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# Do You Need a Water Treatment Product?: What You Need to Know and Ask Before Buying

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# Agricultural Engineering Update



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## DO YOU NEED A WATER TREATMENT PRODUCT?

–What you need to know and ask before buying–

by

Joseph L. Taraba, Linda M. Heaton and Thomas W. Ilvento<sup>1</sup>

### INTRODUCTION

A homeowner may have obvious problems with the drinking water system; such as, staining of porcelain sinks, stained clothes after washing, cloudy water, foul/funny tasting or smelling water or corrosion of faucets or plumbing. The homeowners may be very concerned about their water because of recent publicity, advertisements or door-to-door sales which raised issues about the quality of the drinking water from a private or public water supply. The homeowners may be concerned about the water supply after a recent educational program that was attended or presented in the local media outlets. How does that homeowner determine if a water treatment product is needed?

If a home is supplied with water from a public water system, the water must meet water quality standards that have been set by the Safe Drinking Water Act and, if these criteria are not met, the

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water system must notify consumers if a contaminant affecting health exceeds the standards. Private water supplies are not regulated or tested and it is up to the owner of that water supply to test for contaminants and protect that water supply from contamination. It is also up to the private water supply owner to choose the treatment devices to bring the water up to a quality to meet their needs and requirements.

First of all, the Federal Trade Commission suggested that the following tips should be considered:

- Some water treatment product dealers may falsely claim that the water in your area contains harmful levels of contaminants. Verify the claims by checking with your local or state department of health, the state department of environmental protection that regulates water quality or your county extension office.
- Some water treatment product dealers say their product has been approved by the Environmental Protection Agency(EPA). The EPA does not test or approve products. The EPA does require that certain devices have an EPA registration number if they contain substances controlled under the Insecticide, Fungicide and Rodenticide Act (FIFRA). EPA does not test or evaluate the performance of these products.
- If you believe your water is contaminated, have it tested by an independent laboratory. Do not rely on a salesman's in-home test or test results from a company or company-contracted laboratory.
- REMEMBER: There are bacterial and chemical, organic and inorganic, contaminants. No single treatment product will solve all these problems.

#### WHAT TO DO?

The first thing to do is test your water with a water testing laboratory that is certified for the particular tests that you want. A list of these laboratories is found in "Certified Water Testing Laboratories" (AEU-4, Agricultural Engineering Publication). A list of tests that are needed to identify a problem contaminant and its concentration are listed in the publication . It is also important to know the Total Dissolved Solids (TDS), alkalinity and the pH of the water. (These values should be part of an annual test of your water along with a bacterial test and a nitrate-nitrogen test.) These parameters are important when the type and size of treatment product to solve the particular water problem are being chosen. The companies that sell water treatment may also test your water so that they may recommend the proper equipment to treat the water problem that has been identified. It is important that you also test the water independently to confirm their results.

## HOW MUCH WATER NEEDS TO BE TREATED?

It is now important to determine how much of your water coming into your house needs to be treated for the water contaminant that is of concern. In general there are two type approaches--point-of-entry(POE) and point-of-use(POU). The POE treatment devices treats the water as it enters the house or whole house treatment and the POU treatment devices will treat water coming from a single water tap or faucet. The difference is the amount of water that is needed to be treated. A POE device will cost more than a POU device. Further, the type contaminant that is being removed may dictate a POE or a POU. For example, most nuisance problems (such as, iron, manganese, hardness, pH, odor, etc.) would suggest a POE type solution. Chemical contaminants that affect health, such as nitrate, lead, trace organics, and that are a concern for water that is only used for drinking and cooking, can be removed with POU type treatment at a separate faucet. Drinking and cooking is only between 1 to 2 percent of the total household water usage. Bacterial decontamination and some organic removal treatment methods may require POE treatment methods to eliminate human exposure during bathing, washing dishes or other water uses where some chemicals may be hazardous when inhaled or absorbed through the skin.

## GET A SECOND OPINION

When purchasing a treatment system, consider a second opinion. One company may not have the range of treatment devices for sale that can deal with the problem water that you may have and may provide a substandard treatment approach as compared to another sales company. Further, asking questions of two or more dealers will give you better insight into choosing the right treatment method.

## CONSIDER WATER CONSERVATION

In choosing between devices to treat for the same water problems, the homeowner may want to consider also the amount of water that is used by these devices in order for them to function. For example the following are approximate water usages for several water treatment devices:

- Reverse osmosis treatment devices will reject between 3 and 19 gallons of water for each gallon of water treated.
- Water softeners will use between 50 and 100 gallons of water during a regeneration.
- Iron filters will use up to 120 gallons of water during a flushing or backwash cycle and up to the same amount during the regeneration cycle (a backwash cycle may occur daily or up to three days between the cycles depending on the iron content of the water and the size of the unit).

-Sand filters for particulate removal needs backwashing on a periodic basis, and up to 120 gallons of water may be required for this procedure. The frequency of this backwashing depends on the amount of particulates that need to be removed from the water and the water usage.

#### **CAN YOUR WATER SYSTEM HANDLE THE REQUIREMENTS OF THE TREATMENT DEVICE?**

Each treatment device may require a minimum water pressure and a minimum amount of water volume to be delivered to the treatment device. For example, an iron filter may require a minimum of four gallon of water per minute to function properly during the backwash cycle. The homeowner will need to know the water pressure and the water delivery rate of the water system as it enters the home or at the point where the device is to be installed.

The other side to this question is: after the treatment device(s) are installed, will your household water system still deliver the proper amount of treated water to meet the needs of appliances or your faucets and showers? At the time of a purchasing decision, these issues may not seem apparent. But reduced water delivery to water outlets in the house can create a high degree of irritation; particularly when the only solution is the expense of installing a larger pump for your water supply or larger diameter piping.

#### **IS THERE INDEPENDENT TESTING OF WATER TREATMENT DEVICES?**

There are many devices on the market to treat each type of water problem. This presents a big problem in most cases, since the consumer has little experience to make proper judgement of the quality, effectiveness, efficiency, ease of maintenance and cost of operation of each manufacturer's device. To help the consumer, there are two independent organizations that have established minimum standards for various components of the treatment devices: National Sanitation Foundation (NSF) and Water Quality Association (WQA). NSF is a non-profit organization which establishes standards for drinking water treatment equipment, tests equipment submitted by the manufacturers and certifies that the equipment meets these standards and other pertinent standards. Devices that meet these standards are listed semi-annually in a publication of NSF and are allowed to display the NSF mark on their equipment and literature. NSF is comparable to the Underwriters Laboratories (UL) listing for electrical product standards. The WQA is an organization of water treatment manufacturers, dealers and distributors which validates filters, water softeners, reverse osmosis units and distillers for minimum construction standards and for total removal efficiencies but not the removal of a contaminant to meet any health or aesthetic standard. (See "Home Treatment Devices Listing Organizations", AEU-44, Agricultural Engineering Department, University of Kentucky for further details.) There are several other independent test laboratories that test water treatment, such as; Rodale Press, Consumer Reports and

several states require that water treatment devices independently validate their product claims and literature advertising.

#### **HOW SHOULD A HOMEOWNER CHOOSE A DEALER AND/OR A MANUFACTURER?**

Always choose to purchase water treatment equipment from a reputable local company that will be available to provide service and from manufacturers that stand behind their products. Ask for referrals to other customers who have purchased a similar type of water treatment equipment, particularly those that have had several years of experience in using the equipment. Avoid inexperienced dealers or manufacturers who may be only taking advantage of the present high public interest in the improving drinking water quality. These dealers and manufacturers many not be around in the long haul and then not be able to service, maintain or backup the equipment warranties. High pressure sales techniques with today's special deal should be looked on as suspect. If you have to sign up today to get the deal, you are being pressured. Local dealers who expect to be around in the long run don't mind that you take your time to make a decision. They intend to be there when you need help.

In choosing a dealer, distributor or manufacturer of water treatment equipment, look for competence and knowledge in the operation, choice, sizing and installation of the water treatment equipment. The WQA sets minimum standards of knowledge for water treatment businesses, sales representatives and equipment installers. Ask if they are members of the WQA and if the employees are WQA certified specialists, sales representatives and installers. WQA is a voluntary organization, so non-members are not necessarily less competent. Those individuals, who are certified by the WQA, have attended training sessions, have taken tests to demonstrate their knowledge and are required periodically to update their knowledge.

#### **BECOME KNOWLEDGEABLE ABOUT THE OPERATION AND MAINTENANCE OF THE TREATMENT EQUIPMENT.**

All water treatment equipment needs to be serviced and maintained. The more treatment equipment that you have the more the burden is on the homeowner. Manufacturers have developed advanced equipment that are automatic and self-monitoring. This helps to relieve the homeowner of some of this responsibility, but it comes at a higher price. Unless the homeowner is unusually dedicated, it may be wise to consider the extra cost of the automatic and self-monitoring type features on the equipment to get consistently high quality water. It may also be wise to consider a service agreement with a dealer to ensure correct operation of the equipment.

Almost all water treatment equipment require some monitoring or testing. Be sure that you understand what is required or offered so that you can maintain or monitor the quality of the water leaving a treatment device. For example, the free chlorine

content of the water can be measured using a test kit so that a chlorinator can be adjusted to give the proper free chlorine concentration to disinfect bacteria or to judge when a carbon filter is no longer removing the chlorine from the water, a TDS test to determine if the reverse osmosis unit is properly functioning or a pressure gauge on the inlet water line to a reverse osmosis unit to be sure the unit will operate properly.

The homeowner needs to know what the service intervals are for the equipment and the costs of this service. Filters and membranes need to be changed. Consider the costs of the supplies such as chlorine bleach for the chlorinator, salt for the water softener, oxidizing chemical for the iron filter or the neutralizing chemical for acid water.

The expected life of the treatment equipment should also be determined. A dealer that has long experience with a particular piece of equipment would be a better judge than if he is only dealing with the manufacturer's promise. Consider the warranty coverage of the equipment. Does it cover installation costs, because this can be a substantial cost if a warranty replacement is needed.

#### **SHOULD OTHER WATER SOURCES BE CONSIDERED?**

After going through the above process, the cost may be above what you may want to spend. The homeowner may then consider the rehabilitation of the present well or develop a new water source by drilling a new or deeper well. Bottled water may be a choice but it can be expensive for the long run. For the short term bottled water may be a choice if nitrates in the water are a concern particularly if water is to be used for making formula for a baby under the age of six months.