Fact Sheet

Drinking Water Protection for Shallow Injection System Owners & Operators

State of Oregon
Department of Environmental Quality

Water Quality
Underground Injection Control
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Background

Stormwater and wastewater at some businesses enter floor drains or storm drains that discharge directly into sumps, drywells, trench drains and septic tanks with drainfields. These types of disposal practices release wastes directly into the ground and can pollute groundwater as well as nearby surface water. Municipalities that rely on well fields do not pre-treat the drinking water prior to serving it to local residents. This fact sheet provides information on injection systems and the management practices to help preserve and protect drinking water resources for all Oregonians.

What is an Underground Injection Control (UIC) System?

An underground injection system is any human-made system, structure or activity created to discharge fluids directly into the subsurface. Most underground injection systems in Oregon are shallow and are widely used to dispose of stormwater and process wastes generated by individuals, businesses, industrial facilities, cities and counties from their properties, streets and parking lots. Various wastes such as nitrates, phosphates, bacteria, solvents, waste oil, paint, petroleum products and heavy metals can be present in the water that goes to an injection system. Even extremely low concentrations of many of these wastes can be hazardous to human health and the environment when they enter groundwater.

Common Oregon injection systems

- Stormwater drywells, drill holes, trench/ French drains, infiltration galleries and perforated piping
- Onsite drainfield systems (serving 20 or more people or 2,500 gallons per day)
- Industrial/commercial process waste disposal systems (e.g., cooling water)
- Aquifer recharge wells
- Aquifer remediation and geothermal wells

Prohibited injection systems in Oregon

- Deep waste disposal and hydrocarbon storage below a drinking water aquifer
- Process disposal systems related to mineral extraction and leachate
- Hazardous/radioactive waste disposal
- Agricultural waste disposal
- Sewage drill holes
- Cesspools serving more than 20 people or receiving mixed wastes
- Motor vehicle waste disposal (e.g. automotive shop waste, gas station disposal).
- Agricultural drainage wells.

NOTE: DEQ has a more detailed list of injection wells. (See "Resources" listed on page 2.)

How can I find out if I have an injection system on my property?

It may be difficult to know where waste fluids going to a sink, floor drain or storm drain will end up. Check with your local jurisdiction to see if your property has access to a stormwater sewer line and sanitary sewer. Your stormwater and wastewater may discharge to an injection system and/or septic system. Even if your area has a municipal sanitary sewer, some sewage treatment plants do not accept industrial process wastewater, which must be disposed of in other systems. In some areas, the sewer system may have been installed after many of the industrial buildings were already constructed, with only the sanitary waste lines being later connected to the sewer. Below are some suggestions for ways to evaluate whether your waste fluids are being routed to an injection system:

- Check your sewer and water bill. If you are not separately billed for stormwater discharge, stormwater and inside drains may lead to injection systems (e.g., drywells). If you lease the property and do not receive a wastewater bill, contact the property owner.
- Compare the date of facility construction/ operation to the dates that the sewer and stormwater lines were installed in the area (contact your public works department to find out when sewer connections were available in the area). If your facility was constructed before the local sewer was installed, it is possible that only the sanitary lines were connected to the sewer and other drains in the facility and parking areas remain connected to an injection system.
- Check building plans or drawings to locate wastewater lines and stormwater drains.
- Call your sewer plant. Find out if they accept industrial wastewater that is generated at your facility.

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- Your local jurisdiction or a plumber can offer suggestions for dye testing and drain line locating.

Why are UICs a risk to drinking water?

When properly sited, constructed, maintained and operated, injection systems can be an effective and environmentally safe means of fluid waste disposal. The degree of risk to underlying groundwater and nearby surface water varies from quite high to very low. Factors that affect the risk are the hydrogeologic setting, well location, UIC construction and operation, depth to the high seasonal water table, volume and quality of commonly injected fluids, likelihood of accidental spills and use at un-remediated sites identified for cleanup. For example, stormwater drywells receiving untreated urban runoff from residential and commercial areas could routinely inject water that violates drinking water standards directly to groundwater. Furthermore, in areas where hazardous chemicals are handled, an accidental product or chemical spill could enter a storm drain sump and lead to severe groundwater contamination. Groundwater, once contaminated, is difficult and costly to clean up. Surface water resources are mostly no longer available as drinking water sources so most cities are turning to groundwater to fill this vital need as our population grows.

Shallow injection and infiltration systems which introduce wastes directly into the ground are not designed to treat process and industrial wastes. Harmful chemicals in the wastes may kill the septic system bacteria that are necessary for the effective primary treatment of sanitary wastes before discharge to a drainfield. When septic systems do not function properly, toxic pollutants and poorly treated sanitary wastes percolate into the ground; these contaminants can reach the water table and may contaminate the local drinking water source.

Water supply contamination is not only a public health and environmental concern, but also a financial burden that can be costly for both the community and the responsible business. Controlling discharge and properly locating and maintaining injection systems protects the environment and your financial resources.

Regulatory requirements for UIC owners

If you own or operate any type of injection system, you are required to:
(1) Register and provide the required inventory data to the Oregon Department of Environmental Quality for any type of injection system. DEQ will review and certify that the UICs meet federal and state standards under rule authorization in writing. The rules, registration forms and guidance documents are available from DEQ's Web site at: http://www.deq.state.or.us/wq/uic/uic.htm. (See "Resources," below, for other assistance.)
(2) Meet a "non-endangerment" performance standard. In other words, fluids entering the injection system must meet state groundwater quality standards and drinking water standards at the point of injection or by the time the injected fluid reaches the high seasonal water table.
(3) Submit a UIC closure form to DEQ for review and approval to properly close any injection system when you are through using it.
(4) Comply with all other local, state and federal regulations (i.e., OAR 390-44 and 40 CFR, Part 144-147).

For an injection system to quality as "rule authorized," facilities must be registered and approved by DEQ. Owners must provide data to prove they meet the basic siting requirements (OAR 340-044-0018(3), which include a determination that the well is constructed, operated and maintained in a manner that does not endanger underground sources of drinking water. In addition, category requirements apply which require an approved stormwater management plan, regular maintenance, spill controls and, in some cases, annual monitoring.

If an owner or operator of a well cannot provide the required registration data or a UIC system does not qualify as "rule authorized," then the owner may be required to: (1) close the injection well; (2) discharge to a local municipal stormwater sewer (if available); or (3) apply for a DEQ Water Pollution Control Facilities permit (individual industrial – N form). For owners with numerous UICs or multiple sites, a permit may be more economical. Some sites that cannot qualify for rule authorization may be able to operate under a permit (e.g., if located too close to a water well).

Resources – Where can I get help?

For local assistance, check your phone directory or billing information for your local sewer utility, water utility, public works department, county/city development/planning office. All jurisdictions should have copies of their source water protection areas available to the public. Local environmental consulting companies (hydrologists and engineers) can also assist with registration or applying for a permit.

Your state and federal contacts are:
Oregon DEQ/Toll-free in Oregon at 1-800-452-4011
Oregon DEQ UIC Program

Barbara Priest, program coordinator (503-229-5945)
David Cole, regional hydrogeologist (503) 229-6371
David Johns, UIC administrative specialist (503) 229-5160
http://www.deq.state.or.us/wq/uic/uic.htm
Oregon DEQ Drinking Water Protection Program
Sheree Stewart, coordinator (503-229-5413)
Julie Harvey, protection specialist (503-229-5664)

U.S. Environmental Protection Agency
1-800-424-4EPA
http://www.epa.gov/safewater/uic/index.html

http://yosemite.epa.gov/R10/WATER.NSF/UIC/UIC+Program (EPA Region 10 UIC page)

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