

Drinking Water Quality Regulator for Scotland

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To:  
Local Authority Contacts

29 March 2016

Dear Colleague

### **Information letter 01/2016**

The Private and Public Water Supplies (Miscellaneous Amendments) (Scotland) Regulations 2015 – taste and odour, colour and radon

### **Background**

1. To more closely reflect European requirements and align private water supply regulations with the Public Water Supplies (Scotland) Regulations 2014, it has been necessary to revise the way in which taste and odour and colour are dealt with. The above amending regulations set out this new requirement. DWQR has produced guidance on these changes, and this may be found in Annex 1 of this letter.
2. The transposition of a revised European directive – EU Directive 2013/59 ( Euratom ) – means that some private water supplies may need to be sampled for radon. This will need to be done on a risk basis – DWQR has commissioned research to identify which areas may have water supplies at high risk of containing radon. This research is published on the DWQR website in the “Research” section. Annex 1 also contains background information on radon and guidance on the approach to be followed.

### **Location of High Risk areas for Radon**

3. The purpose of this letter is to inform local authorities of the new requirements, their significance and DWQR’s expectations for how they will be implemented. Not all local authorities will have private water supplies in high risk areas for radon, and not all supplies will require to be sampled. Due to the nature of radon, only groundwaters in high risk areas will need sampling. The table below shows the number of supplies to be sampled by each local authority – as with other parameters, Type B supplies will only require sampling on request.

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Local Authority	Total no. of PWS	Groundwater Type A sources in high risk areas	Groundwater Type B sources in high risk areas
Highland	2347	192	561
Aberdeenshire	7810	106	570
Perth & Kinross	1521	86	275
Angus	429	22	5
Moray	799	15	76
Scottish Borders	1424	14	72
Stirling	434	9	16
Orkney	234	8	47
E. Lothian	43	3	2
Aberdeen City	43	1	38
Argyll & Bute	1846	1	1
C. nan Eilean Siar	49	0	0
Clackmannanshire	27	0	0
Dumfries & Galloway	1384	0	1
Dundee City	2	0	0
E. Ayrshire	196	0	0
E. Dunbartonshire	16	0	0
E. Renfrewshire	148	0	0
Edinburgh City	17	0	0
Falkirk	9	0	0
Fife	331	0	0
Inverclyde	60	0	0
Midlothian	65	0	0
N. Ayrshire	282	0	0
N. Lanarkshire	15	0	0
Renfrewshire	12	0	0
S. Ayrshire	231	0	0
S. Lanarkshire	404	0	0
Shetland	63	0	0
W. Dunbartonshire	19	0	0
W. Lothian	55	0	0

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## Sampling and Analysis for Radon

4. Scottish Ministers will write to each local authority and issue waivers for those private water supplies that **do not** require sampling. It is hoped that, as sampling is undertaken, it will be possible to issue waivers for more supplies that have been demonstrated not to contain radon despite being in a high risk area. For convenience, DWQR will send each local authority a list of their supplies that **do** require sampling. This will include those where the risk area of the supply or source characteristics are unclear. Although such supplies will require sampling, they can be treated as a lower priority than those that are definite high risk groundwaters.
5. Sampling for radon requires a specific technique to ensure that the dissolved gas is not lost. The radioactive nature of radon also means that samples need to reach the laboratory promptly or it will decay away. As the guidance states, Scottish Water is currently the only laboratory accredited for radon analysis in Scotland (so far as we are aware). Local authorities are at liberty to use any accredited laboratory they choose for analysis, but consideration should be given to excessive travel times. Analytical capacity will be an issue, and DWQR accepts that it may not be possible to test the identified private water supplies every year. Local authorities may wish to give some thought as to how they will prioritise the sampling and analysis.

## Action to be Taken in the Event of an Exceedence of the Radon Standard

6. As the guidance explains, the 100 Bq/l parametric value is not an absolute standard requiring remedial treatment, but a trigger for investigation, which would likely consist of radon in air monitoring. In the unlikely event that the local authority decides that remedial treatment for radon is required, the guidance lists some options. It is likely that PWS grant support would be considered in such circumstances, even if the supply had already received grant, as radon represents a new legislative requirement.

## Enquiries

7. Issues or queries arising from this Information Letter should be directed, in the first instance, to Matthew Bower (0131 244 0743). This letter has been sent electronically. The forthcoming Private Water Supply Seminar organised by DWQR for 19 May in Edinburgh will provide an opportunity to discuss any issues around compliance with the new requirements. A copy of this letter will be sent to Health Protection Scotland and the Drinking Water Inspectorates of England and Wales and Northern Ireland.

Yours sincerely



Sue Petch

Drinking Water Quality Regulator for Scotland

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# ANNEX 1

## The Private and Public Water Supplies (Miscellaneous Amendments) (Scotland) Regulations 2015

### Guidance – Taste, Odour and Colour in Type A Private Water Supplies

#### Introduction

The Private and Public Water Supplies (Miscellaneous Amendments) (Scotland) Regulations 2015 have amended Schedule 1 to The Private Water Supplies (Scotland) Regulations 2006 (“the 2006 Regs”) relating to Type A supplies.

#### Regulation 8

The amendments to the schedule include changes to the Prescribed Concentration or Value (PCV) for taste, odour and colour. The taste and odour parameters have been moved from Table B Part II: National requirements to Table C (indicator parameters). An additional requirement has been added to Table C for colour. This change relates to Type A supplies only. The parameters required for Type B supplies listed in Table D remain unchanged.

For taste and odour the amendment is from a value on a scale of 0-3 at 25°C to a quantitative assessment of ‘Acceptable to consumers and no abnormal change’. For colour, the additional requirement adds ‘Acceptable to consumers and no abnormal change’. The PCV remains in Table B as 20mg/l/Pt/Co.

#### Interpretation

The term ‘acceptable to consumers’ refers to a quantitative assessment made by qualified laboratory analysts. Therefore for the purposes of the Regulations it does not refer to the final consumer, owner or user of the supply, nor to a qualitative assessment made by a sampling officer at the premises where the water is sampled.

#### Taste and Odour

The amendment reflects the analytical method for determining taste and odour in drinking water set out in the Standing Committee of Analysts Blue Book 233 published in November 2010: [https://www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/316767/TandO-oct26C-233.pdf](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/316767/TandO-oct26C-233.pdf)

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EH6 6QQ



This is a prescribed, quantitative method involving a panel of trained testers. Therefore in this context the term 'consumer' refers to this panel of trained consumers at the analysing laboratory.

### Colour

If a sample meets the colour standard required by Table B, there has been no complaint registered with the local authority and the local authority has had no indication that the supply fails or is likely to fail the colour standard, it will be deemed to be wholesome as per Regulation 7 of the 2006 Regs.

However if a complaint is registered and the local authority has reason to believe that the supply fails or is likely to fail the colour standard, the parameters referred to in Table C (now containing taste, odour and colour) should be investigated as set out in Regulation 18 of the 2006 Regs.

Colour will continue to be monitored as part of the standard suite of analysis, and the addition to Table C has been made to more closely align with the Drinking Water Directive. The Scottish Government has chosen to retain a PCV for colour for Type A supplies, given the importance of ensuring that water is of a low colour and low organic content prior to disinfection using ultraviolet light (the most common method of treating a PWS).

Despite this amendment it is unlikely that water below the standard of 20mg/l/Pt/Co would be discernible to the human eye.

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# Guidance – Radon in Water

## Private Water Supplies

### Introduction

Radon is an odourless, colourless, radioactive gas that occurs naturally. It is released from certain rocks and the risk of occurrence varies according to geology. Although direct ingestion of radon in water is harmless, prolonged exposure to radon in air by inhalation has been linked to an increased risk of lung cancer. It is likely that any radon dissolved in water will readily gas off upon exposure to atmospheric pressure, adding to the total radon contact of the air. The amending Regulations have been introduced to transpose the requirements of the EU Directive 2013/59 (Euratom) into Scottish legislation. The purpose of the drinking water elements of this directive is to limit the contribution that radon in drinking water makes to the total concentration of airborne radon.

The guidance below applies to private water supplies. Where reference is made to high risk radon areas, this relates to the map in Annex 1. Local Authorities will be issued with “Waivers” by DWQR, listing supplies that are NOT high risk and therefore do not need to be sampled for radon. A flow chart at the end of this document (Annex 2) summarises the process for both types of supply.

Reg 21-24

### Monitoring

Monitoring for radon in Type A private water supplies is required at the audit monitoring frequency, unless :

- a) evidence shows that the concentration of radon is likely to be stable
- and b) Scottish Ministers are satisfied that concentrations of radon, tritium and calculated indicative dose will remain below the PCV for each parameter.

Scottish Ministers will issue notices indicating those supplies that meet these criteria and need not be sampled. In practice, this will be for the following circumstances, where:

- 1) The supply is a surface water, or
- 2) The supply is not in an area with a known high risk for radon in air, or
- 3) The supply is a groundwater in a high risk area but the previous radon sample has shown the radon concentration to be less than half the PCV of 100 Bq/l.

Where the water is treated with the specific purpose of removing radon, monitoring at the frequency specified in Table C of Schedule 1 must be undertaken, regardless of the above criteria.

Monitoring for radon should take place at the earliest point in a property at which water may be consumed.

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Analysis of water samples for radon should be undertaken by a laboratory accredited for that purpose. Sampling technique is critical for radon – as it is a gas, it can be easily lost from water samples. Similarly, the half-life for radon is 3.8 days, so swift analysis after sampling is vital. Advice on sampling requirements should be sought from the analysing laboratory. Currently (February 2016), Scottish Water is the only laboratory UKAS accredited for radon in water analysis in Scotland, although several laboratories have accreditation elsewhere in the UK.

Laboratory capacity in the UK to analyse for radon in water is limited. Consequently, this will constrain the number of private water supply samples that it is possible to analyse at any time and it may be necessary to prioritise water supplies and samples.

### **Action to be taken in response to an exceedence of the PCV**

A “Parametric value” of 100 Bq/l has been set for radon in drinking water in Scotland. Although this is effectively the PCV, it serves primarily as a trigger for further investigation and advice. An exceedence of the PCV of 100 Bq/l does not in itself automatically necessitate a requirement to install treatment. Action need only be taken if, following investigation, the supply is considered to be a risk to health.

A further “Action value” of 1000 Bq/l has been set. If a water sample contains radon above this concentration, immediate action must be taken to reduce concentrations of radon in water. Survey work indicates that it is unlikely that this concentration will be exceeded in Scottish private water supplies.

Where a sample exceeds the radon PCV of 100 Bq/l in a private water supply, and a resample confirms this to be a representative result, the local authority must undertake further investigation to identify the source of the high radon value.

Advice should be provided to the users of the supply, including the suggestion that they may wish to monitor radon in air concentrations within buildings. Advice to owners and users should include that:

- their water supply has been identified as a source of radon;
- radon is a naturally occurring gas that is released from certain rocks;
- radon is radioactive and prolonged exposure to radon by inhalation has been linked to increased instances of lung cancer;
- radon ingested directly within the water is unlikely to be a health issue itself, but this radon may contribute to the total amount of airborne radon within the building;
- radon in air monitoring within the buildings served by the supply may be appropriate;
- further information on radon may be obtained at <http://www.ukradon.org/>

If levels are significantly above 100 Bq/l it may be appropriate for the local authority to consult with the NHS Board to agree whether this advice needs to be modified, or additional measures are required. If radon in air monitoring is required, simple to use measurement kits may be ordered from Public Health England: <http://www.ukradon.org/information/measuringradon> . They cost approximately £50,

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including analysis. Measurement of radon in air involves placing small, inert, radon detectors in the property for a specified period, before sending these off for analysis.

Where a result is obtained that is less than 50 Bq/l, and the local authority is confident that the sample was representative of the water supply, no further samples are required from this supply. It should be noted that changes to the European Drinking Water Directive may mean that this criteria may be varied at some point in the future.

### **Radon Treatment**

Treatment of water to remove radon is unlikely to be necessary on private water supplies, but if required is relatively simple. There are two main methods of treatment – specialist advice should be sought if necessary:

- Aeration. As radon is a gas, it can be stripped from the water by cascading the water or bubbling air through it;
- Adsorption. Radon can be adsorbed onto GAC filters, which are available as simple cartridges. These will need to be periodically replaced, with the replacement interval depending upon the flow rate and concentration of radon in the water. Care may be needed in disposal of spent filters as they will have accumulated radon.

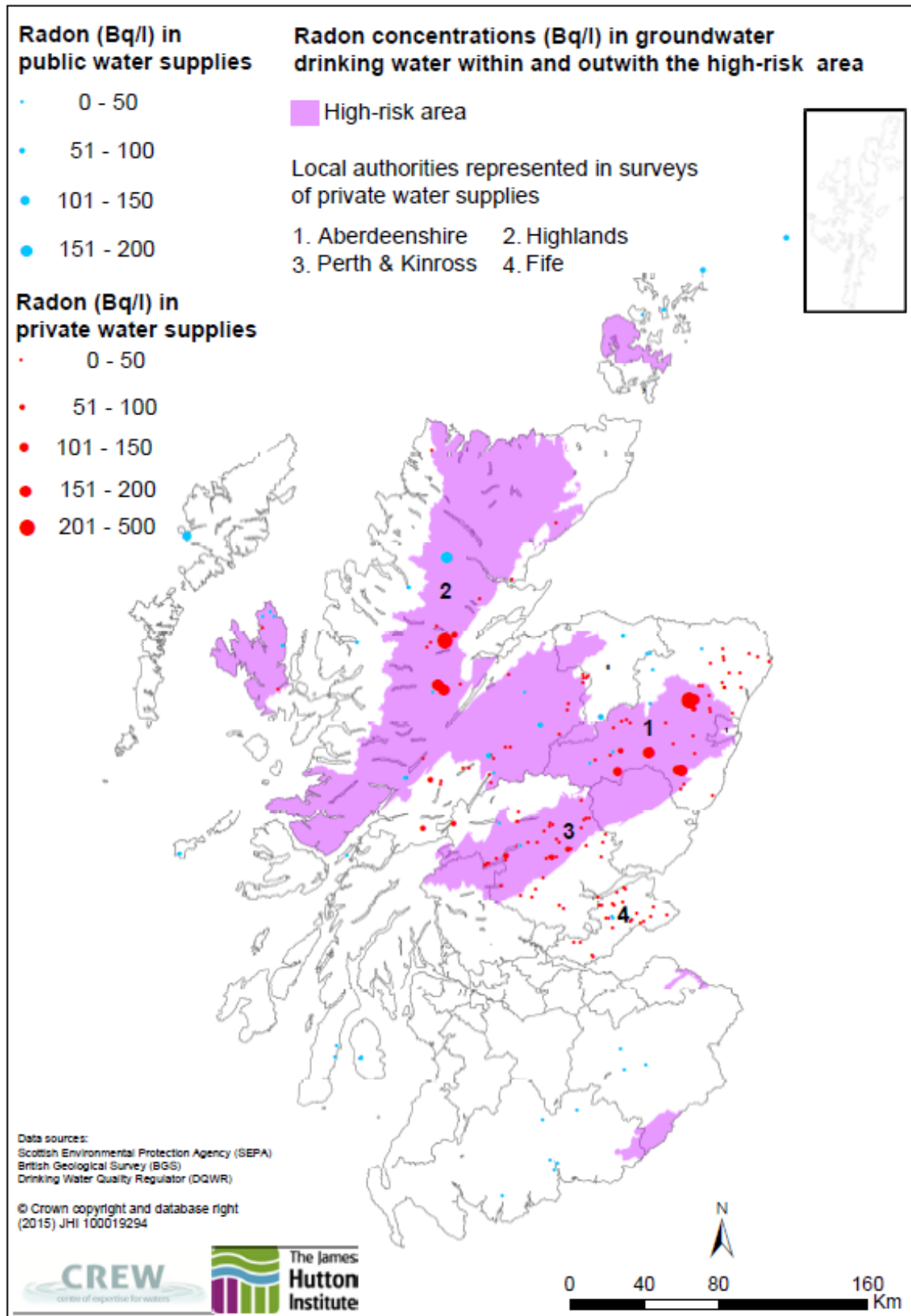
Decay storage is less likely to be suitable for private water supplies due to the need for careful control of water residence times.

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# Annex 1: Radon in Groundwater Risk Map



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## Annex 2: Radon Amending Regulations Summary Flowchart

