

## 2.6 Radioactivity

All waters contain traces of naturally occurring radionuclides, the concentrations depending on the origin of the water. The natural radionuclides of most relevance are radon (Rn) and uranium (U). Radon is volatile and as a result it can be released from water as a gas. This is of concern if the release occurs within a confined space with insufficient ventilation.

Radon and uranium are only found in significant concentrations in groundwater in certain parts of the UK, depending on the type of geology. Further advice is available from local authorities and the National Radiological Protection Board (NRPB). These substances are not significant for any surface water sources in the UK.

The concentration of radioactive elements in water is expressed in terms of their activity, in Bequerels per litre (Bq/l). There is currently no official recommended level of radon in drinking water in the UK. There is a draft European Commission recommendation on radon in drinking water supplies of 100 Bq/l for public supplies and an action level of 1000 Bq/l for non-commercial private supplies. The EU level of 1000 Bq/l is consistent with recent advice from the NRPB. Uranium limits were proposed to be in the range 20 to 100 µg/l. The uranium guideline is currently 20 Bq/l (equivalent to a concentration of approximately 2 mg/l).

Treatment for radon removal cannot use point of use systems fitted to the tap because, being volatile, it is released into the atmosphere whenever water is used. Under-sink treatment using an activated carbon filter is also inadvisable because the filter would become radioactive. Radon removal treatment therefore has to be installed before entry of water into a building. Aeration is the preferred treatment technique but other methods are feasible. Treatment is discussed further in Section 7.

Uranium removal is best achieved by point of use systems, as discussed in Section 7.