Ope's Water Quality 101 for solventless production

Intro to Water Quality: Understanding the Importance and Challenges to ensuring access to safe and clean water

Water Quality refers to the condition and characteristics of water,

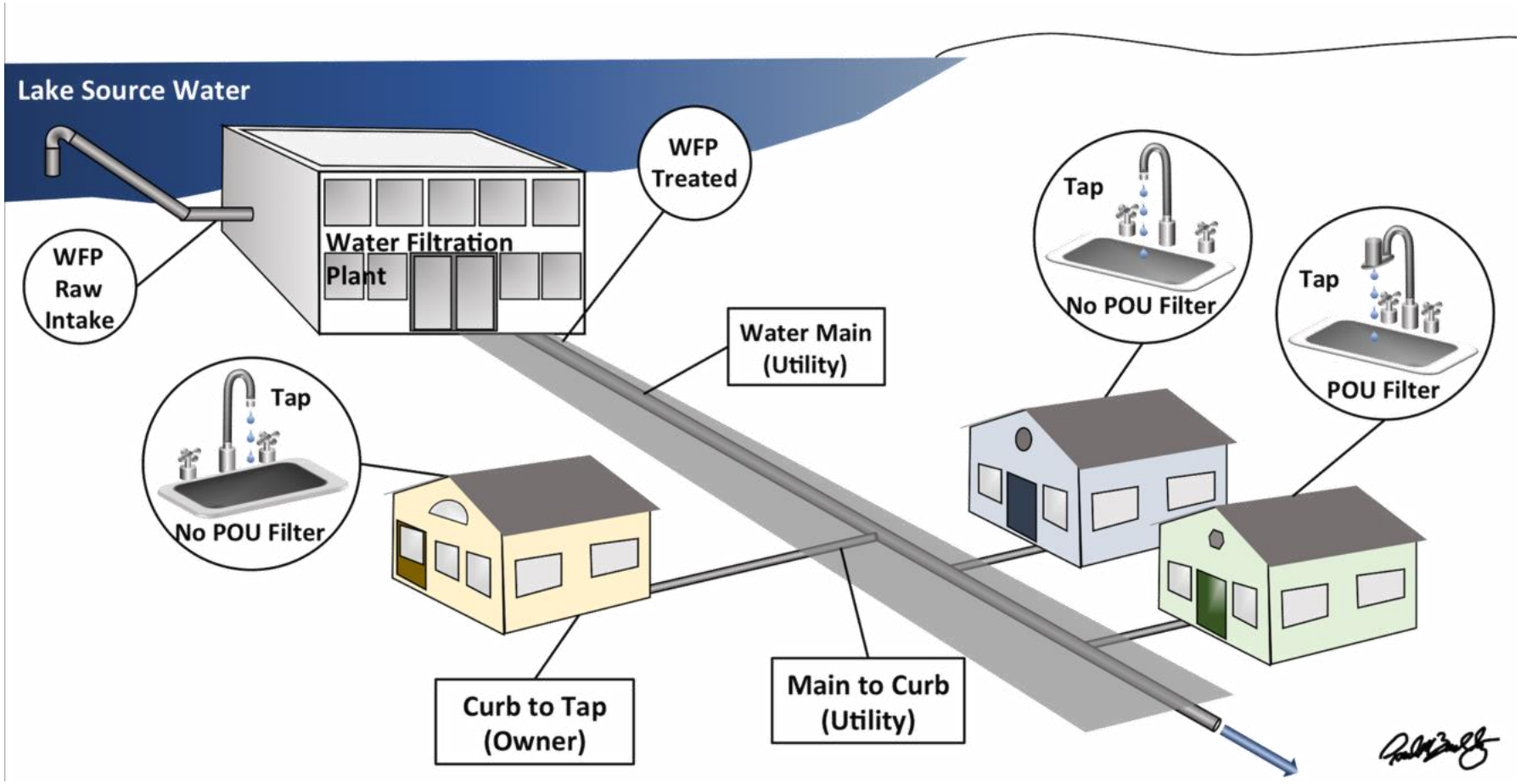
Emcompassing its suitability for various uses and the health of aquatic ecosystems, based on chemical, physical and biological properties

Key Characteristics of Water Quality

Water Quality is assessed by analyzing various parameters including

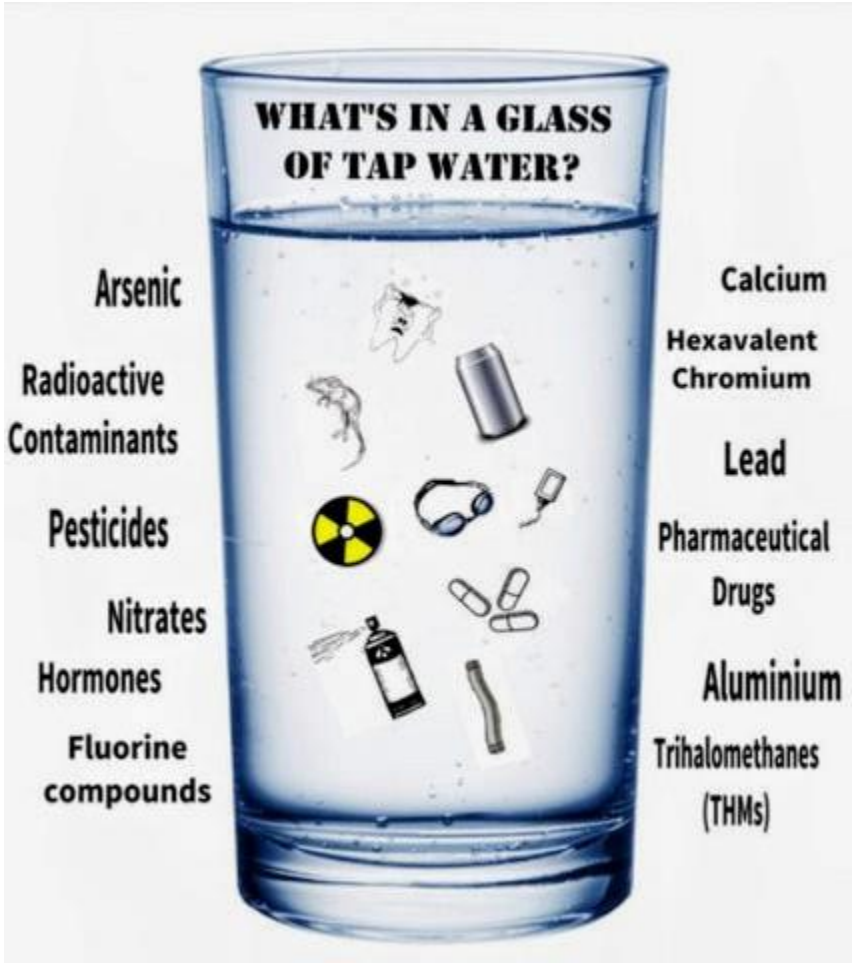
- Physical: Temperature, turbidity (cloudiness), and conductivity.
- Chemical: pH (acidity/alkalinity), dissolved oxygen, hardness, and the presence of specific pollutants (like heavy metals, pesticides, and nutrients).
- Biological: The presence and types of microorganisms, including bacteria and pathogens.

How water from the tap works



Typical Water Main

Contaminants Commonly Found in Tap Water



What you can do to improve your water quality

Water treatment is any process that improves the quality of water to make it appropriate for a specific end-use. Water treatment removes contaminants and undesirable components or reduces their concentration so that the water becomes fit for its desired end-use. This treatment is crucial to human health and allows humans to benefit from.

Adding stages to a water filtration system involves layering different types of filters to target various contaminants, with common stage

The different stages removes minerals that are both natural and results of human activities and can be measured in both ph and TDS

What is TDS?

Total dissolved solids, or TDS refers to any minerals, salts, or metals dissolved in the water.

Total dissolved solids include inorganic salts , calcium , magnesium , potassium, sodium, bicarbonates, iron, lead, fluoride , chlorides, sulfates, small amounts of organic matter and much more. High levels of TDS can contribute to equipment scaling , discolored or cloudy water, a salty metallic taste , and corroded pipes , fixtures and tubing's. TDS is measured in PPM or parts per million and is now many parts a certain molecule or compound makes up within the one million parts of the whole solution. Its typically used to describe concentrations of chemicals dissolved in a solvent(typically water) or compounds in soil.

Adding stages of filtration

Even being on public water, I always will recommend a water softener first in line before sending through your filters it will prolong the life of them by removing any hard water with high mineral content causes scaling and will clog the filters reducing their effectiveness.

Adding a whole house filter will help with adding to your water quality , health , and longevity of your plumbing and fixtures while also reducing contaminants including chlorine, chloramine, sediment, dirt and particulate matter

I generally recommend to go with something bigger on a whole house filter because the bigger the filters and the more you have the more you will catch and essentially last longer

You can go 4.5x10 or 4.5 x 20 single double or triple

What is Reverse Osmosis

- Reverse osmosis is a separation technique where pressure is applied to a solution, forcing the solvent through a semipermeable membrane from a region of low concentration to one of high concentration, effectively leaving behind the solutes. It is commonly used for water purification and to remove molecules and ions from solutions. This process allows nearly pure water to exit across the membrane while larger particles remain on one side.
- This is beneficial because this nearly removes all the TDS in from the water

Average TDS In:

Tap Water= 350ppm+

RO Water= 20ppm+

RO and DI= 0 ppm

Typical Types of reverse osmosis that can be used

- 150gpd+

- 1000gpd+

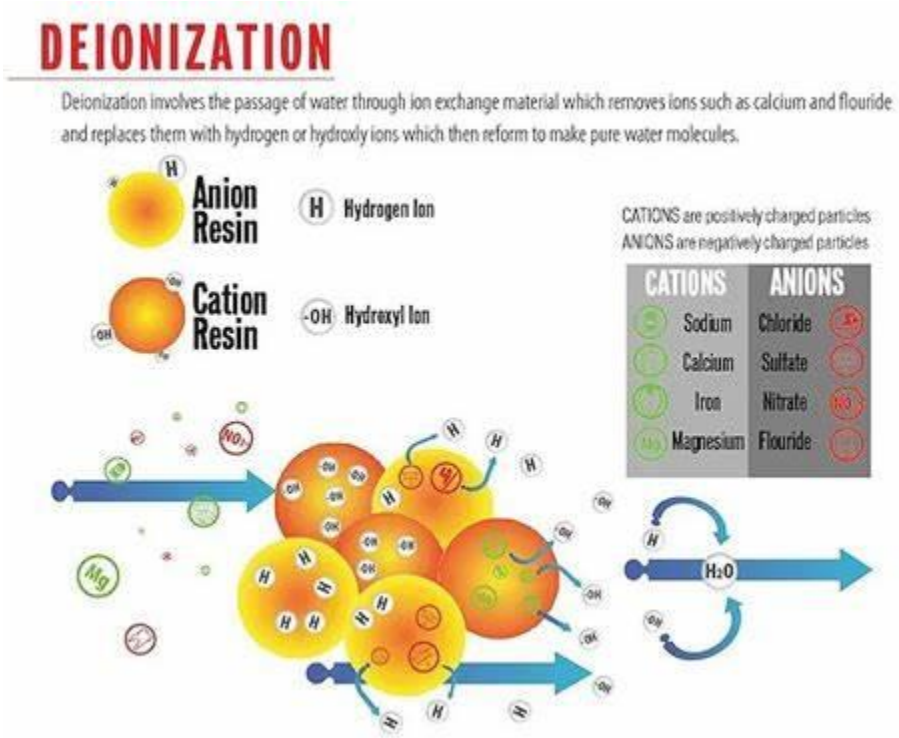
Common Type of Reverse Osmosis Pumps

Typical Deionizer

What is DI or DeIonized Water

- **Deionized water** is water that has had all its mineral ions removed through an ion exchange process, resulting in a liquid that is nearly pure H_2O. This process strips away dissolved solids such as iron, calcium, and other minerals, making it completely free of charge. Deionized water is one of the purest forms of water and is commonly used in medical, pharmaceutical, and laboratory applications due to its lack of impurities.
- This will be the only way to achieve a true 0ppm water when ran with the reverse osmosis and will change in rate depending how big or small your set up is . The more water and the bigger system you have the more extensive your DI will need to be to able to keep up with the demand to remove all the TDS

How Deionization Works



Acceptable amounts of TDS in Solventless Processing

- Ideally you want o ppm , or as close to it as possible . If you rinse your hash off with any amount of TDS, you are introducing whatever amount of TDS into the hash therefore contaminating it, The only way to rid of contamination is to rinse completely with oppm ultrapure water
- No amounts of dissolved solids should ever be smoked or vaporized. There are a number of health defects from drinking water with high level TDS let alone from smoking or vaporizing it
- Even after drying your Hash will still contain TDS with a multitude of inorganic salts, calcium, magnesium, potassium, sodium, bicarbonates, iron, lead, fluoride, chlorides, sulfates and much more
- Contaminated water and TDS can and will introduce foreign microorganisms, minerals and particles and will jeopardize your quality of your final product

Inline TDS meter

How UV Water Sterilizer Works?