

Underground Injection Control for Remediation Systems

Overview

DEQ administers Oregon's Underground Injection Control Program, which includes use of all types of in-place remediation treatment systems where treatment reagents (e.g., biological amendments and nutrients or oxidizing agents) are introduced below ground. EPA revised UIC regulations in 1999 to allow underground injection as part of a remedial action or remedy at federal Superfund sites, and for state cleanup and leaking underground storage tank remediation.

The Oregon Environmental Quality Commission adopted administrative rules in 2001 and DEQ established registration procedures for existing and new aquifer remediation systems using underground injection.

What is regulated as a remediation system?

An underground injection control system places fluids below ground. EPA and DEQ define fluids as any material or substance that flows or moves whether in a semisolid, liquid, sludge, gas or other form or state. EPA defines classifications for UIC systems; a remediation system is classified as either Class IV or Class V.

A Class IV remediation system injects hazardous or radioactive waste into or above a formation containing an underground source of drinking water. Typically, contaminated groundwater containing a hazardous waste (e.g., tetrachloroethylene from dry cleaning operations) is pumped, amended with treatment reagents, and then injected into the aquifer to facilitate treatment on site.

A Class V injection system differs from a Class IV system in that tap water is used to mix the amendments prior to injection, or reagents are injected without aqueous dilution.

How are remediation systems regulated?

Written approval from DEQ is required for installation, use, maintenance, modification, plugging, abandonment and closure of all injection systems.

DEQ's Environmental Cleanup Program or Underground Storage Tank Cleanup Program in coordination with the UIC Program review and approve active cleanup site activities involving

UIC remediation systems. A work plan for the remediation system must be submitted to DEQ and approved in writing by DEQ's Environmental Cleanup Program. Parties conducting independent cleanup not under DEQ's oversight must register the system and receive written approval from DEQ's UIC Program prior to proceeding with the work.

The Oregon Water Resources Department also has regulatory authority for construction, maintenance, conversion, and abandonment of monitoring wells, geotechnical holes, and other holes under Oregon Administrative Rule 690-240. Refer to Water Resource Department's web site for guidance on their requirements: http://www1.wrd.state.or.us/pdfs/Water_Well_Booklet_2010.pdf

An existing in-use remediation system is subject to UIC regulations. The Safe Drinking Water Act does not allow "grandfathering" of an existing system, including sites operating under existing Water Pollution Control Facility permits.

How do I register a remediation treatment system?

Fill out and send to DEQ the UIC Aquifer Remediation registration form found at <http://www.deq.state.or.us/wq/uic/forms.htm> and include signature of owner or legally authorized representative and date.

Each remediation system, which may include multiple temporary or fixed injection points, needs to be registered. A site undergoing cleanup through a site-specific cost recovery and oversight agreement does not require a separate UIC fee. DEQ Environmental Cleanup, Tanks, and UIC program staff will coordinate aquifer remediation project work.

If a site owner independently undertakes remediation with no DEQ Cleanup or Tanks cost recovery/oversight agreement in place, UIC registration fees for each remediation injection point must be submitted to DEQ.

Requirements for UIC remediation system owners

An owner or operator of an injection system for remediation must:

- Provide inventory data of the remediation system to DEQ. DEQ will review the data



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DEQ's mission is to be an active leader in restoring, maintaining, and enhancing the quality of Oregon's air, water and land.

and certify in writing that the UIC system meets state and federal standards for authorization by rule.

- Fill out and send to DEQ the WPCF-N individual permit application form found at <http://www.deq.state.or.us/wq/wqpermit/docs/forms/08-WQ-054.pdf> if a remediation injection system proposed by a party conducting an independent cleanup does not meet the authorization by rule requirements. The form must include signature of legally authorized representative and date. An applicant must also submit WPCF permit fees with the application.
- Either obtain a permit as outlined above or meet the substantive requirements of a WPCF permit, as stated in Oregon Revised Statute 465.315, if a party is conducting cleanup under DEQ oversight with a remediation system that is not rule authorized.
- Satisfy the substantive requirements for UIC "non-endangerment" performance standard. DEQ's Environmental Cleanup and UIC program staff will make this determination. Staff will evaluate the proposed remedial design, taking into account site-specific remedial/corrective action objectives and associated cleanup levels to be achieved throughout the remediation.

DEQ will require a performance monitoring program to identify and correct any unforeseen worsening of site contamination (such as horizontal or vertical spread of groundwater contamination outside of treatment zone). This determination may allow for the contaminated groundwater withdrawn from an aquifer for treatment to "substantially reduce" hazardous constituents in the groundwater.

"Substantial reduction" may occur either in-situ following reinjection, or ex-situ prior to reinjection. The reduction may occur in-situ after treated groundwater is reinjected into the aquifer (i.e., within the formation that is the target zone for the injected fluid). The intended treatment must reasonably be expected to reduce levels of contamination and must be part of a legitimate effort to achieve cleanup of such contamination. These provisions are consistent with EPA policy for in-situ groundwater treatment through underground injection requirements.

What is required for an independent cleanup project?

If an independent cleanup project is not subject to DEQ oversight, fluids entering the injection system must meet state groundwater quality standards and drinking water standards at the

point of injection, or at the point the injected fluid reaches the high seasonal water table. DEQ will evaluate the information and data submitted with the WPCF permit application to determine if these standards are met.

What is required for closing a remediation system?

When remediation goals are met and DEQ prepares to issue a No Further Action determination for the site, or if DEQ requires a remediation system to be closed, the owner or operator must close the system and fill out DEQ's UIC Registration Pre-Closure Notification form found at: <http://www.deq.state.or.us/wq/uic/forms.htm>. The submitted form must include signature of owner or legally authorized representative and date. If a site owner or operator is independently undertaking remediation with no DEQ Cleanup or Tanks cost recovery and oversight agreement in place, UIC closure fees for each remediation injection point must also be submitted to DEQ.

The UIC program's Oregon Administrative Rules specify closure requirements in OAR 340-044-0040. Other state and local requirements may also apply to UIC system closure, including Oregon Water Resource Department water well and other hole abandonment requirements for systems that are above or below the water table (OAR 690-220 and OAR 690-240 respectively). An owner must get DEQ's written approval before closing a system. Further information on UIC closure requirements are on DEQ's UIC web site at: <http://www.deq.state.or.us/wq/uic/uic.htm>.

For more information

Contact David Cole, DEQ regional hydrogeologist, Portland, at 503-229-6371, or call toll-free in Oregon at 1-800-452-4011, ext. 6371.

Information is also available from the Oregon Department of Water Resources at <http://www.oregon.gov/OWRD/>.

Alternative formats

Alternative formats (Braille, large type) of this document can be made available. Contact DEQ's Office of Communications and Outreach, Portland, at 503-229-5696, or call toll-free in Oregon at 1-800-452-4011, ext. 5696 for more information.

