PRIVATE DRINKING WATER IN CONNECTICUT

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Effective Against: Pathogenic (disease-causing) organisms including bacteria and viruses, phenols (aromatic organic compounds), some color, taste and odor problems, iron, manganese, and turbidity.

Not Effective Against: Large cysts and some other large organisms resulting from possible or probable sewage contamination, inorganic chemicals, and heavy metals.

How Ozone (O_3) Treatment Works

Ozone is a chemical form of pure oxygen. Like chlorine, ozone is a strong oxidizing agent and is used in much the same way to kill disease-causing bacteria and viruses. It is effective against most amoebic cysts, and destroys bacteria and some aromatic organic compounds (such as phenols). Ozone may not kill large cysts and some other large organisms, so these should be eliminated by filtration or other procedures prior to ozone treatment. Ozone is effective in eliminating or controlling color, taste, and odor problems. It also oxidizes iron and manganese.

Ozone treatment units are installed as point-of-use treatment systems. Raw water enters one opening and treated water emerges from another. Inside the treatment unit, ozone is produced by an electrical corona discharge or ultraviolet irradiation of dry air or oxygen. The ozone is mixed with the water whenever the water pump is running. Ozone generation units require a system to clean and remove the humidity from the air. For proper disinfection the water to be treated must have negligible color and turbidity levels. The system requires routine maintenance and an ozone treatment system can be very energy consumptive.

Ozone is not without some concerns also; ozone is a toxic gas and it can produce disinfection by-products in drinking water. In order to reduce by-product formation, the water must have minimal amounts of organics.

The major benefit of ozone treatment is that it is very effective as a disinfectant. In contrast to chlorine, ozone is active over a wide pH and temperature range. The required contact time is so short that it is not a consideration in the system design. However, this is not true for Giardia and Cryptosporidium, both protozoan cysts associated with sewage contamination.

Maintenance

Always follow the manufacturer's instruction for maintenance, cleaning, and part replacement. Regardless of the quality of the equipment purchased, it will not perform satisfactorily unless maintained in accordance

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with the manufacturer's recommendations for maintenance, cleaning, and part replacement. Keep a logbook to record equipment maintenance and repairs.

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 the system 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 contaminant 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.

Like chlorine, ozone is a toxic gas and ozone generators may lead to and could create an ozone hazard within your home, causing illness. The greatest drawback with ozone treatment is its lack of an ozone residual time. With ozone treatment, disinfection occurs primarily at the point of contact between the ozone and the water. The disinfection process does not occur beyond the treatment unit. This contrasts with chlorination treatment where the residual chlorine remains in the water and continues the disinfection process for some time. Ozone has an active residual time measured in minutes, whereas the active residual time for chlorine is measured in hours. You can purchase equipment to test for residual ozone. The only way to know if the unit is working is to test for ozone residual or have bacterial tests conducted on the treated water. Ozonation equipment is expensive, and chlorination may still be desirable because of the low residual time of ozone.

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 microfiltration is a viable alternative treatment method for your situation. See the #19 *Questions to Ask When Purchasing Water Treatment Equipment* for more information. Consumers should inquire about the following before purchasing an ozone system:

- Has the treatment system been tested and certified by a third party to ensure that it meets manufacturer's claims?
- Are there any special installation requirements that may add to the equipment costs, for instance changes to your household plumbing?

Product Certification

NSF International is a non-profit organization that sets performance standards for water treatment devices. 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 evaluate 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 1-800-NSF-MARK or http://www.nsf.org/consumer/

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/

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