

What does a UV system consist of?

A typical UV system has two pre-filters plus a UV light inside a bulb sleeve. The sleeve is inside a tube, and the water runs through the tube around the sleeve. These are located where the water first enters the house (point of entry), right after the pump. To protect your eyes and skin from damage, the outside tube covers the light.

Why do I need pre-filters?

Filters before the UV light remove debris. Microorganisms can hide in the debris. Any debris lowers the effectiveness of your UV disinfection unit, so it is important that your filters are clean and functional.

What size should the pre-filters be?

Typically, two filters are placed before the UV light. The first one is used to pick up bigger sediment and normally is a 30–10-micron filter. The second filter is usually a 5- or 1-micron filter. Sometimes one of the filters is combined with charcoal or carbon to improve the taste of the water.

UH researcher and UV expert Victor Moreland recommends these additional tips:

- Do not over-tighten the lamp assembly or sensor.
- Always disinfect the lines after maintenance.
- Be careful when sliding the lamp into place.

▶ Checklist to keep your UV unit running smoothly

- 1. Filters:** Change filters regularly, according to the manufacturer's recommendations.
- 2. Bulb:** Change the light bulb regularly, usually yearly. After the recommended period, even if the light operates, its intensity will not be enough to inactivate the disease-causing organisms.
- 3. Bulb sleeve:** Wipe the light bulb down with a soft cloth to remove iron and minerals that may coat the lamp. You can clean the sleeve with a cleaning product that removes lime. Use a soft, lint-free cloth. Rainwater is typically soft, so there usually isn't much coating

For more information, contact:

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RAINWATER CATCHMENT SOLUTIONS:

Ultra-Violet (UV) Light Water Treatment Systems



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What exactly is an ultra-violet (UV) light?

Ultra-violet light has a wavelength that is smaller than visible light, so people are unable to see it. This kind of invisible light is known for causing sunburn as well as its ability to kill microorganisms.

Why use UV for water treatment?

Ultra-violet light is popular for disinfecting water. Some advantages and disadvantages of using UV water treatment are the following:

Advantages

1. No chemicals added
2. No disinfection byproducts
3. Cost-effective
4. Fast-acting
5. Proven and trusted
6. Effective against a broader range of organisms than chlorine
7. Simple to maintain.

Disadvantages

1. No residual effect once the water passes by the light
2. The effectiveness of the disinfection may be influenced by certain water characteristics, e.g., cloudiness of the water
3. UV disinfection doesn't remove heavy metals or other non-living contaminants.

How does it work?

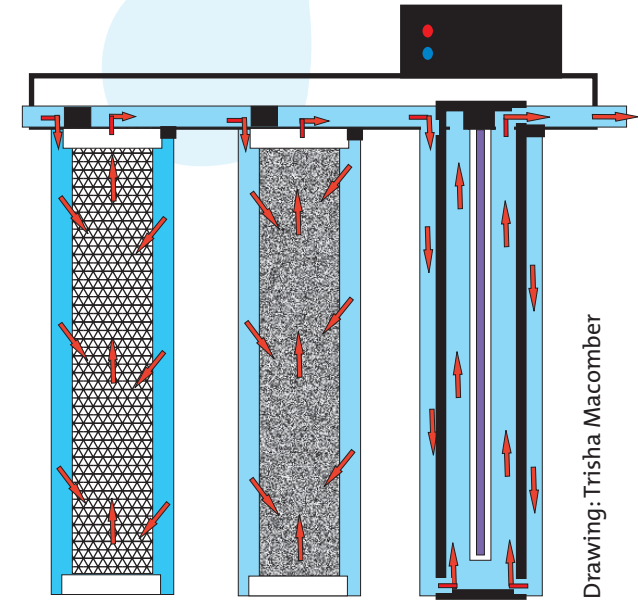
UV disinfection works because the light inactivates disease-causing organisms by destroying their DNA. DNA is what allows organisms to reproduce and infect.

What kind of UV light do I need for my water catchment?

You need a UV that provides an intensity or "fluence" strong enough to inactivate the harmful organisms found in raw water (water collected from rooftops is considered "raw" or untreated water).

The intensity or fluence is a combination of the strength of the light, the distance the light travels through the water, and the speed at which the water travels past the light. The intensity you need is 40 mJ/cm² (milli-Joules per square centimeter) or 40,000 μWsec/cm² (micro-watt seconds per square centimeter). These UV light systems are called "Class A" by NSF International, an independent water treatment certification laboratory. NSF International certifies that the manufacturer's claims are true. In order to ensure that disinfection is taking place, it is important to regulate the water type and flow to match the light intensity and specifications.

Class B UV lights operate at a lower intensity and are made for treated water, such as county or city water. Most under-sink UV systems are Class B units. Check the rating before making a purchase.



Drawing: Trisha Macomber

In this example, the pump pushes water through sediment and charcoal filters to remove debris. The filters enable the UV light to effectively disinfect water that is as clear as possible.