decision making in circumstances where an accredited provider of that analysis is not readily available. This situation is most likely to arise with respect to emerging technologies and highly specialised tests. In such circumstances the laboratory should provide an indication of the extent of validation of the analytical method and some level of assurance regarding the confidence that can be placed in the results. Wherever possible, a provider of a non accredited laboratory test should be accredited for other analytical methods to ensure that the laboratory is familiar with the principles of operating within a quality management system.

Clinical laboratories and reference laboratories providing services related to the investigation or management of drinking water incidents should have an appropriate quality management system in place and ideally should have appropriate accreditation for the services they provide.

9. Protection of Consumer

There are a number of possible actions which may be taken to protect consumers. These may include:

- a risk assessment as to the potential of the incident to be a risk to human health;
- a review of any emergency measure in place;
- providing advisory information to consumers;
- continuing supply but advising customers not to use water for drinking and cooking, or to boil water for such purposes;
- switching to temporary alternative supplies or providing suitable alternative supplies for vulnerable groups, e.g. infants;
- shutting off supply and providing water by tanker;
- flushing of supplies may be advised by the Local Authority in houses/premises that are known to be unoccupied. The HSE may do likewise in respect of affected unoccupied properties owned by them;
- in the event of a chemical contamination the system may be drained and scoured to ensure complete removal of the chemical contaminant;
- providing information to public representatives, residents associations, press and local radio, leaflet distribution, website and social media updates, and via the Irish Water customer contact centre.

9.1 Restriction of Use

A range of control measures may be employed to minimise the potential danger to human health. Where restriction of use is necessary, the consumers may be advised to:

- boil tap water before consumption;
- do not use for drinking, cooking but can use for washing or
- do not use for drinking, cooking or washing.

A boil water notice may be considered where there is a danger to human health from microbiological contamination. This should be done in order to ensure the safety of the drinking water supply and to prevent health-damaging outbreaks.

However, issuing a boil water notice is a serious measure that should be undertaken only when there is an ongoing risk to human health which outweighs any risk from the boil water notice itself. The public interest is not always best served by boil water notices, which can have negative health consequences, such as scalds, and economic losses, such as increases in energy use and/or losses to food, beverage and tourist industries.

In some instances (e.g. *Cryptosporidium*), epidemiological evidence of an outbreak may form the basis for advice, in the absence of laboratory evidence of water contamination.

In the event that a water services authority issues a boil water/water restriction notice without prior discussion with the HSE, the HSE should be informed at the earliest opportunity.

In the more usual scenario, i.e. where a decision to issue a boil water/water restriction notice follows a consultation with the HSE, the text of the notice, and the accompanying press release, should be agreed with the HSE.

Where there is a restriction of use or interruption to water supply, special consideration should be given by the water services authority to notify key settings and vulnerable groups.

Key settings include:

- Hospitals
- Hospices
- Nursing and residential homes
- Schools, pre-schools, colleges
- Day-care centres
- Health centres, GP and Dental surgeries
- Food production premises and pharmaceutical industries.

Hairdressers, swimming pools and spas may need special consideration in the event of algal contamination when direct skin effects may be problematic.

Vulnerable groups for consideration for additional advice:

- Infants
- Elderly
- Visitors to the area
- Home haemodialysis patients
- Severely immunocompromised patients (e.g. leaflet on 'Drinking Water Supplies, Cryptosporidiosis and Severely Immunocompromised Patients' <http://www.hpsc.ie/A-Z/Gastroenteric/Cryptosporidiosis/Publications/File,14628,en.pdf>.)

9.2 Information for Consumers

The following two sections detail guidance which should be provided to consumers in the event of a restriction to drinking water.

9.2.1 Infant Formula

Where drinking water restrictions are in place, the reconstitution of infant formula for bottle-fed infants requires particular advice.

If there is no Drinking Water Restriction notice in place:

Powdered infant formula should be prepared with water from the cold tap at the kitchen sink. It should be brought to the boil once (rolling boil for 1 minute) and cooled. Water that has been re-boiled several times should not be used.

Water that has passed through an ion exchange water softener i.e. one using salt, should not be used to prepare infant feeds. A small separate drinking water tap is usually provided at the kitchen sink when these are installed.

If there is a Drinking Water Restriction notice in place:

Bottled water can be used to make up infant formula. All bottled water, with the exception of natural mineral water, is regulated[‡] to the same standard as drinking water.

It is best not to use bottled water labelled as 'Natural Mineral Water' as it can have high levels of sodium (salt) and other minerals, although it rarely does. 'Natural Mineral Water' can be used if no other water is available, for as short a time as possible, as it is important to keep babies hydrated.

If bottled water is used to make up infant formula it should be boiled once (rolling boil for 1 minute), and cooled in the normal way.

Ready-to-use formula that does not need added water can also be used.

9.2.2 Private Household Wells

The consumer should check that water that they use from a private well is safe.

Private well water supplies can pose a risk to health unless the well is properly built, protected, maintained and, if necessary, treated. Most wells are not monitored under the Drinking Water Regulations. Therefore, the owner is responsible for monitoring, as well as for maintaining and treating the water.

Well water should be tested at least once a year for bacteria and at least once every three years for chemicals.

However, well water contamination can come and go and may not show up on occasional tests. Even wells which usually produce very high quality water can become contaminated after heavy rainfall, if there are animals nearby and at different times of the year. The risk of contamination should be constantly considered.

Where a well is contaminated or suspected of being contaminated with bacteria, an attempt should be made to remove the source of the contamination. If this cannot be done, the customer should consider getting the water treated.

In the interim, water from such a well should be boiled before using it for preparing infant feeds, drinking, making ice, preparing salads and similar foods, or brushing teeth.

9.3 Water from Tankers and Bowsers

When emergency water supplies are provided from tankers and bowsers and consumers provide their own containers, it is important for consumers to ensure that their water containers are clean before filled. As a precautionary measure, this water should be boiled before use for drinking, food preparation and brushing teeth.

[‡] All bottled water is regulated by European Communities (Natural mineral waters, spring waters and other waters in bottles or containers) Regulations, 2007 (S.I. No. 225 of 2007). Additionally, spring waters and 'other waters' must also comply with European Union (Drinking Water) Regulations, 2014 (S.I. No. 122 of 2014).

10. Communications with Public, Media, other Health Professionals

10.1 Communications with Public and other Health Professionals

For public supplies and depending on the severity of an issue, Irish Water, or the Local Authority as its agent, agrees with the HSE the content and method(s) of information dissemination including restriction of drinking water use and the removal of such restriction.

For private supplies, the Local Authority agrees with the HSE the content and method(s) of information dissemination including restriction of drinking water use and the removal of such restriction.

Communication to the public may include:

- prompt, clear and concise briefing of public representatives;
- through the Irish Water customer contact centre;
- house to house distribution of water notice;
- press releases;
- public notices e.g. church and other religious centres, schools;
- engaging with residents associations;
- fact sheets/FAQs,
- public health information leaflet on waterborne illnesses, including specific advice for vulnerable groups where appropriate;
- radio and television interviews;
- website and social media;
- helpline.

While Irish Water or the Local Authority has a responsibility to advise all consumers, additional advice may be provided directly by the HSE. According to local arrangements, specific advice may be given to vulnerable groups and other health professionals (Directors of Public Health Nursing, GPs, consultants) or through relevant key settings, such as elderly care facilities, pre-schools.

Public Health communications with the public and with other health professionals may be purely advisory, but it may also be part of active surveillance of disease as part of the investigation of an outbreak of infectious disease.

Irish Water, Local Authorities and the HSE should work together to provide consistent and complementary information and advice for the public.

10.2 Communication with Media

In accordance with Irish Water/Local Authority protocols, Irish Water is responsible for managing all media interactions in relation to drinking water incidents for public supplies.

For private supplies, the Local Authorities are responsible for managing all media interactions in relation to drinking water incidents.

When an Outbreak Control Team (OCT) has been convened, the OCT may also have a role in communicating with the media, under Infectious Diseases Regulations. Irish Water, Local Authorities and the HSE should work together to provide consistent and complementary information for the media.

11. Criteria for Lifting a Notice

Prior to issuing a boil water, restriction of use or advisory notice, it is good practice to establish criteria for removing the notice. However, this is not always possible and sometimes the urgency for issuing such notices precedes the definition of lifting criteria.

The criteria should take into consideration the balance of risks associated with continuing any restrictions, against the potential health risk associated with the waterborne hazard. Criteria may include cases of human illness, concentration of the contaminant, remedial action, sustainable supply and timescale involved and may also be informed by the EPA and the requirements of any related Direction.

The principal criteria for lifting a notice should include:

- water monitoring results satisfactory/indicate compliance;
- treatment is effective and sustainable and the commissioning statement[§] is agreed by the EPA, where appropriate;
- epidemiological evidence that the outbreak is over/return to background levels of human illness;
- the treatment is sustainable.

[§] A commissioning statement is written confirmation that the treatment plant is operating effectively and meets appropriate external quality standards.

Appendix 1: Drinking Water (Quality) Liaison Committees/Groups

The objectives of the committee will be to:

- Review recent drinking water incidents and outbreaks,
- Review non-compliances of parametric values from Tables A, B and C,
- Review all open files,
- Close relevant issues or incidents if appropriate,
- Discuss lessons learned if appropriate
- Discuss
 - Communication guidelines for drinking water incidents and outbreaks, including updating contacts lists
 - Source and distribution of water intended for human consumption
 - Monitoring arrangements
 - Disease patterns of waterborne illness
 - Training and quality assurance
 - Prevention of duplication of resources
 - Effectiveness of monitoring programme
 - Update of practice in light of new developments
 - Consider educational sessions

A Drinking Water (Quality) Liaison Committee/ Group should include, as a minimum, a representative from Irish Water, the Local Authority, HSE Environmental Health and HSE Public Health services.

Members from the Water Services Authority may include

Director of Services
Senior Engineer
Senior Executive Engineer -Water Services Section
Area Engineer
Chemist/Environmental Scientist/Technician
Veterinary Officer
Others as appropriate

Members from HSE may include

Specialist in Public Health Medicine
Public Health Senior Medical Officer
Microbiologist/Senior Laboratory Technician (Public Health Laboratory)
Principal Environmental Health Officer
Senior Environmental Health Officer
Principal Dental Surgeon
Surveillance Scientist
Microbiologist
Public Analyst
Others as appropriate

Members from Irish Water may include

Regional Operations Manager
Regional Water and Wastewater Compliance Specialist
Regional Water and Wastewater Compliance Analyst
Service Level Agreement Lead

Appendix 2: Guidance on when a Drinking Water Issue may not Pose a Danger to Human Health

(a) Coliforms:

In relation to coliform results, when all of the following apply:

- result is a single instance of < 10 coliforms/100ml in a range of at least two samples taken on the same day in a single supply;
- result has arisen from routine sampling programme and not as a result of an identified local issue;
- adequate free residual chlorine levels (>0.1 mg/L) have been verified at the sampling point at the time of sampling and over the intervening period;
- no other factors of concern are associated with the supply at time of sampling and since that time (i.e. other positive microbiological results, interruption of supply, problems with treatment process, increased turbidity, consumer complaint, etc);
- a repeat sample obtained as soon as reasonably practical, and preferably within one working day, shows a clear result;
- the sample relates to domestic type settings only and without any associated food business activity or from high risk premises such as hospitals, nursing homes or other residential care facilities, pre-schools or child minding facilities, schools;
- confirmation from the consumer in the failing location that no one has symptoms of gastrointestinal illness (such as vomiting and/or diarrhoea);
- confirmation that the consumer has been informed of the result, has been advised that the problem is likely to be specific to their premises and has been advised to use an alternative source of water for consumption, or of the need to boil the water, until a clear result is obtained.

(b) Turbidity

Any increase in turbidity should be risk assessed by the Local Authority and, in the event of sampling taking place at an inappropriate time (e.g. following backwashing, scouring of mains), a follow up sample should be taken as soon as possible and preferably within one working day. If such result is considered adequate for that supply, there is no need for immediate discussion with the HSE.

Appendix 3: Contact Details

The initial first point of contact in the HSE is *usually* the Principal Environmental Health Officer.

There is an emergency telephone advisory public health medical service out of hours which is available to HSE Principal Environmental Health Officers and Directors of Water Services in the Local Authority. County Managers have been notified of the arrangements for this service.

Emails are not usually an appropriate first point of contact in emergency situations. Where there is a drinking water incident of potential danger to human health, telephone contact is essential.

Subsequent arrangements can be made for follow-up communications.

	Landline	Mobile	Email	Fax	Out of Hours
HSE (contacts may include)					
Principal Environmental Health Officer					
Senior/Environmental Health Officer					
Director of Public Health					
Specialist in Public Health Medicine					
Microbiologist					
Local Authority (contacts may include)					
Director of Water Services					
Senior Engineer					
Senior Executive Engineer					
Executive Engineer					
Engineer					
Environmental Scientist					
Irish Water					
Regional Operations Manager					
Regional Water and Wastewater Compliance Specialist					
Regional Water and Wastewater Compliance Analyst					
Service Level Agreement Lead					
Laboratories (contacts may include)					
HSE Public Health					
HSE Public Analyst					
Local Authority Lab					
Private					
EPA					
Local contact					

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