

8.2 Uranium removal

Unlike radon, uranium does not transfer from water to air once inside houses and thus treatment at point of use seems more appropriate than treatment at point-of-entry. Point of use treatment has the potential advantage that much smaller volumes require treatment. Many methods are available for removing heavy metals from water and as such there is no shortage of possible solutions to a problem with uranium but ion-exchange and reverse osmosis are the only suitable options for private water supplies, the former is normally the preferred method. For ion-exchange, by changing the resin in commercially available water softening equipment it will be possible to easily provide effective treatment systems. Reverse osmosis is also effective. It has the advantage that package point of use systems are available that can be used without any modifications. Uranium removal is rarely practised so advice should be sought from professional water treatment equipment suppliers or consultants. Table 8.2 summarises available systems.

Table 8.2 Uranium removal techniques

Treatment option	Efficiency	Availability	Disposal issues	Approximate cost per household	Other issues
Reverse osmosis Point of use (under sink)	>95%	Package systems available from domestic water treatment suppliers.	Waste stream unlikely to be a problem. There will be a build up over time on the membrane and to some extent on any preceding GAC filter; this should be monitored.	About £500. Running costs about £40 a year.	Pre-treatment for radon removal required. Possibly a need for shielding of the system, due to build-up on the RO membrane. No direct process guarantees from manufacturers. Regular changing of the membranes and any pre-filters would be required.
Reverse osmosis Point of entry (whole supply)	>95%	Package systems available from domestic water treatment firms. Also available from medical sector.	As above.	About £2,500, with £200 a year running costs.	Possible need for shielding/careful location. Again, no direct process guarantees. Regular filter changes required. Generally, treating far more water than is required.
Ion-exchange Point-of-use (under sink)	>95% (dependent on resin)	Many water softeners available. Suitable resins (to replace those in the softeners) are also available.	Resin can be effectively regenerated, meaning no long term build-up. Regenerant stream should be suitable for disposal (sufficient dilution possible).	From £500, plus resin cost. Low annual running cost (£20?) depending on water usage and type of system.	Well proven and effective system, although no tests done in UK. As such, a testing regime may be of benefit. The type of resin used is very important. Note: Not used as a softener.
Ion-exchange Point-of-entry	>95% (dependent on resin)	As above.	As above.	Similar to above; higher running cost.	As above. Treating far more water than required.

This page is intentionally blank