

National Strategy to reduce exposure to Lead in Drinking Water

June 2015



Comhshaol, Pobal agus Rialtas Áitiúil
Environment, Community and Local Government



An Roinn Sláinte
DEPARTMENT OF HEALTH

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Introduction

Why is lead an issue?

Lead is a naturally occurring metal which is found in rocks, soil, water and air. Since the 1970s, there has been a growing concern with risk to health from exposure to lead. Exposure to lead has reduced in Ireland since then, due to the banning of lead in paint in the early 1990s and the introduction of unleaded petrol in the mid-1990s as well as the on-going removal of much of the public lead water mains. Irish people are now, in general, exposed to significantly less lead than was previously the case. However, pipes connecting water mains to individual households or premises, internal lead plumbing and internal pipework with lead-based fixtures and solder remain a potential source of lead. Lead pipework and plumbing was previously in widespread use and is most likely to be prevalent in properties constructed in the period up to and including the 1970s. The severity of adverse health effects of lead exposure, from whatever source, is influenced by the total amount consumed, the duration of lead exposure and the age at which exposure occurs. For most people, the main source of lead is our food, with drinking water accounting for only a small portion of our overall exposure. Infants, young children and pregnant women are most susceptible to the adverse health effects of lead. In the case of formula-fed infants, drinking water can form a significant proportion of the total daily intake of lead where lead pipework or lead-containing fixtures and solder are present.

What action is required?

The Health Services Executive (HSE) and Environmental Protection Agency (EPA) have developed a joint position paper on lead in drinking water which was published in December 2013. This publication sets out a summary of the issues including the relevant legislation, health effects of lead exposure and appropriate interventions. An updated summary of the key points made in that document is set out below:

Box 1: Summary of key points from EPA & HSE joint position paper

- People should try to drink water with as little lead as possible, especially those who are vulnerable, such as babies and young children. Consistent consumption of lead in drinking water can have adverse health effects.
- The main source of lead in drinking water is old lead pipes and plumbing, especially service connection pipes and internal plumbing.
- The removal of lead pipes in drinking water presents more challenges than the removal of lead from fuel or paint, due to issues such as old infrastructure, incomplete pipe-laying records and

Box 1: Summary of key points from EPA & HSE joint position paper

costs to property owners.

- The responsibility for actions to reduce the level of lead in drinking water is collective and requires actions on behalf of Irish Water and other water suppliers, property owners (public or private) and personnel installing or carrying out works on water supply pipes.
- Consumers in properties built before the 1970s should check whether lead has been used in the pipework or service connections or internal plumbing. This can be done with the assistance of a suitably qualified plumber and/or by testing the water for lead. See “Drinking Water Consumer Advice Note – Lead” at www.hse.ie/water .
- The legal parameter for lead in drinking water is set at 10µg/l from 25 December 2013.
- Where a lead exceedence above the parametric value of 10µg/l , has been identified, flushing the cold water tap before consumption may reduce the level of lead. However, the effectiveness of flushing should be verified by testing the water before and after flushing.
- If the drinking water lead remains above 10µg/l, an alternative source of potable drinking water should be used, especially by formula fed infants, young children and pregnant women. See “Frequently Asked Questions – Lead in Drinking Water” www.hse.ie/water
- Water suppliers should replace identified lead distribution mains and any newly identified distribution mains as soon as they are identified
- All lead pipes and plumbing in public and private ownership should be replaced over time.
- Water suppliers and personnel installing or carrying out works on drinking water supply pipes should ensure that all materials that come into contact with drinking water are on the list of approved products and processes.

Based on Joint Position Paper: Lead (Pb) in Drinking Water, December 2013, EPA, HSE

The legal limit for lead in drinking water in Europe was reduced from 25µg/l to 10µg/l [micrograms per litre] in December 2013. This was done as part of a wider plan to reduce people’s lifetime exposure to lead to the lowest possible level. The levels of lead in drinking water are monitored by water providers (Irish Water for public supplies and Group Water Schemes serving over 50 people) through random sampling which is reported to the relevant supervisory authority (EPA or Local Authorities in the case of Group Water Schemes). Since 2004, various EPA reports have highlighted the issue, with the following extract from the Drinking Water report for 2013 which was published in January 2015.

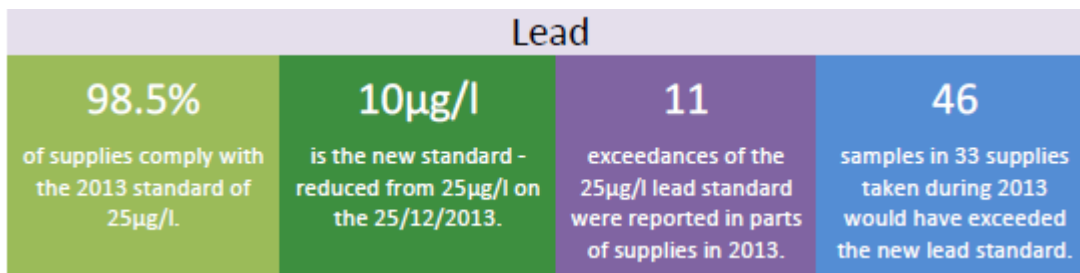


Figure 1 – Lead Exceedences in 2013 - : EPA, 2015

In this report, the EPA called for a national strategy to be developed to address lead in drinking water. The need for surveys to enhance monitoring has been recommended by the EPA with guidance on this matter issued in 2009. Now with the establishment of Irish Water, there is new capacity to deal with a range of risks to drinking water supply, through national and regional strategic planning, enhanced asset management capability and increased capital investment. In planning their strategy to deal with lead pipes, Irish Water is now conducting these lead surveys and these are informed by new evidence on the extent of lead in the connections to domestic distribution systems emerging through the metering programme. While it was generally known that houses built before 1970s were likely to be at risk, the emerging data is shedding greater light on the areas of risk. In particular, some 5% of properties metered to date under the domestic water metering programme appear to have lead pipes. Irish Water’s metering team note when properties may have a lead pipe connection. This makes it more likely that the internal plumbing and pipes of the property are made of lead. Lead can be picked up by the water as it travels through these pipes.

Key elements of the national strategy

While there are a number of actions which Irish Water can take within its area of responsibility, the emerging data reinforces the view of the Joint EPA/HSE paper of 2013 that tackling this issue requires collective action, involving property owners, public bodies and water suppliers.

This national strategy to reduce exposure to lead in drinking water is set in that context, seeking to clarify responsibilities and identify actions. Existing statutory and regulatory procedures set out the standards which have to be observed in relation to the quality of drinking water, the responsibility of property owners, water suppliers and supervisory authorities to ensure that drinking water provided to consumers is wholesome and clean. In support of these arrangements, appropriate guidance and protocols have been established in particular to cover situations where exceedances are found or other public health issues

arise. While these are subject to appropriate review in the light of evolving standards, evidence and practices, the development of a national mitigation strategy for lead in drinking water does not aim to change these underlying statutory roles.

Drawing on the experience and newly emerging data, the strategy seeks to go further to set **a long-term national objective to reduce peoples' exposure to lead by removing it from drinking water or reducing its prevalence to levels compliant with prescribed standards through the removal of pipes and where appropriate other measures.**

The best and most effective way of dealing with lead in drinking water is to replace all lead pipes and all lead plumbing delivering water to drinking water points. However, given the scale of the task, this is likely to take many years and alternative remediation measures and advice are necessary in the interim period. Consequently it is key that -

- Awareness is raised amongst responsible bodies and consumers, particularly focussed on vulnerable groups, and
- Levels of risk are subject to on-going assessment and, where possible, mitigation measures taken in advance of longer term solutions.

The strategy therefore requires

- Actions by water providers
- Actions by HSE/EPA
- Actions by other public bodies
- Actions by householders and other property owners

This strategy will be subject to on-going monitoring and review by the Departments of the Environment, Community and Local Government and the Department of Health.

Roles and Responsibilities

The joint EPA and HSE position paper on lead makes it clear that tackling lead requires collective action on the part of a number of public and private stakeholders. It is important in developing a national strategy to reduce the exposure of people to lead in drinking water to clarify the various roles and responsibilities.

Responsibility for policy and legislation in relation to water quality issues rests with the Minister for the Environment, Community and Local Government taking account of any advice of the Minister for Health on matters pertaining to public health. Specific arrangements are in place to regulate and supervise the supply of drinking water. These arrangements reflect the fact that the majority of people in Ireland receive their drinking water through public supplies, with others provided through group water schemes and private wells.

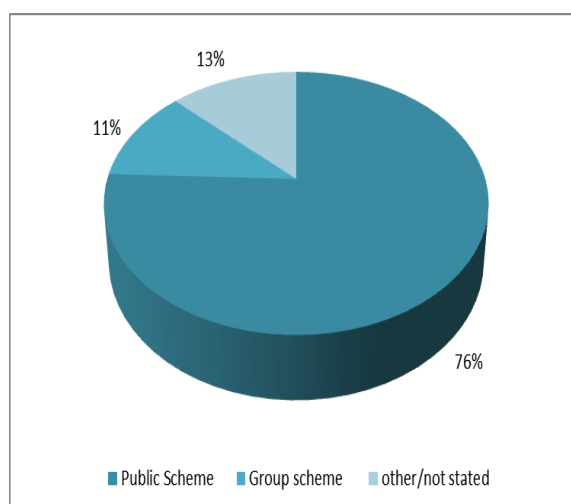


Figure 2 - Drinking Water Supply in Ireland – Source: CSO, Census 2011

Since 1 January 2014 Irish Water has statutory responsibility for all aspects of water services planning, delivery and operation at national, regional and local levels for public water schemes. Group water schemes are divided between public and private schemes:

- **“Public” Group Water Schemes** - these are schemes where the treated water is provided by Irish Water, but responsibility for distribution of the treated water rests with the privately managed group scheme, such as a Committee or a Board. These schemes usually take water from the larger public water supplies.

- **“Private” Group Water Schemes** - these are schemes where the water is privately sourced, treated and distributed to the members (users) by a Management Committee or Board. Many of these schemes have their water treated under a Design, Build and Operate contract arrangement.

Apart from private wells which are exempt under the national drinking water regulations (see below), the balance of drinking water is provided through **Small Private Supplies (SPS)** - a large group of different types of supply comprising industrial water supplies (such as those used in the brewing industry) to boreholes serving commercial premises (e.g. pubs, hotels etc.) and public buildings (e.g. schools, nursing homes).

Supervision under Drinking water regulations

The relevant EU Directive¹ is reflected in national regulations updated in 2014² which set out the parameters to ensure that households receive drinking water which is wholesome and clean. These parameters reflect the safe limits for different microbiological and chemical matters which can be found in drinking water and these are known as the *parametric values*. Under these Regulations:-

- the Environmental Protection Agency (EPA) is provided with supervisory powers for public water supplies;
- the EPA can direct Irish Water to improve the management or quality of a public water supply;
- the local authorities have a similar supervisory role in relation to group water schemes and private supplies;
- Irish Water must notify the EPA of drinking water non-compliances or risks to public health arising from a public water supply;
- .

The HSE also has a statutory role under the drinking water regulations. In particular, Irish Water (or the local authority in the case of group water schemes, small private supplies and wells) is obliged by the Regulations:

¹ Council Directive 98/83/EC

² European Union (Drinking Water) Regulations 2014 (S.I. 122 of 2014) came into force on 27 February 2014

- to consult with the HSE and to get the agreement of the HSE on the actions to be taken to protect human health in the event of water exceedances or a public health risk;
- where it is considered that the exceedance represents a public health risk Irish Water and a Group Water Scheme in agreement with the HSE must promptly inform consumers and give the necessary advice;

Responsibility of property owners

The Drinking Water regulations specifically state that the water supplier will not be in breach of its obligations where the non-compliance is due to the domestic distribution system (Regulation 6(1) of SI No. 122 of 2014). Section 54(1) of the Water Services Act 2007 places responsibility on the owner of a premises to maintain the internal plumbing to ensure that water intended for human consumption meets the prescribed quality standards at the tap.

Therefore, responsibility for the maintenance and replacement of the water mains and public-side communication pipes to the boundary of the property lies with Irish Water or the water supplier (see Figure 1) while responsibility for the maintenance and replacement of the supply pipe (i.e. the private-side service pipe) and internal plumbing pipes, tanks and fittings lies with the property owner.

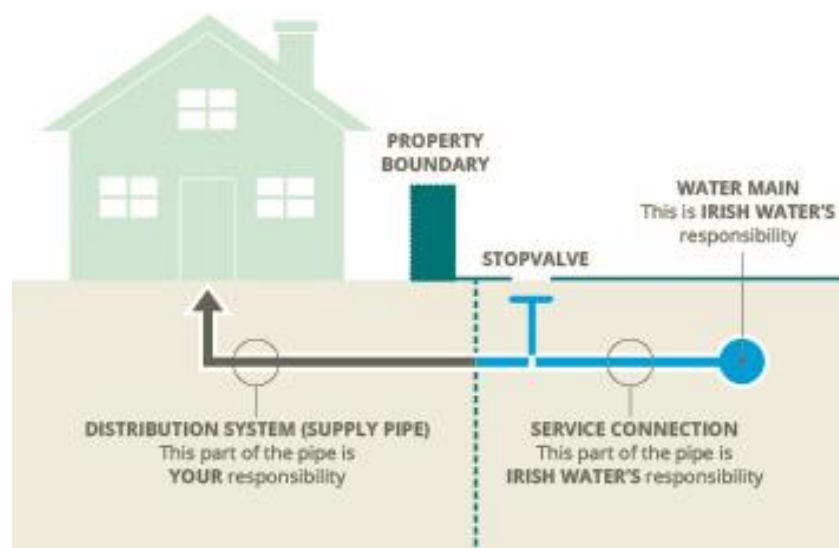


Figure 3 – Responsibility for water distribution systems

In the event that non-compliance with standards is due to the domestic distribution system in a private dwelling, the provisions of Regulation 6 of the Regulations apply and Irish Water/Local Authority shall advise consumers of any possible remedial action that should be taken by them.

Extent of problem

Lead has been used historically for pipes used in water supply distribution systems. From the 1970s onwards, the practice of using lead pipes for this purpose was discontinued, although the practice may have ceased some time before this. From a precautionary perspective, this strategy is focussed on the risk assessment of properties up to and including the 1970s.

Irish Water estimated that their distribution system extends to 60,000 km and their records currently indicate that there are no lead water mains in their network. Given that most group water schemes were initiated from the 1970s onwards, it is not expected that lead water mains are an issue for that sector, but this is subject to verification. Therefore, the areas where lead pipes are likely to be found are:

- short pipes connecting water mains to the private supply pipes (service connections);
- some terraced houses which are supplied with water through shared backyard services (about 30,000- 40,000 houses are estimated in this category); and
- internal distribution systems of properties (supply pipes and internal plumbing)

The national domestic water metering programme being rolled out by Irish Water has identified to date that approximately 5% of houses have lead service connections and are likely to have lead pipes in their internal distribution systems. It is believed that this may be higher in urban centres where buildings are likely to be older. The roll-out of the metering programme, together with other analysis being undertaken by Irish Water, is allowing for the mapping of areas of risk to be undertaken. The mapping will enable Irish Water to assist the various stakeholders in assessing risk and prioritising actions. The data being gathered by Irish Water is being provided to the HSE for assessment and a rolling programme of advising relevant consumers who are at risk of having lead pipework has commenced.

Lead pipes are usually dark grey or black (unless painted), with a dull coating, and the joints appear to be 'swollen'. A simple way of identifying lead is to scrape the pipe gently with a coin or a knife – if a shiny silver strip is revealed, then the pipe is lead.

Public Health Advice

The acute and chronic effects of lead exposure are numerous. At very high levels of exposure, lead can cause damage to most organs in the body, particularly the kidneys and central nervous and blood systems. Legislation to control the use of lead in industry, in fuel and paint has ensured that high levels of lead exposure are now rare in developed countries.

However, studies over the last 30 years have shown that adverse health effects can also result from sustained exposure over time to lower levels of lead. In particular, the epidemiological evidence indicates that continued exposure to low levels of environmental lead can adversely affect cognitive development in children. Continuous exposure to lead can also cause:

- renal toxicity;
- disturbances in cardiac conduction and rhythm and increase in blood pressure;
- hepatic damage;
- anaemia and other haematological effects;
- reproductive and developmental toxicity;
- gastrointestinal disturbances.

It is recommended that everybody should minimise their intake of lead from all sources. This recommendation is based on evidence of the potential impact of lead on longer term health. Following the successful removal of the principal sources of environmental lead, such as in fuel and paints, the focus has turned, in recent years, to drinking water as a possible source of preventable human lead exposure.

Everyone should try to drink water with as little lead as possible and no level is considered completely safe. The higher the level of lead in drinking water and the longer that this water is consumed the greater the risk. Unborn babies, infants and young children are at particular risk. The EPA and HSE have prepared advice available at www.hse.ie/water – “Drinking Water Consumer Advice Note – Lead” as well as “Frequently Asked Questions – Lead in Drinking Water”. As Irish Water identifies potential lead connections through the metering programme, following contact with the HSE, a rolling programme of drawing attention to the advice has commenced. The agreed consumer information notice prepared

for this purpose is at Appendix 1. While the general advice to property owners is to replace their lead pipes, advice is provided as to the measures to be taken in advance of this action.

Advice on Testing

A single water lead test may not provide a full picture of the lead levels in the drinking water in a premises. This is because the presence of lead in water can be influenced by a number of factors, including the length of a pipe, the length of time water has been standing in a pipe, the temperature and the chemical nature of the water. This means that samples taken from the rising main (usually the cold water tap in the kitchen) at different times of the day or at different temperatures can give different results. Should an owner choose to have their water tested for lead:

- They should use a laboratory with accreditation for testing for lead in drinking water. Using an accredited laboratory means the owner can have independent assurance that the test is carried out properly.
- They should take a sample before and after water has been flushed through the pipe.

The Irish National Accreditation Board (INAB) assesses and certifies laboratories. It lists all accredited laboratories on its website: <http://www.inab.ie/Directory-of-Accredited-Bodies/Laboratory-Accreditation/Test/> .

Where a lead exceedance above the parametric value of 10 micrograms per litre is identified by testing, flushing the cold water tap before use may reduce the level of lead. However, the effectiveness of flushing will vary from premises to premises and should be verified by further testing after flushing. If the water has been tested and is still above 10 micrograms per litre after flushing the advice provided by the HSE is as follows:-

Box 2: what to do if water is exceeds limits

- You should use safe drinking water from some other source. This is especially important for pregnant women, bottle-fed infants and young children.
- Even if the level stays above 10µg per litre, you can use the water for toilet flushing, showering and bathing, laundry and dishwashing.
- Boiling water will not remove lead from the water.

Precautions to take if water has not been tested

The leaflet advises consumer that they can take the following precautionary actions if they have lead pipes but the water has not been tested:-

Box 3: what to do property has lead pipes, but the water has not been tested

- To minimise the intake of lead use only water from the cold water tap in the kitchen for drinking, cooking and making baby formula. This is called the 'rising main'. It comes straight into your house from the water mains. The water from this tap is usually moving and flowing and has not been stagnant (still or stationary). Water from other taps in your house may have been stagnant in tanks and pipes for longer periods of time and, therefore, more likely to have a higher level of lead.
- Always flush the water before use. If the tap has not been used for many hours, running (flushing) the water before using it for drinking or cooking may lower the level of lead. However, the only way to know if you have lead in your drinking water, and if flushing lowers it, is by testing it before and after flushing.
- Alternatively, you could use bottled water.

Action 1: Raising Awareness

Over the years, the EPA and the HSE have published guidance documents, position papers and advice notes on the issue of lead in drinking water in line with their respective statutory roles. The EPA publishes a Drinking Water Quality in Ireland report each year and these reports are available on the EPA's website. The EPA has issued guidance to provide greater clarity to water providers and others with responsibilities in this area, including a guidance note on lead compliance monitoring and surveys³ (A second advice notice provides information to water providers on action programmes to restore the quality of drinking water that is impacted by lead pipes and plumbing).⁴ The HSE and EPA produced advice for consumers in July 2014⁵ and Frequently asked questions are available on the HSE website. <http://www.hse.ie/eng/health/hl/water/drinkingwater/lead/>. Both agencies will continue working with Irish Water in light of emerging data to update this advice and consider the need to target advice to particular sectors.

Irish Water will be initiating a major public information programme after the publication of this strategy that will involve all the major stakeholders, including the EPA and the HSE. In addition, following consultation with the HSE, Irish Water will communicate with customers directly where the national metering programme indicates likely presence of lead pipes. The data gathered will also be provided to relevant stakeholders to assist in their risk assessments.

In addition, the Water Services Training Group⁶ will examine potential for further training of key stakeholders and water providers to raise awareness of this issue and the approaches to conducting lead surveys through its regional training centres.

Action 1: Raising awareness			
Actions		Responsible bodies	Target
1.1	Materials for consumer information	Provision of specific consumer advice – Irish Water & Group	Materials already agreed, to be kept under review

³ EPA Drinking Water Advice Note No. 1).

⁴ EPA Drinking Water Advice Note No. 2)

⁵ Drinking Water – Consumer Advice No.1 – Lead (Pb) – HSE, EPA July 2014

⁶ The Water Services Training Group (which includes representatives of local authorities, Irish Water, the Department of the Environment Community and Local Government and the National Federation of Group Water Schemes) provides training programmes for water sector workers.

Action 1: Raising awareness			
Actions		Responsible bodies	Target
		Water Schemes Provision of specific public health and environmental advice - HSE and EPA	
1.2	Issue advice in areas with high concentration of lead pipes shown through Irish Water's metering programme	IW consulting with HSE	Rolling programme commenced in June 2015
1.3	Preparation of advice material for water providers	EPA with HSE	Material already available: to be kept under review
1.4	Circulation of information to relevant public bodies	DECLG	June 2015
1.5	Circulation of information to Group Water Schemes	NFGWS	Q3 2015
1.5	Water Services Training Group to consider the training needs associated with the national strategy implementation and prepare programmes accordingly	WSTG	End 2015

Action 2: Water Providers

Irish Water

From 1st January 2014 Irish Water is responsible for the production, distribution and monitoring of drinking water from over 1000 public water supplies, serving the majority of the population. If lead concentrations above the drinking water standard are detected then Irish Water is required to notify the EPA which has a supervisory role in relation to Irish Water. If the EPA is not satisfied that Irish Water is actively implementing measures to rectify the problem then it can issue a legally binding direction. Failure to comply with a direction is an offence and may result in prosecution by the EPA.

The EPA has long recommended that water providers carry out a lead survey to determine the extent of lead piping in the distribution network and in premises served by the distribution network. Irish Water has indicated that their records show that there is no lead watermains in its distribution system. Therefore the drinking water leaving treatment plants and distributed through the public watermains meets the requirements of the Drinking Water Regulations in relation to lead. However, there may be communication pipes or shared backyard services forming part of the public network, which contain lead piping. In line with the existing EPA guidance, Irish Water will continue to populate its asset management systems to reflect information on its distribution network and include programmes in its capital investment plans to replace any limited lead piping which may be found in its network.

While Irish Water's primary responsibility is to ensure that lead piping is removed from the public network, there are also measures which a public water utility can take to assist in the overall strategy through raising awareness and proposing potential remedial options that reduce or eliminate the impact of lead piping such as control of pH or the use of corrosion inhibitors. Irish Water intends to assess and trial other treatment options such as ortho-phosphate dosing to assess their efficacy and appropriate conditions of use (e.g. technical and environmental).

Box 6: Potential treatment options to reduce plumbosolvency

When water comes into contact with lead, particularly when it is left standing in the pipe for a period of time, the lead can dissolve into the water at low concentrations – this process is referred to as plumbosolvency. Water utilities can take certain actions to mitigate this

process by altering water properties - such as controlling the acidity levels (pH) as this can reduce the capacity of the lead to dissolve in the water or adding chemicals to create a barrier between the pipes and drinking water (corrosion inhibitors). This needs careful consideration in light of the properties of the treated water and the local water environment.

Irish Water will also continue to gather and map information on the location of lead piping, lead connection services and households and premises which are likely to have internal lead plumbing and fittings as part of the metering programme, and make these available to relevant stakeholders to assist in considering public health actions and risk assessments.

Irish Water intends to publish a consultation document setting out the range of measures which it proposes to consider under a Lead in Drinking Water Mitigation Plan to issue in June 2015. This will build on the existing commitments in the Capital Investment Programme 2014-2016 and the intention outlined in the draft Water Services Strategic Plan to implement such a plan.

While the plan will be subject to consultation, approval of the Commission for Energy Regulation (CER) and a Strategic Environmental Assessment and an Appropriate Assessment, the key actions to be undertaken by Irish Water in line with the overall National Strategy will include:

- Lead surveys (*conducted in accordance with EPA Advice Note No.1 on Lead Compliance Monitoring and Surveys*) including a more extensive sampling programme and the use of other indicator data to assess levels of lead and define priority areas for action.
- More detailed information for households.
- Optimisation of the properties of the treated water to reduce the level of lead in the drinking water in the distribution network (e.g. control of pH)
- Conduct research on various aspects of the lead pipe issue, including trials of chemical lining systems (Dundalk) and use of ortho-phosphate as corrosion treatment (Limerick).
- A programme of removal of lead in shared backyard services over the next 5 years.

- If a property owner replaces the lead pipework on their property, Irish Water will also replace the pipework between the water main and the property boundary.
- Ensure the priority replacement of lead service connections to public buildings where people may consume water, where such property owners are replacing the lead pipework on their property - in particular in properties with vulnerable populations (e.g. crèches, schools, hospitals etc).

Group Water Schemes

There is no knowledge or evidence to suggest that lead piping was used in the construction of Group Water Scheme distribution networks. Statutory monitoring of the Group Water Scheme sector also suggests that lead is not an issue on these supplies. However, smaller GWSs, supplying less than 100m³ of water per day may not be regularly be monitored for the presence of lead. The EPA in its most recent drinking water report (published January 2015) recommends that a programme of monitoring for lead should be undertaken to determine the extent of its presence in private supplies. Should a monitoring programme indicate the presence of lead piping on a Group Water Scheme network, a replacement programme will be undertaken with the assistance of funding through the multi-annual rural water programme funded by the Department of the Environment, Community and Local Government.

Action 2: Water Providers			
Actions		Responsible bodies	Target
2.1	Liaise with HSE & EPA on issues arising where exceedances found in line with regulations and EPA guidance or lead pipes discovered through metering programme	Irish Water	On-going
2.2	Provide for the replacement of remaining lead pipes in public network as part of capital programme.	Irish Water	A number of regulatory cycles

Action 2: Water Providers			
Actions		Responsible bodies	Target
2.3	Replace connection pipes in association with property pipe replacement	Irish Water	On-going
2.4	Consult on <i>Lead in Drinking Water Mitigation Plan</i> to address lead, including measures to mitigate private side issues	Irish Water	June 2015
2.5	Provide funding as part of new multi-annual Rural Water Programme to address identified lead issues on Group Water distribution systems	DECLG	End 2015

Action 3: Removing lead from the Housing Stock

The overall objective of the national strategy is to reduce exposure of consumers to lead in drinking water by removing lead pipes. It is estimated that over 200,000 older houses and apartments in Ireland may be at risk of having lead exceedances because of the presence of lead pipes, unless the original piping has been entirely replaced in renovation works. Therefore, actions which encourage the replacement of these lead pipes play an important role in reducing exposure to lead in an enduring manner.

Owners of properties should ensure that personnel installing or carrying out works on drinking water supply pipes or fittings, whether during new works or renovations, use appropriate materials⁷. Further measures to be considered by the Department of the Environment, Community and Local Government in rolling out this strategy will be the scope

- to draw existing lead piping to the attention of potential purchasers of dwellings;
- to develop national standards for plumbing systems for new build properties and renovations to ensure that it is explicitly clear that lead soldering should not be used

Actions by householders and Private landlords

Irish Water will initiate targeted awareness raising measures in areas where the risk of lead pipes is likely to occur. Based on this advice, owners of households and premises should:

- Determine whether there is any lead pipework or plumbing in their property. A suitably qualified plumber could assist where this is unclear.
- Consider replacing lead pipework, fittings or solder in the service connection and internal plumbing of any premises where it has been found.
- Contact Irish Water or their Group Water Scheme if it is decided to replace the private lead supply pipe and internal plumbing to ensure that the public-side service connection pipe is replaced by the water supplier
- Bring the presence of lead pipes and any advice notes received from their water supplier or the HSE to the attention of tenants.

⁷ While there are no specific standards in Ireland for this purpose, reference should be made to guidance on approved products and processes published by the Drinking Water Inspectorate of England and Wales (www.dwi.gov.uk) or other equivalent EU Member State approval scheme.

The costs involved in replacing pipes can potentially be partially defrayed through the Home Renovation Incentive Scheme.

Box 4: Home Renovation Incentive

The Home Renovation Incentive (HRI) provides tax relief by way of an income tax credit at 13.5% of qualifying expenditure on repairs, renovations or improvement works to a person's main home or rental property by HRI qualifying Contractors. Qualifying works include the replacement of lead pipes and any associated plumbing, landscaping or driveway repairs. Contractors engaged on the works must be tax compliant. Full details of the scheme, including helpful advice regarding the qualifying criteria and selecting a contractor can be accessed on Revenue's website (www.revenue.ie).

The Minister for the Environment, Community and Local Government will establish a new grant scheme to assist low income households to replace lead pipes in their home. The scheme will be administered by local authorities and in line with Drinking Water regulations, the available resources will be prioritised to areas of highest risk. Funding for this measure in 2016 will be finalised in the context of Budget 2016.

Box 5: Grant scheme for Lead Pipe Replacement

The maximum grant will be €4,000 or 80% of the cost, whichever is the lesser, for incomes of less than €50,000, based on the household meeting. A reduced maximum grant of €2,500, or 50% of the costs, whichever is the lesser, would be available to those earning between €50,000 and €75,000.

Social Housing Providers

From a sample of the local authority sector, it would appear that each local authority has a proportion of residential rental units that were constructed before 1970 and are therefore at risk of having lead piping. The urban local authorities are likely to have a higher proportion of pre-1970 units. Where surveys have not already undertaken, each authority should survey their housing stock to determine the extent of any lead pipework or plumbing. The surveying should target properties based on age, history of renovation and relevant material garnered by Irish Water during the national domestic metering programme.

Based on this survey, and in line with the aims of the Drinking Water Regulations, a programme should be developed by each authority to mitigate the risk by targeting action in the areas of social housing where the risk of exceedance is likely to be highest. The actions

to remove lead pipework, fittings or solder in the supply pipes and internal lead piping over time, can, in some cases, be integrated into various programmes of stock improvement undertaken by local authorities, including voids and regeneration programmes. Local authorities should liaise with Irish Water or the relevant group water scheme where appropriate, to ensure that any lead service connections are replaced in tandem with works to upgrade the plumbing of properties in the ownership of local authorities.

In relation to the Approved Housing Body sector, the Department of the Environment, Community and Local Government has had preliminary engagement with the Irish Council for Social Housing (ICSH) and with the National Association for Building Cooperatives (NABCO). There are approximately 27,000 units of accommodation provided by the sector. The ICSH estimates that 90% of the stock was provided over the last 20 years. The balance would include older properties but some of these may have had refurbishment work done in more recent times. NABCO members supported the provision of approximately 5,000 homes dating back as far as the late 1960s and featuring many different tenure types. While it is encouraging, in that the clear majority of properties date from the last 20 years, the only way to be sure about the extent to which lead may or may not feature in the plumbing systems would be for the accommodation providers in the sector to carry out an assessment of their properties.

Action 3: Removing lead from housing stock			
Actions		Responsible bodies	Target
3.1	Encourage houses to consider lead pipe replacement	DECLG	On-going
3.2	Provide grant scheme to be administered by Local Authorities to assist low income groups in replacing pipes	DECLG, local authorities	To be launched later in 2015
3.3	Local authorities to prepare risk assessment of social housing stock and include in	Local Authorities	Preliminary assessment by end 2015 and on-going

Action 3: Removing lead from housing stock			
Actions		Responsible bodies	Target
	maintenance/stock improvement programmes		review
3.4	Approved housing bodies to prepare risk assessment of social housing stock and include in maintenance/stock improvement programmes	Approved Housing Bodies	Preliminary assessment by end 2015 and on-going review
3.5	Consider the scope for further measures to introduce standards for plumbing in housing and notify purchasers of presence of lead piping on sale of dwellings	DECLG	End 2015

Action 4: Education Sector

The Department of Education and Skills has conducted a preliminary assessment of the age profile of the primary and secondary schools across the country using data provided to it by schools. From the preliminary assessment it would appear that a large proportion of school buildings may be at risk of having lead plumbing and pipes, based on their age profile. However, this does not take account of any refurbishments or other remedial works that may have been carried out over the years. It should be noted that in the majority of school buildings, the Department of Education & Science would not actually be the owner of the buildings. As part of this Strategy it will be necessary for school owners to undertake an assessment of their buildings to determine if there are lead pipes present and if so to develop plans to mitigate any risks.

The ultimate objective will be to replace lead pipes and the Department of Education and Skills may need to develop a risk based strategy for the sector to underpin capital maintenance and capital investment plans taking account of access to buildings by vulnerable groups. Regard should be had to emerging maps of risk areas developed by Irish Water, as priority should be accorded to areas where young children (primary school age) are likely to be exposed to lead pipes at home as well as at school.

It should also ensure that the building owners provide the necessary advice and information to patrons and employees.

Action 4: Education Sector			
Actions		Responsible bodies	Target
4.1	Provide information on risk assessment re lead and guidance on health advice	D/Education and Skills, on advice of HSE and EPA	Q3 2015
4.2	Include funding for priority lead pipe replacement in Schools Capital Programme	D/Education and Skills	Preliminary assessment by end 2015 and ongoing review

Action 5: Hospitals and Health Care facilities

The HSE is conducting an assessment of its property folio including acute hospitals, long term healthcare properties, and residential (domestic) properties. It is anticipated that a proportion of these buildings may be at risk of having lead plumbing and pipes. The HSE will carry out a survey of its premises to establish the extent of the existence of such piping and will adopt a risk based approach to mitigation including the replacement of lead pipes.

Action 5: Hospitals and Health Care Facilities			
Actions		Responsible bodies	Target
5.1	Provide information on risk assessment re lead and guidance on health advice	HSE	Q 3 2015
5.2	Include funding for priority lead pipe replacement in HSE Capital Programme	HSE	Preliminary assessment by end 2015 and ongoing review

Action 6: Other Public Bodies

The Department of the Environment, Community and Local Government has had preliminary discussions with a number of other State Agencies that own or operate publicly owned buildings including the Office of Public Works and the Irish Prison Service. The Department will be writing to each Government Department as part of the National Strategy requesting that they (and any agencies within their remit) complete an assessment of the buildings in their ownership to determine if lead pipes and plumbing are present. If it is determined that lead pipes are present it will be necessary for the Departments and Agencies to establish the extent of the existence of such piping and to adopt a risk based approach to mitigation including, where appropriate, replacement of lead pipes. They should also ensure that they provide the necessary advice and information building tenants or employees as appropriate.

Action 6. Other Public Bodies			
Actions		Responsible bodies	Target
6.1	Provide information on risk assessment re lead and guidance on health advice	DECLG to write to Government Departments and local authorities. Relevant Departments to contact agencies under their aegis.	Q3 2015.
6.2	Based on risk assessment, programmes to replace lead piping in high risk areas should be integrated into the relevant bodies capital investment and maintenance programmes	All public bodies	Preliminary assessment by end 2015 and ongoing review

Action 7: Research and Monitoring

The actions proposed under this strategy will be monitored by the two Departments and reported upon on an annual basis. A summary of the actions are set out at Appendix 2. The EPA will continue to report on all aspects of compliance on drinking water standards on an annual basis. Research and evidence gathering beyond the statutory requirements will aid the implementation of the strategy and evolving of effective mitigation measures. In particular, Irish Water has indicated that part of its mitigation plan is likely to involve more extensive sampling programme and trials of potential measures such as chemical lining system and ortho-phosphate dosing.

In addition, many other jurisdictions recommend the use of filters by consumers. There are pros and cons to such an approach, and this is an area which merits consideration by the EPA and HSE in consultation with the National Standards Authority of Ireland (NSAI) with a view to developing advice for consumers.

Action 7: Research and Monitoring			
Actions		Responsible bodies	Target
7.1	Monitoring of implementation of the strategy	Joint D/Health/DECLG	Ongoing
7.2	Conduct research on possible measures to address lead e.g., trials of chemical lining systems, ortho-phosphate dosing as corrosion treatment and filters.	Irish Water, HSE, EPA	2015 and on-going
7.3	Conduct more extensive sampling programme to assess levels of lead and define priority areas	Irish Water / NFGWS/LA	Ongoing
7.4	Continue to report on lead issues as part of annual drinking water reports	EPA	Ongoing
7.5	Develop guidance on the use of filters	EPA and HSE in consultation with the	End 2015

Action 7: Research and Monitoring			
Actions		Responsible bodies	Target
		NSAI	

Appendix 1 – Information for customers being issued by Irish Water

June 2015



Lead Pipes Information for Customers

Lead and drinking water

Lead is used for making batteries, roofing material and metal products such as pipes and solder (used for joining pipes). It was also used in petrol and paint. Much lead has been removed from our environment over the past 50 years or so. This has been achieved by removing lead from petrol and paint and replacing lead pipes and plumbing. The removal of lead from the environment over time means that Irish people, in general, are exposed to very little lead.

- **Irish Water's records currently show there are no lead water mains in Ireland.** There are still some lead pipes in the public network, but these are mostly in old shared connections or in the short pipes connecting the (public) water main to the (private) water supply pipes.
- **Lead pipes may have been used in water service connections and in inside plumbing in properties built up to and including the 1970s.**
- **Lead can dissolve into drinking water.** This happens when drinking water comes in to contact with lead pipes especially when it is left standing in a pipe for a period of time. Such lead pipes are found mostly in the internal plumbing of properties.
- **Lead in drinking water is recognised as a health concern.** The limit for lead in drinking water has been reducing over time and is now at a very low level (10ug/L or 10 microgrammes per litre).

How much lead is in drinking water?

If your property has lead plumbing, it is possible that there is lead in your drinking water.

The amount of lead which dissolves into drinking water can depend on:

- the length of lead pipework involved;
- how long the water is sitting in the pipe;
- the temperature of the water; and
- whether your water is hard or soft i.e. the water chemical characteristics.

Wherever lead piping is present in the supply pipe or internally in the property, there is a risk that lead may dissolve into the drinking water.

Who is responsible for the pipes?

- **Irish Water** is responsible for the pipes under the road or paths to the outer edge of the boundary of your property.
- **You** are responsible for the pipe from the outer edge of the property boundary to the building and all the inside plumbing.

There are other types of connections (e.g. where the connection is shared or comes through the back garden) but these are not common.

How do you know if you have lead pipes inside your property?

Look for the point where the water pipe enters the property and check as much of the pipe as possible.

Lead pipes are usually dark grey or black (unless painted) with a dull coating and the joints appear to be 'swollen'. A simple way of identifying lead is to scrape the pipe gently with a coin or a knife – if a shiny silver strip is revealed, then the pipe is lead.

If the plumbing has been upgraded or replaced in your property, you should still check the pipe running from the water main to your kitchen tap. Small amounts of lead piping may remain in the system.

As a guide, other pipe materials have the following appearances:

- Copper – bright or dull orange colour, and hard
- Iron – dark, very hard, and may be rusty
- Plastic – may be grey, black or blue

If you are in any doubt, you should employ a qualified plumber to check the type of pipework in your premises.

If you are not the owner of the property in which you live, please pass this information on to the property owner.

More information can also be found in the Environmental Protection Agency (EPA) and the Health Service Executive (HSE) "Drinking Water Consumer Advice Note No. 1 – Lead (Pb)" available at www.hse.ie/water

If you have lead pipes inside your house, the recommendation is to replace them

The World Health Organisation (WHO), the EPA and the HSE recommend total lead pipe replacement as the ultimate goal in reducing long-term exposure to lead. Research indicates that unless the public and private supply pipes are both replaced, lead levels in the water could still be higher than the legal limit. Replacing the public supply pipe or the private pipe on its own does not resolve the problem.

If a property owner replaces the lead pipework on their property, Irish Water will also replace the pipework between the water main and the property boundary.

What steps can you take before replacing your lead pipes?

If your water has not been tested, can you take precautions?

- Use only water from the cold water tap in the kitchen for drinking, cooking and making baby formula. This is called the 'rising main'. It comes straight into your house from the water mains. The water from this tap is usually moving and flowing and has not been stagnant (still or stationary). Water from other taps in your house may have been stagnant in tanks and pipes for longer periods of time and, therefore, more likely to have a higher level of lead.
- Flush the water before use. If the tap has not been used for many hours, running (flushing) the water before using it for drinking or cooking may lower the level of lead. However, the only way to know if you have lead in your drinking water, and if flushing lowers it, is by testing it before and after flushing.
- Alternatively, you could use bottled water.

If your water has been tested and is still above 10µg per litre (10 microgrammes per litre) after flushing what can you do?

- If after running (flushing) the water the level of lead stays above 10 µg per litre, you should use safe drinking water from some other source. This is especially important for pregnant women, bottle-fed infants and young children.
- Even if the level stays above 10µg per litre, you can use the water for toilet flushing, showering and bathing, laundry and dishwashing.
- Boiling water will not remove lead from the water.

How can you get your water tested for lead?

If you want to test your water for lead:

- You should use a laboratory with accreditation (approval) for testing for lead in drinking water. Using an accredited laboratory means you have independent assurance that the test is carried out properly.
- You should take a sample before and after water has been flushed through the pipe for 3 minutes.

It is important to understand that....

- A single test for lead in water may not provide a full picture of the lead levels in the drinking water at your property.
- This is because the amount of lead in water can be influenced by a number of factors, including the length of a pipe, the length of time water has been standing in a pipe, the temperature and the chemical nature of the water.
- This means that samples taken from the same tap at different times of the day or at different temperatures can give different results.

The Irish National Accreditation Board (INAB) assesses and certifies laboratories. It lists all accredited laboratories on its website and you can check with it for suitable laboratories in your area. It is a good idea to ring a few laboratories as prices can vary. The website address is: <http://www.inab.ie/Directory-of-Accredited-Bodies/Laboratory-Accreditation/Testing/>

Who is most affected by lead in drinking water?

- Regular intake of even low levels of lead can have small health effects for everyone.
- The greatest health risk is for babies in the womb, infants and young children.
- Bottle-fed infants are especially at risk because, for the first 4-6 months of life, all of their food comes from milk-formula which is made up with drinking water.

For further information on the health effects of lead and advice on lead in drinking water, see the HSE's 'Lead in Drinking Water – Frequently Asked Questions (FAQs), May 2015' at www.hse.ie/water.

What is Irish Water doing about lead?

The Government is developing a National Lead in Drinking Water Mitigation Strategy. As part of this strategy, Irish Water, as the national public water utility, is drafting the Irish Water Lead in Drinking Water Mitigation Plan, in collaboration with the EPA and the HSE. The options being considered under this Plan will be published for public consultation shortly and will be subject to regulatory approval. Some of the options under consideration are:

- A more extensive sampling programme to assess levels of lead and define priority areas for action.
- More detailed information for households.
- A programme of investment (subject to approvals and funding) for the replacement of the public connection pipes, and any other types of lead connections, under a long term planned programme.
- Optimisation of the quality of the treated water to reduce the level of lead in the drinking water in the distribution network (e.g. control of pH, use of corrosion inhibitors).
- Conduct research on various aspects of the lead pipe issue, including trials of chemical lining systems (Dundalk) and use of ortho-phosphate as corrosion treatment (Limerick).

If a property owner replaces the lead pipework on their property, Irish Water will also replace the pipework between the water main and the property boundary.

Need more information?

If you require further information:

- visit www.water.ie or
- phone Irish Water at LoCall 1890 278 278 or +353 1 707 2828 (lines open 24/7)

More information on health issues can be found at www.hse.ie/water

CHECKLIST

- Check your plumbing for lead
- Read the HSE Lead in Drinking Water FAQs enclosed with this leaflet
- Organise a replacement of lead pipes within your property and Irish Water will replace the public connection if it is made of lead
- If you are renting, pass this information on to the property owner
- If you are the owner and are renting or selling this property, pass this information on to the new occupants
- If in doubt, contact Irish Water

Appendix 2 – Summary of Actions

Actions		Responsible bodies	Target
Action 1: Raising awareness			
1.1	Materials for consumer information	Provision of specific consumer advice – Irish Water & Group Water Schemes Provision of specific public health and environmental advice - HSE and EPA	Materials already agreed, to be kept under review
1.2	Issue advice in areas with high concentration of lead pipes shown through Irish Water's metering programme	IW consulting with HSE	Rolling programme commenced in June 2015
1.3	Preparation of advice material for water providers	EPA with HSE	Material already available: to be kept under review
1.4	Circulation of information to relevant public bodies	DECLG	June 2015
1.5	Circulation of information to Group Water Schemes	NFGWS	Q3 2015
1.5	Water Services Training Group to consider the training needs associated with the national strategy implementation and prepare programmes accordingly	WSTG	End 2015
Action 2: Water Providers			

Actions		Responsible bodies	Target
2.1	Liaise with HSE & EPA on issues arising where exceedances found in line with regulations and EPA guidance or lead pipes discovered through metering programme	Irish Water	On-going
2.2	Provide for the replacement of remaining lead pipes in public network as part of capital programme.	Irish Water	A number of regulatory cycles
2.3	Replace connection pipes in association with property pipe replacement	Irish Water	On-going
2.4	Consult on <i>Lead in Drinking Water Mitigation Plan</i> to address lead, including measures to mitigate private side issues	Irish Water	June 2015
2.5	Provide funding as part of new multi-annual Rural Water Programme to address identified lead issues on Group Water distribution systems	DECLG	End 2015
Action 3: Removing lead from housing stock			
3.1	Encourage houses to consider lead pipe replacement	DECLG	On-going
3.2	Provide grant scheme to be administered by Local Authorities to assist low income groups in replacing pipes	DECLG, local authorities	To be launched later in 2015
3.3	Local authorities to prepare risk	Local Authorities	Preliminary

Actions		Responsible bodies	Target
	assessment of social housing stock and include in maintenance/stock improvement programmes		assessment by end 2015 and on-going review
3.4	Approved housing bodies to prepare risk assessment of social housing stock and include in maintenance/stock improvement programmes	Approved Housing Bodies	Preliminary assessment by end 2015 and on-going review
3.5	Consider the scope for further measures to introduce standards for plumbing in housing and notify purchasers of presence of lead piping on sale of dwellings	DECLG	End 2015
Action 4: Education Sector			
4.1	Provide information on risk assessment re lead and guidance on health advice	D/Education and Skills, on advice of HSE and EPA	Q3 2015
4.2	Include funding for priority lead pipe replacement in Schools Capital Programme	D/Education and Skills	Preliminary assessment by end 2015 and on-going review
Action 5: Hospitals and Health Care Facilities			
5.1	Provide information on risk assessment re lead and guidance on health advice	HSE	Q3 2015
5.2	Include funding for priority lead pipe replacement in HSE Capital Programme	HSE	Preliminary assessment by end 2015 and on-going

Actions		Responsible bodies	Target
			review
Action 6: Other Public Bodies			
6.1	Provide information on risk assessment re lead and guidance on health advice	DECLG to write to Government Departments and local authorities. Relevant Departments to contact agencies under their aegis.	Q3 2015.
6.2	Based on risk assessment, programmes to replace lead piping in high risk areas should be integrated into the relevant bodies capital investment and maintenance programmes	All public bodies	Preliminary assessment by end 2015 and on-going review
Action 7: Research and Monitoring			
7.1	Monitoring of implementation of the strategy	Joint D/Health/DECLG	On-going
7.2	Conduct research on possible measures to address lead eg trials of chemical lining systems, ortho-phosphate dosing as corrosion treatment and filters.	Irish Water, HSE, EPA	2015 and on-going
7.3	Conduct more extensive sampling programme to assess levels of lead and define priority areas	Irish Water / NFGWS/LA	On-going
7.4	Continue to report on lead issues as part of annual drinking water	EPA	On-going

Actions		Responsible bodies	Target
	reports		
7.5	Develop guidance on the use of filters	EPA and HSE in consultation with the NSAI	End 2015