



# Carbon Filtration Basics

*Six months ago I opened the refrigerator to pour myself a glass of water from my pour-through pitcher. As I was filling my glass, I realized I could not remember the last time I changed the carbon filter. I had been thinking about replacing the filter for a while—a really long while.*

The filter in the pitcher was the last one in the box and every time I went to the store I would forget to purchase a new package. I realized that I knew little about old filters. Do they support bacterial growth? Is it more harmful to use a filter past its recommended use-by date than it is to drink water straight from the tap? Can removed contaminants sneak back into my water? I decided to discontinue use of the pitcher until I bought replacement filters.

Two months later I took a position at the Water Quality Assn. (WQA). As part of our training program, I learned a great deal about filters and now have an excellent understanding of how my carbon filter treats my water. WQA gets a number of questions regarding activated carbon filter use. Because I know firsthand that consumers can have a lack of understanding of these products, I wanted to share what I have learned.

By Amanda Thomas

Determining when to change your activated carbon filter

## How It Works

Activated carbon filtration is often used for pour-through, faucet-mounted, countertop or under-counter systems. In cases where all water in a house needs treatment, a whole-house filter also can be used.

Carbon filtration is inexpensive, treating gallons of water for just pennies. It has been known to reduce a number of aesthetic contaminants (taste, odor, chlorine or color from organic molecules), as well as health-related contaminants (atrazine, benzene, phenol, radon, pesticides, herbicides and more).

It is important to note that many other types of contaminants, such as ammonia, calcium and nitrates,

cannot be removed by simple carbon filtration. If you are looking to reduce a specific contaminant, check the system's literature to ensure that it reduces that chemical.

## Filter-Change Frequency

If the system is used for aesthetic contaminants only, you can simply replace the filter when the taste or odor of the water becomes objectionable. If you are using the filter for health-related reasons, however, you likely will not be able to detect the contaminant by taste or odor alone. Therefore, it is important to change the filter at the interval or volume of water specified by the manufacturer. If the treatment device is certified to NSF/ANSI standards 42 or 53, use the filter capacity specified on the certification body's listing. If a performance-indication device (PID) is present, change the filter when the PID activates.

## Contaminant Dumping

If the carbon bed becomes exhausted, it may unload chemicals that were trapped back into the water. However, if you follow the manufacturer's instructions, this should not happen.

Manufacturers usually recommend a timeframe or volume of water for replacement of carbon filters that is long before the bed reaches complete exhaustion, which helps prevent this dumping. Therefore it is important to follow the manufacturer's instructions, especially when using the filter for health-related contaminants.

## Bacteria Concerns

Bacteria have been known to grow in carbon filters. As long as the water

supply to the filter bed is potable, there is no reason to believe that pathogenic organisms will grow in the filter. The bacteria that do grow in these filters are harmless.

When feasible, keep water regularly flowing through your filter and back-wash with hot water (120°F to 150°F). Both methods will destroy or deter the growth of non-pathogenic organisms. It should be noted that it is possible for these non-pathogenic organisms to reduce the number of active sites present in carbon media, thus reducing the capacity of the filter.

Carbon filters are not capable of removing all bacteria from water and therefore should not be used as purifiers. They should be used only on potable water.

## Lack of Use

It is possible for a filter to desorb materials when the bed sits idle for an extended period of time, or even just overnight. Although the water is likely still good, it does not hurt to discard the first bit of water out of the unit.

## Using Your Knowledge

Now that I have become more familiar with carbon filtration, I know that I should have replaced my filter at the manufacturer's recommended three-month interval. Because my specific filter is used only to remove chlorine and improve the taste and odor of my water, there were no harmful effects of using it for as long as I did. Based on the information above, I hope you too can make an informed decision about your carbon filter. *wqp*

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