



Radium

Water Treatment

Radium occurs naturally in groundwater in the radionuclide form and can be readily removed to safe levels utilizing a variety of Layne Christensen Company proven technologies.

Selecting a cost effective treatment technology for the reduction of radium is based on a number of factors which require evaluation.

Factors include: water quality, degree of treatment, space availability, simplicity of process and the treatment and disposal of residual waste generated from the primary treatment process. Layne's engineers can evaluate your water quality, recommend abatement strategies, conduct technology verification pilot studies and design and install turnkey treatment plants to meet the 2006 radium compliance standards.



A known carcinogen, radium and its isotopes exist naturally in many groundwaters in the United States. The USEPA and State guidelines have established 5 pCi/L as the MCL for combined Radium in potable water.

Our Full Service Approach

- On-site pilot studies to evaluate media life and pre-treatment requirements.
- Engineering and EHS report for permit applications.
- Procurement, fabrication and shop assembly of skid-mounted modular systems with spent resin removal and resin replacement capability.
- Startup and training in system operation, monitoring, maintenance and media replacement procedures.
- Resin replacement and coordination of spent resin disposal services.
- Purchase, leasing and long-term financing options.
- "Balance of Plant" design and installation services for foundations, enclosure and battery limit tie-ins including wellhead modifications.



DOWEX™ RSC (Radium Selective Complexer) is a specialized media specifically formulated to remove radionuclides directly from groundwater and aqueous streams. The RSC treatment process represents the essence of operational simplicity, with the raw water being applied in series to one or more beds of RSC, thereby enabling the water-soluble radium to be irreversibly complexed with the media matrix.

The RSC media is used on a once-through basis, and after its useful life the spent RSC media is disposed of appropriately. RSC can be used in a direct pump-and-treat-mode in small systems or alternatively, where conventional ion exchange is utilized, the spent brine can be treated with RSC prior to discharge to the sanitary sewer. In certain cases the brine would be amenable to recycle and reuse thereby reducing operating costs.

LayneOx™ is a high rate granular filter media used for the removal of contaminants in water.

When hydrous manganese oxide is added, the LayneOx HMO process can provide effective radium removal. The radium is adsorbed to the HMO particles, which are physically filtered out by the LayneOx media.

The catalytic properties of LayneOx allow high loading rates (up to 9 gpm/ft) and low hydrous manganese oxide feed rates. The media is backwashed like a conventional treatment system.

LayneOx also lowers costs due to reduced equipment size requirements.

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Layne Christensen Company

Water Technologies:
Define
Develop
Deliver