Validation Impact Assessment

Title of regulatory proposal	Amendments to the Private Water Supplies Regulations 2009
Lead Department/Agency	Defra
Expected date of implementation	April 2016
Origin	EU
Date	02/10/2015
Lead Departmental Contact	Ken Meger 020 802 63480
Departmental Triage Assessment	Low-cost regulation (fast track)

Rationale for intervention and intended effects

Amendments are proposed to the Private Water Supplies (or PWS) Regulations 2009 covering all water that is not supplied directly by water companies or licensed water suppliers. These water supplies may be owned by private individuals, small companies, hotels (collectively termed private water suppliers) and are effectively regulated by local authorities. The amendments proposed cover 3 different areas:

i. **Transposition of EU Directive 2013/51/Euratom:** The Euratom Directive published in the Official Journal on 7 November 2013 has a transposition deadline of 28 November 2015. Euratom introduces a new requirement on member states to monitor for radioactive substances (in both public and private water supplies. The existing regulations already included these radioactive substances apart from radon. Radioactive substances like radon can be incorporated into the human body by inhaling or ingesting water. Certain studies have shown that inhaling or ingesting radon can lead to increased risks of lung and stomach cancer. The rationale for intervention is therefore to address the public health concerns posed by the presence of radon in drinking water, and the intended effects are to ensure that radon levels are monitored where there is a risk of radon occurring in water supplies and any necessary action taken as required.

   In England local authorities already monitor their water supplies according to a list of parameters set out in the current PWS regulations. Transposing the Euratom requirements mean that radon would be added to this list and local authorities required to monitor for it as an additional parameter according to the monitoring frequencies specified.

   There has been discussion in the scientific community for some time about the presence of radon in drinking water; it is not a sudden new phenomenon. It is, however, considered more of an issue in other EU countries which is why there was a drive to have a new EU directive and follow due process in member state countries to transpose this. The regulations for England will therefore take a proportionate and risk-based approach as monitoring will not be required where it can be demonstrated that levels of radon are likely to be well below the parametric value set;[1] where it is likely to be exceeded monitoring must be carried out at the frequencies set out in the Euratom Directive.

ii. **Clarification of Drinking Water Directive provisions:** The PWS regulations transpose Directive 98/83/EC (the Drinking Water Directive, or DWD). In considering the amendments needed to respond to i), lawyers have identified 3 areas where the wording relating to the DWD could benefit from being clarified:

   a) In the scope section: clarification that water used in a food production undertaking where it will not affect the quality of the final product, is outside the scope of these Regulations for example water used in distilling and brewing processes. Currently the private supply operator is required to ensure that all

[1] Euratom introduces a parametric value for radon of 100 Bq/l and allows member states to set a level higher than 100 Bq/l and lower than 1,000 Bq/l that will be judged inappropriate to be exceeded. The WSWQ regulations set this level at 100 Bq/l.

water used is wholesome and this may necessitate treatment processes. The new wording would remove this requirement in certain circumstances, giving greater flexibility to owners of private supplies;

b) In the risk assessment, and regulation 9 and 10 definition section: clarification of the wording where water is used as part of a commercial activity to bring it in line with the DWD wording and thus ensure full compliance with the directive. This intervention is intended to remove any doubt caused by differences in wording and in so doing simplify the regulations for the local authorities. Local authorities would not be able to do this themselves; and

c) In the action to be taken section: clarification to ensure that the correct procedure is followed where the concern is the domestic distribution system of a premise where water is made available to the public.

iii. Introduction of one change to the domestic regulation on private water supplies:

a) Change to the time period for when a new private supply needs to be risk assessed by a local authority. This will change from within a 5 year period to before it is brought into supply or as soon as reasonably practicable from when the Local Authority becomes aware of the new supply.

b) This changes existing domestic regulation on private water supplies. It is not related to the Euratom or the DWD and it does not amount to gold plating.

c) There are clear public health benefits from this change. It will mean the quality of a new private water supply will be assessed sooner to ensure that the water is safe and not harmful to health, rather than the supply being left for up to 5 years without being assessed. If an issue with the water supply is identified then this change will enable the private water supplier to rectify this sooner.

Viable policy options (including alternatives to regulation)

This proposal concerns amendments to existing regulations. There are no viable alternatives to regulation to implementing the amendments.

With respect to the Euratom requirements, the EU requires that all member states transpose the Euratom directive into their respective domestic law. Regulation allows quality standards to be set out in law and provisions made for the monitoring of compliance with those standards that other interventions (such as guidance) would not. Ensuring compliance is important because of the potential risk to public health that is associated with the presence of radon in drinking water.

The Drinking Water Directive (DWD) itself is EU legislation that all member states are required to transpose. In England this is done via the Private Water Supplies (PWS) Regulations 2009. Including the two clarifications proposed in the amendments is optional at this stage but beneficial, because they provide clarity and prevent gold-plating of the DWD requirements.

The new change to the regulations is also optional at this stage. However, given the risk to health if new supplies are not properly risk assessed before being brought into use there are clear benefits to bringing in this change.

The viable policy options are therefore the following:

1. to amend the regulations to cover only the Euratom requirements (including a risk based approach to monitoring for radon); or

2. to amend the regulations to cover the Euratom requirements *and* the three DWD clarifications; or

3. to amend the regulations to cover the Euratom requirements, the three DWD clarifications *and* the one new change.

The policy team's preferred option is to combine all of the required and suggested amendments into one new, clearer set of regulations and take forward **option 3**. Overall the amendments proposed amount to a low-cost regulatory intervention that is also de-regulatory

in nature given its aims to consolidate and clarify existing regulations, and include a risk-based approach where possible, thereby reducing the regulatory burden on business.

Initial assessment of business impact

'Business impact' in this context refers to the impact on private water suppliers that supply water as part of a commercial activity. These are classified as Regulation 9 supplies in PWS regulations, along with those provided to the public and those over 10m3/day volume.

i. **Transposition of the Euratom Directive:**

Cost of monitoring

Local authorities may be required to monitor water sources for radon and other radioactive substances. This will be determined by the outcome of risk assessments to check the likely presence of radon in private water supplies. Local authorities are already required to risk assess and monitor the private water supplies in their area and therefore including radon in the analysis suite is not a significant additional burden. Where radon is confirmed as a risk, it will represent an additional cost of analysis.

Under the PWS Regulations, Local authorities have the ability to pass sampling costs onto the relevant persons for the supply, as defined in Section 80 of the Water industry Act (1991) – including owners of the supply, consumers, etc.

The DWI has provided estimations of the sampling costs that businesses may incur if local authorities do choose to pass on costs. As local authorities will take a risk based approach only businesses in moderate to high risk radon areas and small businesses will be analysed (medium and large businesses are more likely to already have treatment systems in place which would remove radon)). Taking a top-end cost of £90 per sample, estimated worst case scenario costs across businesses that are located in high and moderate risk areas amount to £40,500/year (more detail on cost estimation is provided in the evidence section that follows).

Cost of treatment

A business would need to treat their water supply if a local authority assesses the likely presence of radon or another radioactive substance, to ensure it meets the levels required set out in the regulations. The DWI has provided estimates of the costs of treating a water supply (£1,000) and the number of businesses with a private water supply (495) that would need to undertake treatment if radon or another radioactive substance is recorded.

The worst case scenario is that if all these businesses need treatment then the total impact would amount to £495,000 (more detail on cost estimation is provided in the evidence section that follows). This would be a one off cost. Any existing treatment that has already been installed in businesses is likely to provide mitigation against radon in drinking water, but the proportion of these is unknown.

ii. **Clarification of DWD provisions**

Clarifying the DWD provisions in the Private Water Supplies (PWS) Regulations 2009 is estimated to have a negligible impact on local authorities with no additional burden or cost expected. This is because the clarifications proposed are to wording only and not to policy.

iii. **Introduction of one change**

This change requires new private water supplies to be risk assessed by a local authority prior to it being brought into use or as soon as reasonably practicable after the local authority becoming aware of the supply, compared to within 5 years as in the current regulations.

The cost to businesses from the risk assessment of a new water supply is a one off cost. The change to the regulations means this will occur at the start of the 5 year period rather than later as it could be currently.

Businesses with a new private water supply could be impacted as they would have to prepare for an inspection before bringing the supply into use, rather than within 5 years. However, this will not create an additional cost to businesses. A local authority provides sufficient notice in advance of an inspection, to ensure there is access to the site for example. The change means the local authority would do this when it becomes aware of a new supply, rather than within 5 years.

The business impact will have an EANCB = 0 because there is no additional burden on businesses, therefore no further cost analysis has been undertaken

One-in, Three-out status

Taking the three areas of proposed amendments as set out above:

i. Transposing the Euratom directive is an implementation of EU legislation and will not "gold plate" the EU requirements. These amendments are therefore **out of scope**.

ii. The amendments proposed to clarify the requirements of the DWD are also **out of scope** since the DWD itself is also EU legislation.

iii. The amendment proposed to introduce one new change is **within scope**. There is no additional burden placed on business and no direct benefits to businesses. For purposes of the Business Impact Target this is a qualified regulatory provision with neutral impact.

Rationale for Triage rating

The amendments proposed are estimated to have neither a great impact on nor a high cost to business. The estimated maximum cost in a worst case scenario is £535,500year. These estimated costs will amount to less than the £1m threshold that defines 'low-cost regulation' and determines eligibility for the fast-track route.

Departmental signoff (*SCS*): Catherine Harrold Date: 02/10/2015

Economist signoff (*senior analyst*): Nick Haigh Date: 05/10/2015

Better Regulation Unit signoff: Mustafa Siddique Date: 16/10/2015

Supporting evidence

1. The policy issue and rationale for Government intervention

The intervention proposed concerns amending existing water quality regulations. Drinking water is a 'merit good' commodity, its quality regulated to protect public health. The main rationale for intervention is to transpose the Euratom directive to ensure compliance with new water quality standards as concerns the presence of radioactive substances in private drinking water supplies. Ensuring compliance is important because of the potential public health risk associated with the presence of radon in drinking water that local authorities would not otherwise necessarily monitor. Current regulations include provisions for monitoring other radioactive substances but do not include radon, and do not therefore include the latest quality standards.

Clarifying three instances of wording relating to the Drinking Water Directive provisions will remove any uncertainties that local authorities may face about their monitoring procedures and ensure consistency with the wording in the directive. This is a low-cost and de-regulatory intervention. Introducing a new requirement for new supplies to be risk assessed early and brought under the monitoring regime, will help protect public health. This is a low-cost intervention.

2. Policy objectives and intended effects

- To ensure that domestic drinking water supplies are monitored for radioactive substances (radon) and that measures are in place to protect health of consumers from actual or potential risks associated with the presence of radon in private water supplies;
- To clarify elements of the existing regulations to bring them up to date and improve the efficiency of government intervention;
- To introduce 1 new change to the regulations to ensure the quality of new private supplies.

3. Policy options considered, including alternatives to regulation

This proposal concerns amendments to the Private Water Supplies Regulations 2009. As discussed above, there are no viable alternatives to regulation to implementing the required amendments.

As set out above, the policy options considered are the following:

1. to amend the regulations to cover only the Euratom requirements (including a risk based approach to monitoring for radon); or

2. to amend the regulations to cover the Euratom requirements *and* the three DWD clarifications; or

3. to amend the regulations to cover the Euratom requirements, the three DWD clarifications *and* the one new change.

The policy team's preferred option is to combine all of the required and suggested amendments into one new, clearer set of regulations and take forward option 3.

Overall the amendments proposed amount to a low-cost regulatory intervention that is also de-regulatory in nature given its aims to consolidate and clarify existing regulations, and include a risk-based approach where possible, thereby reducing the regulatory burden on business.

4. Expected level of business impact

Impact

'Business impact' in this context refers to the impact on private water suppliers that supply water as part of a commercial activity. These are classified as Regulation 9 supplies in PWS regulations, along with those provided to the public and those over 10m3/day volume.

The policy team's preferred option above is 3. This combines the Euratom requirements with the DWD clarifications and the one new change, and is therefore the most complete of the options and the one likely to have the most impact on business.

Costs

Our assessment of the cost to business of this option 3 focuses on the Euratom requirements relating to radon, and the change to ensure that new supplies are risk assessed prior to being brought into use. These interventions are expected to have the highest cost to business, of all the changes. We have worked closely with DWI colleagues in assessing cost implications. Their estimations have been based on a recent research report and are as follows:

Cost of risk assessment for radon
This is expected to be negligible, since local authorities already conduct risk assessments on their water supplies.

Cost of taking samples for radon
This is expected to be negligible, since local authorities already take samples to test for other parameters, or contract laboratories to do this for them. The requirement to test for radon does not imply additional sampling visits.

Cost of analysing the samples
Under the PWS Regulations, Local Authorities have the ability to pass analysis costs onto the relevant person(s) (e.g. owners of the private supply).
Whilst a sample for radon would be taken at the same time as any other samples, analysing a sample for radon does require separate specialised analytical techniques. This does not in itself imply an increased per unit sample cost. However, local authorities may face increased sampling costs if they are required to take and test samples for radon more frequently than their existing sampling regime, which may be the case if their water sources are located in areas where the presence of radon is more likely.

Radon is only a significant risk of being present in water supplies in groundwaters, as it dissipates easily from surface waters. The recent DWI research splits groundwater in the UK into three bands. These bands are based on analytical data, geological radon potential and levels of radon in the air, which together give a level of risk of radon occurring in water supplies and effectively reflect the following: high (radon values above 500 Bq/l), moderate (radon values between 50 and 500 Bq/l) and low radon risk (radon values below 50 Bq/l).

Local authorities will take a risk based approach for monitoring for radon and other radionuclides. Local authorities will be able to use the DWI research report to assess whether the risk of radon occurring in water supplies in their area is high or moderate and whether there is a need to sample. Local authorities are less likely to identify radon as a risk in medium or large businesses, where they have existing treatment processes which would also remove radon.

The DWI has therefore estimated the number of businesses that local authorities would have to sample over a one year period. This is calculated as businesses in England with a private water supply, located in moderate and high-risk radon areas, and classified as being a small business.

The method for calculating the costs was as follows:

1. Recent DWI research has calculated that there are 450 businesses that may require monitoring.
2. A unit cost of £90 per sample analysis has been applied to the number of samples to give a one-year cost per local authority and a grand total as follows:

450 x £90 = £40,500

Estimated costs across all businesses, if local authorities choose to pass on costs, would therefore amount to **£40,500** / **year.** However, £90 per sample analysis is thought to be a top-end, worst-case single unit cost. A recent tender answered by one laboratory cited unit costs of £32.50 per sample, and large sampling programmes for example could also drive the unit cost down. Using the lower-end cost of £32.50 per sample and following the same steps as above, the estimated cost across all local authorities for one year would amount to (450 x £32.50) = £14,625.

Cost of treating radon found in water supplies: A business would need to treat their water supply if a local authority records the presence of radon or another radioactive substance above the permitted value. A local authority can take certain measures to reduce levels of radon where these are found to be above the safe limit. One method is aeration, whereby oxygen is passed through water, driving off the radon present. Recent information from the water treatment industry states that the cost for the removal and reduction of radon costs are approximately £1000 per water supply.

Expert opinion is that it is less likely that specific aeration processes would be required as a standalone treatment for medium and large businesses, as any existing treatment processes in place would agitate the water sufficiently to drive off the radon.

Treating radon via aeration would only be an option necessary for groundwater supplies in moderate and high risk areas (those originating underground). In surface water supplies (from e.g. lakes and reservoirs) any radon is likely to be lost to the air.

The number of businesses with a private water supply that may need to undertake treatment of radon or another radioactive substance is recorded has been calculated as below:

1. DWI has calculated that there are 495 businesses with a private water supply that are located in moderate and high risk areas, and not classified as being a medium or large business.
2. The cost of every business treating their private water supply to remove radon is approximately £1,000 per supply.
3. If all businesses with a private water supply need treatment then the total impact would be:

   495 x £1,000 = £495,000

It is important to note that **£495,000** is the absolute worst case scenario. It is extremely unlikely that all these private supplies will require treatment, and where they do it will be a one off cost.

Cost of risk assessing new supplies: There will be no additional costs to businesses from this change. The change means that the cost to the private supplier of risk assessment will be incurred prior to the supply being brought into use or as soon as the local authority becomes aware of the new supply, compared to within 5 years.

Businesses with a proposed new private water supply could be impacted as they would have to prepare for an inspection before bringing it into use, rather than within 5 years. However, this will not create an additional cost to businesses. A local authority provides notice in advance of an inspection, to ensure there is access to the site for example, and this would be done as soon as the local authority becomes aware of the new supply.

The business impact will have an EANCB = 0 because there is no additional burden on business and no direct benefits to businesses therefore no further cost analysis has been undertaken. Evidence highlighted the in-direct health benefits to the public in carrying out risk assessments earlier than they are currently undertaken, however there is insufficient evidence and it would be disproportionate to fully monetise these benefits.

Benefits

Transposing the Euratom directive to include a new focus on radon in local authorities' existing risk assessment and monitoring procedures will have health benefits for consumers of drinking water across England. It is important to remember that these regulations apply not only to water that we drink, but water used for washing, cooking, heating and other sanitary purposes.

Radon is a radioactive substance that can be released from water and therefore, may contribute to the concentration of radon found in the air. Certain studies suggest that if radon is present in drinking water in certain levels (the Euratom Directive gives a threshold of 1,000 Bq/l above which would be unacceptable), consumers of the water will be at risk of exposure via ingestion and inhalation of the radon, with the greater risk coming from inhalation. Inhalation of radon may lead to an increase in the risk of lung cancer, with smokers more at risk. Radioactive particles can get trapped in the lungs which can damage lung tissue thereby increasing the risk of lung cancer. Ingestion of radon exposes the gastrointestinal tract to irradiation, and can increase the risk of stomach cancer.

Research in America referenced by the Environmental Protection Agency (EPA) estimates that radon in drinking water causes around 168 deaths a year http://water.epa.gov/scitech/drinkingwater/dws/radon/qa1.cfm). These figures are now dated (1999) which makes it difficult to extrapolate implications for England from the American research. It is worth noting, however, that the same research indicates that approximately half of the drinking water in the United States comes from ground water that is tapped by wells,[2] compared to the 35% of public supplies that come from groundwater in the UK. There is currently no federally-enforced drinking water standard for radon in the USA, though the EPA has in the past proposed to regulate radon in drinking water from community water suppliers and ensure these suppliers provide water with radon levels no higher than 4,000 pCi/L.[3] This corresponds to about 148 Bq/l, which is higher than the limit of 100 bq/l we are proposing for England in the WSWQ regulations, which is in itself much lower that the upper limit set by the Euratom directive of 1,000 Bq/l. Research commissioned by DWI indicates very few water supplies in the UK will have levels of radon in drinking water above the risk threshold value of 1,000Bq/l (only 2% or groundwater and mixed source supplies in England and Wales are located on high hazard aquifers) and therefore, it is unlikely deaths will occur in England due to the potential presence of radon in drinking water.

The benefits of the other parts of policy option 3, as discussed earlier in this document, derived from reducing the burden on business. Local authorities will be able to refer to one, amended set of regulations; they will have new clarity on three of the DWD provisions; they will be able to risk assess new private water supplies prior to use and take measures to improve the data records they keep to provide consistency across the industry.

The change to the risk assessment for new supplies being undertaken prior to being brought into use, rather than within 5 years will have clear public health benefits. It will mean the quality of a new private water supply will be assessed sooner to ensure that the water is safe and not harmful to health, rather than the supply being left for up to 5 years without being assessed. If an issue with the water supply is identified then this change will enable the private water supplier to rectify this sooner

Early assessment of OI3O

Transposition of the Euratom Directive and Clarification of DWD provisions fall **out of the scope** of OI3O because they transpose and clarify an EU Directive.

The amendment proposed to introduce one new change recommended by the DWI is within scope of OI3O. Requiring new supplies to be risk assessed prior to being brought into use will allow the local authorities to have greater awareness of the number of private supplies in their

2 http://www.nap.edu/openbook.php?record_id=6287&page=2

3 http://safewater.supportportal.com/ics/support/KBAnswer.asp?questionID=35532&hitOffset=251+246+217+207+195+169+159+132+117+106+87+70+31+12+8&docID=2850

area, and the relative risks of them. This will be of assistance if they have to investigate a drinking water quality incident. In addition, it provides comfort that those who will be supplied by the new supply will not be put at undue risk. Not properly assessing a new supply before bringing it into use can result in a range of health risks from contaminated water. DWI is aware of a large number of case studies where members of the public have been made ill by a contaminated private supply.

This change has no additional costs or benefit to businesses. For purposes of the business impact target this change would be a qualified regulatory provision with neutral impact.