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WHERE DOES DRINKING WATER COME FROM?

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Where does our faucet's drinking water come from?

We are so used to simply turning on our faucets to see water flow from it, that we don't even ask ourselves how it gets there. Yet, it is an interesting question: water treatment and its transportation vary in different places, so how does it get to our homes?

First, how do we define "drinking water"? According to the B64.10 norm, drinking water is water that is safe for human consumption, meaning it presents no health risk.

For this water to arrive in our homes, it must go through 6 steps, including 5 treatments.

The first step is gaining access to water. Water is usually extracted from underground sources or lakes and rivers. It is then pumped to treatment facilities where it undergoes several treatments.

1. Screening and straining

The water goes through a large screen, or bar-screen, that will separate the large debris (wood, rubble, fish…) from the water

2. Coagulation and floculation

Then comes the coagulation and flocculation step. This process aims to get rid of the smaller particles still in the water, like algae or sediments. A product, often alum, acts as a "coagulant". It will make these smaller particles lump together into larger masses that can fall to the bottom of the container. These masses are then evacuated in the sewer systems.

3. Filtration

This process' purpose is to eliminate approximately 85% of the bacteria. The water goes through a filter made of minerals like sand or silica. The filter is usually one meter wide and creates a porous surface through which the water can go, therefore being purified.

4. Ozonation

This process is one of the last ones and is used to eliminate the taste and smell of water. The ozonation process uses O_3 molecules to emit gas bubbles that will oxidize the organic materials. The ozone eliminates the remaining particles after the filtration step, such as bacteria and viruses. Upon contact with ozone gas, bacteria are destroyed, and viruses become inactive. Ozone isn't a residual disinfectant, meaning after the chemical reaction, the molecule dissolves.

5. Chlorination

Since ozone isn't a residual disinfectant, factories add chlorine to water to stop the multiplication of bacteria in the water conducts. Chlorine can be dangerous for consumers' health, so a very precise dose must be calculated to avoid any harm to users. Chlorination being a crucial step, several analyses of water are done daily and on different locations of the water network to ensure its quality.

Once all the treatments are done, water is transported to water tanks to be stored. It is from that point that water will be redistributed to conducts, and ultimately, faucets.

Is it the best solution?

Water goes through a long process before we can consume it. The question today would maybe be the following one: is this process the best solution? There are still instances of water contamination during the process. Also, when we know that the waste from one filtration station is picked up afterwards by other facilities downstream, is this model truly sustainable? These questions will most likely take an increasing importance in the future, in the crucial task of protecting water.

Ville de Montréal - L'eau de Montréal - Production de l'eau potable (montreal.qc.ca)

D'où vient l'eau du robinet | Waterlogic

Our expertise | Darspec