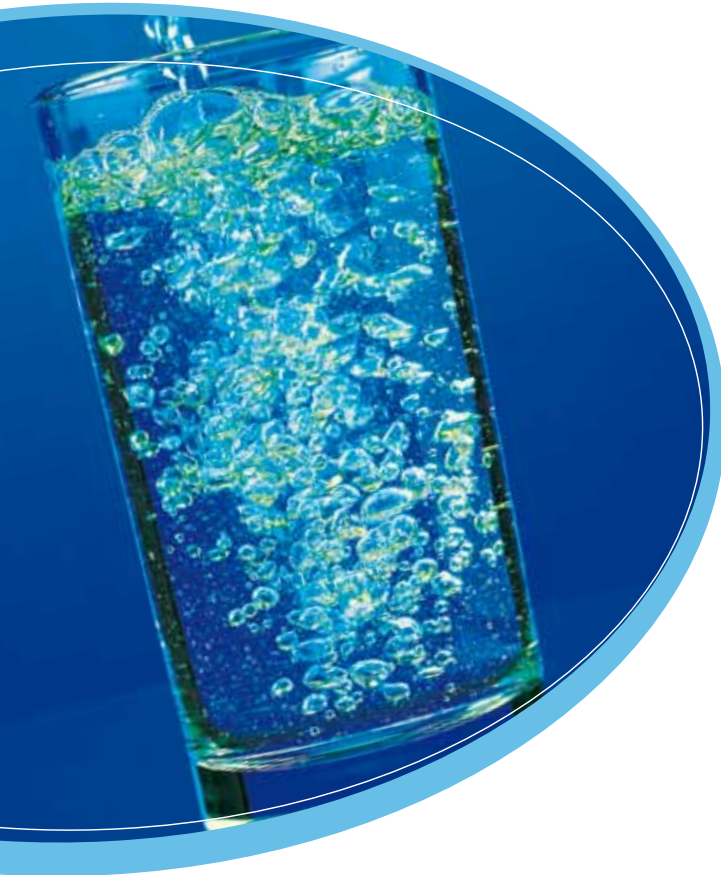


## Where can I obtain more information on radon testing?

To have a water sample tested for radon, download an application form from the EPA web site ([www.epa.ie](http://www.epa.ie)). The application form should be printed out, completed and returned to the EPA with the appropriate payment. A water sampling kit with instructions will then be sent out. Alternatively, phone the EPA's radon freephone 1800 300 600 to arrange a measurement.



Office of Radiological Protection

### Our Mission

To protect and improve the environment as a valuable asset for the people of Ireland. To protect our people and the environment from harmful effects of radiation and pollution.

### Contact Us

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## Radon in Drinking Water

What is it?

What harm can it do?

What can be done about it?



Office of Radiological Protection

## What is radon?

Radon is a naturally occurring radioactive gas. It has no colour, smell or taste and can only be measured with special equipment. Radon is formed in the ground by the radioactive decay of uranium, which is present in variable amounts in all rocks and soils.

## How does radon get into water?

Uranium and radon are both soluble in water and thus may be taken up by water as it passes over rocks and through soil.

## Are all water supplies at risk?

Ground water from wells and bore holes usually has higher radon concentrations than surface waters such as lakes and rivers. Ground water sources currently account for approximately 15% of drinking water supplies in Ireland. The EPA recommends that all groundwater, or partial groundwater, domestic water supplies be tested for radon. If the recommended levels are exceeded, remediation should be considered.

## What are the health concerns about radon in water?

Radon can be ingested by consumption of drinking water. Ingestion of dissolved radon will result in a radiation dose to the lining of the stomach. Most of the scientific evidence links long-term exposure to radon in air with an increased risk of lung cancer. Studies have not shown a definitive link between consumption of drinking water containing radon and an increased risk of stomach cancer. However, increased radiation exposure should always be avoided, where possible.

Radon from tap water can be released into the indoor air and contributes to the radon already present indoors. This can be a particular problem in bathrooms and showers if the ventilation rate is poor and the water contains high concentrations of radon.

The radiation dose from radon in drinking water is normally low compared with that from the inhalation of radon present in indoor air. However, it is prudent to take reasonable measures to minimise exposure to radon in drinking water.



The process of boiling water releases the radon gas from the water into the air. Therefore, there should be no concerns about a radiation dose from drinking tea or coffee. However, it is important to ensure that boiling takes place in a well-ventilated area so as to minimise the risks of inhaling radon gas.

## What areas of Ireland are at risk?

It is not possible to predict if any areas of Ireland are more at risk than others. No direct relationship has been established in Ireland between the amount of uranium in the underlying rocks and soil and the concentration of radon in the water supply. Additionally, no direct relationship has been established in Ireland between radon in indoor air and radon in water.

## In what units is radon concentration in water measured?

Radioactivity is measured in becquerels. One becquerel corresponds to one radioactive disintegration per second. Radon concentration in water is measured in becquerels per litre (Bq/l).

## What radon concentrations should give cause for concern?

For public water supplies, where radon levels are found to exceed **500 Bq/l** remediation of the water supply to reduce the radon concentration should be undertaken. This reference level applies at the source. Public water supplies are defined as follows:

- Drinking water supplied as part of a public or commercial activity (including private water supplies to public facilities such as schools and hospitals).
- Group water schemes.

For private water supplies, where radon levels are found to exceed 1000 Bq/l the need for remediation should be considered. Private water supplies as defined as follows:

- Drinking water from an individual supply, from which no water is supplied as part of any commercial or public activity.

## How can radon be eliminated from drinking water?

As radon is a gas, it is readily lost from water over time or due to agitation of the water. For this reason, the installation of a holding tank, an aeration unit or an agitation system between the source and the domestic tap will significantly reduce the level of radon in the tap water. Proven radon in drinking water remediation products are commercially available.