

PRIVATE DRINKING WATER IN CONNECTICUT

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Effective Against: Dissolved gases such as radon, carbon dioxide, some taste and odor problems such as methane, and hydrogen sulfide, as well as volatile organic compounds, like methyl tert-butyl ether (MTBE) or industrial solvents. Aeration prior to filtration can be used for the precipitation and removal of iron and manganese. Aeration raises the pH of water by removing carbon dioxide.

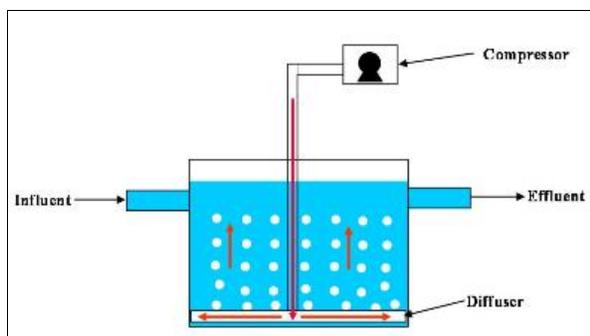


Not Effective Against: Heavy metals, pathogenic (disease-causing) organisms like bacteria and viruses.

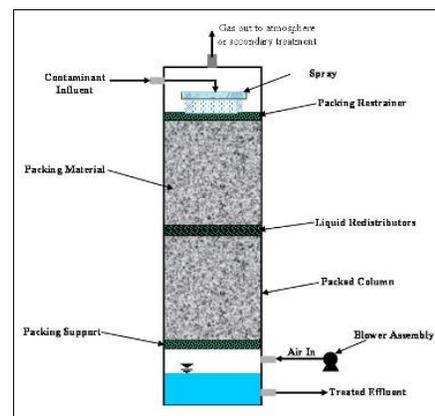
How Aeration Works

Aeration treatment consists of passing large amounts of air through water and then venting the air to the atmosphere. The air causes dissolved gases or volatile compounds to release from the water. The goal is to allow the contaminants to volatilize into the air. In the case of iron and manganese, the air causes these minerals to precipitate out of solution. The water can then pass through a filter to trap the iron and manganese particles.

Air intakes for the aerator can be positioned either outside or inside of the home. First, take a look around the house to identify a clean area for locating the air intake. Avoid areas that have moisture, mold, odors or airborne particles, such as dust from a woodworking shop. For inside the home locations, the intake should be at least a foot above the floor, but preferably near the ceiling. If the home is “air-tight” construction, an interior intake location may result in a vacuum being created within the home. This will prevent proper venting of the heating system combustion gases unless a fresh air source is provided.



Typical diffused aeration configuration



Typical packed tower aerator configuration.



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If the intake is outside of the home, the intake should be high enough to avoid contaminant discharges from such activities as power lawn mowers, leaf blowers, automobiles, boiler exhausts, and splash from roof runoff and garden hoses. The intake also needs to be positioned away from the waste air discharge location on the aeration treatment system.

At the air intake, you can install an air filter to ensure clean air. Take steps to prevent entry of animals and insects into the intake air.



Waste air from the aerator needs to be disposed of outside the home. This air is now moist and has a higher concentration of the contaminant removed from the water. The waste air discharge point should be above the eave of the roof. Place the vent away from windows and on the downwind side of the prevailing wind direction. The waste airline should include a manufactured vent cap that prevents the entry of dust, bird droppings, small animals, and other bacterial hazards.

Mist will carry over from the aerator into the waste air vent line and condensation may also occur. Both the intake and waste airline need to be sloped to allow drainage for moisture. The waste air line connections need to be air tight within the home to prevent leakage of hazardous gas.

Maintenance

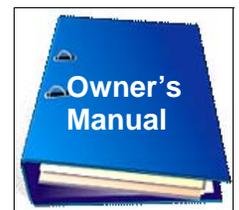
Regardless of the quality of the equipment purchased, it will not perform satisfactorily unless maintained in accordance with the manufacturer's recommendations for maintenance, cleaning, and part replacement. Keep a logbook to record equipment maintenance and repairs.

Bacterial slime will grow in aerators and storage tanks, requiring continuous or periodic chlorination. Chlorination may oxidize iron and other metals and cause them to precipitate out, requiring the need for a filter to remove the metal particles.

Proper, adequate ventilation is a must when operating an aeration system. The tank needs occasional cleaning as precipitated sulfur, iron sulfide, rust, and algae collect. A valve controlled drain line to the ground surface makes flushing the storage tank, at least once or twice each year, easier.

Other Considerations

Ensure the system you choose is installed and operated according to the manufacturer's instructions. After installation, retest both the raw water (prior to treatment) and the treated water at a state certified laboratory to ensure it is working properly and removing the contaminants. You should continue to test the quality of both the raw and treated water annually or more frequently (quarterly or semi-annually) if high levels of contaminants are present in the raw water. Frequent testing will also help you determine how well your treatment system is working and whether maintenance or replacement of components may be necessary.



If there are elevated levels of dissolved iron or manganese in the water, the aeration process can cause rust and other solids to form, staining plumbing fixtures and clothing unless a post-treatment filter is installed to trap the solid forms of iron and manganese. On the other hand, if the raw water coming into the house contains elevated levels of iron and manganese in its solid, precipitate form, a filter may need to be installed before the water enters the aeration system.

The advantage of aeration is that there is no disposal or regeneration of treatment media necessary. This is especially important when the contaminant being treated would constitute a hazardous waste disposal problem, such as radon.

Questions to Ask Before You Buy

Before purchasing a water treatment device, have your water tested at a state certified laboratory to determine the contaminants present. This will help you determine if aeration is an effective treatment method for your situation. See Publication #19, *Questions to Ask When Purchasing Water Treatment Equipment*, for more information.



Consumers should inquire about the following before purchasing an aeration system:

- Has the treatment system been tested and certified by a third party to ensure that it meets manufacturer's claims?
- What maintenance requirements are there?
- Are there any special installation requirements that may add to the equipment cost, for instance changes to your household plumbing?
- How loud is the air blower? Will soundproofing be required?
- How much electricity does the blower require? Is it energy efficient?
- Check with the State Department of Environmental Protection to determine if any air quality laws maybe violated?

Product Certification



NSF International is a non-profit organization that sets performance standards for water treatment devices and chemicals. Because companies can make unsubstantiated statements regarding product effectiveness, the consumer must evaluate test results of the device to determine if claims are realistic. Products that have been tested or evaluated by NSF and meet their minimum requirements are entitled to display the NSF listing mark on the products or in advertising literature for products. Manufacturers and models that meet NSF's standard are included in a listing published twice a year. For more information contact NSF at: 800-NSF-Mark or http://www.nsf.org/consumer/drinking_water/.

For more information please click on the following links:

EPA Office of Groundwater and Drinking Water

<http://www.epa.gov/ogwdw/>

EPA New England

<http://www.epa.gov/region01/>

Adapted from *Healthy Drinking Waters for Rhode Islanders*, University of Rhode Island Cooperative Extension, April 2003.