

Ultraviolet (UV) Disinfection

For Small Drinking Water Systems

Ultraviolet (UV) treatment works by exposing water to a special lamp that emits light in the ultraviolet range. Potentially harmful organisms in the water are inactivated when the light damages their DNA structure.

Source Water Quality

To work properly, a minimum dose of UV light must pass through the water at a flow rate that allows adequate time for disinfection. Some substances in water can interfere with this process. Water with high hardness (minerals) or iron, for example, can cause fouling of the quartz sleeve that surrounds the UV bulb and reduce the amount of light that shines through the water. High turbidity (caused by small particles in the water) or poor UV transmittance (caused by substances in the water that absorb light) can also hinder disinfection.

Pretreatment

Make sure that your source water is tested to determine what pretreatment is needed for the UV light to work effectively. As a minimum, one prefilter will be required (e.g. a 5 micron cartridge filter), but other treatment such as water softening, iron removal, and/or a sediment filter may also be needed.

UV Intensity Sensor

Small drinking water systems are required to be equipped with a UV sensor that monitors the UV intensity passing through the water. The sensor must activate an audible alarm and/or shut off valve (solenoid) to stop the flow of water when the UV intensity is too low to properly disinfect the water. Class A NSF/ANSI 55 UV devices are equipped with the required sensor.

Maintenance and Record Keeping

UV treatment systems will only work properly if maintained according to the manufacturer's instructions for maintenance, cleaning and part replacement. Keep the operation manual on site, as well as replacement parts such as bulbs and filters. Record the date and time of all actions in your logbook. Some examples include:

- Check/clean quartz sleeve
- Check/replace pre-filter(s)
- Check/recalibrate/replace sensor
- Check/calibrate flow regulator
- Replace bulb
- Any malfunctions or system shutdowns

Remember to keep invoices for any work done on the equipment.