

About Water



8.9.2023



Clean Water is Vital

- Both humans and animals cannot live without water.
- Clean tap water is a rare privilege: potable tap water is found only in 28 countries in the world
- Tap water is healthy and safe everywhere in Finland.

Clean Water is Vital

- According to UNICEF, everyone needs access to at least 15-20 liters of clean water a day to survive and stay healthy.
- In Oulu, about 130 liters of water is used a day per person.
- Dirty water causes a range of illnesses in countries where water supply is defective.
- The cleanliness of tap water is being monitored daily by taking samples in Finland.

Where does tap water come from?

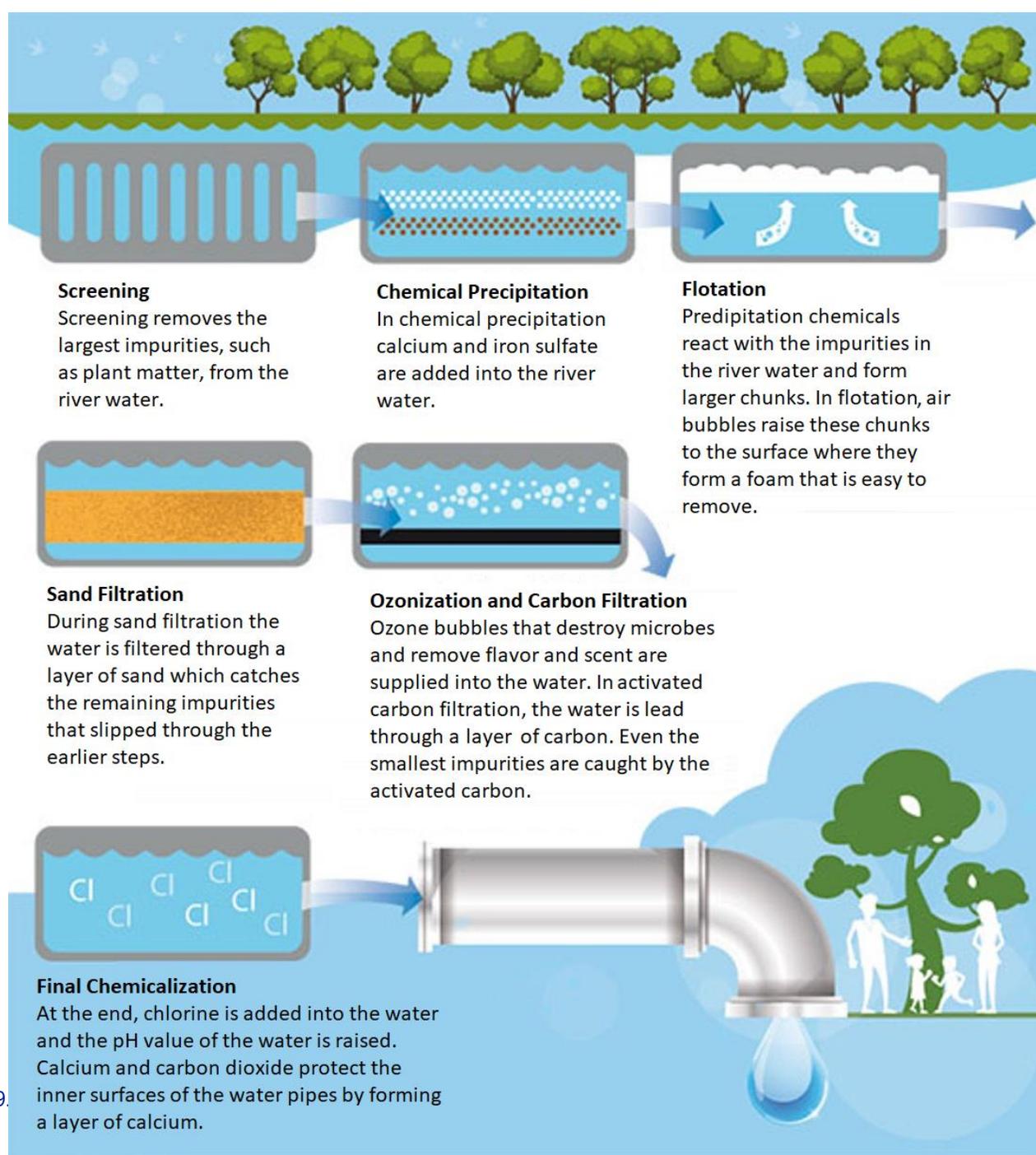
- Water can be prepared for humans from rivers, lakes, or from groundwater, which is found underground. In Oulu, water comes from the Oulujoki or from groundwater.
- River water is purified in two water treatment plants.
- There are multiple treatment plants for groundwater in the Oulu region.
- Water is purified around the clock, and everyday enough water is prepared that it could fill seven swimming pools.

Water Preparation Requires Precision

- Water purification is a multi-stage process.
- It takes around five hours for water to travel through the water plant.
- Tap water preparation purifies untreated water from all harmful substances and microbes, so that the water isn't dangerous to human health.
- Dirty substances and harmful microbes end up in surface waters from the environment due to rains, drainage, air, and human activity. So, surface water always requires thorough treatment.
- Groundwater often requires some treatment also. In Oulu, groundwaters are treated by alkalifying and UV disinfection when needed. When necessary iron and manganese are also removed from the waters.



Sewage Purification Treatment



Water Flows Under the Ground

- There are pipes underground carrying clean water as well as sewage water.
- Oulu has
 - 1980 kilometers of water pipes
 - 1330 kilometers of sewage pipes
 - 680 kilometers of rainwater pipes
- The pipes vary in sizes, up to 160 cm in diameter.
- If we straightened all the pipes, they would reach all the way to Latvia.

Water Towers

- Water towers store clean water.
- The towers fill up each night, and during the day the water is directed into the water pipes.
- There are five active water towers in Oulu: Puolivälinkangas, Maikkula, Kiiminki, Oulunsalo, and Haukipudas.



Networks are Constructed and Repaired



- Oulu has a large surface area and it has a lot of pipe networks.
- Each year Oulu Waterworks constructs or renovates a total of 40 km of new and old networks.
- There the amount of renovation needs to increase in order to secure water quality and avoid malfunctions.

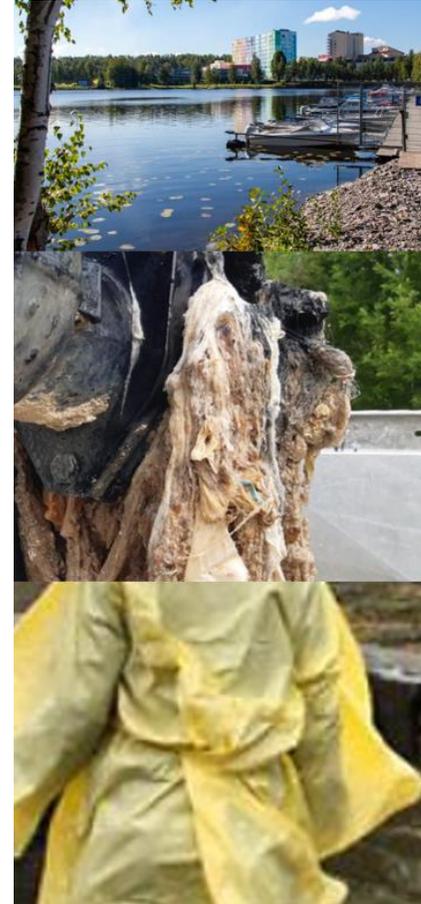
Substances don't Disappear in the Sewers

- Harmful substances in the sewers might disturb sewage purification.
- Do not put oils, heavy metals, paints, medicine etc. into toilet bowls or wash basins.
- Oils, lasting organic compounds, and heavy metals are harmful to purification treatment and to the marine environment.
- Microplastics end up being eaten by fish. Other harmful substances from the environment also stick to plastics.
- Heavy metals end up in sludge and may disturb its further use as fertilizer.



Recent Events are Visible in the Sewers

- Disposable face masks and gloves flushed down toilets cause blockages in sewers. Around 400 cubic meters of sewage was released into lake Saimaa. Swimming was banned in the lake.
- Disposable face masks and disinfectant wipes are thrown carelessly into sewers. Clearing blocked sewers costs 300 € each time.
- Festival customers protected themselves from the rain in Oulu. After the weekend, disposable rain coats appeared in sewers and water treatment plants.



Sewage Water Purification is Important

- If we didn't purify sewage, a notable amount of solid matter and nutrients would end up in the sea. Harmful and dangerous substances would destroy marine environment and would also cause health dangers to humans.
- Solid matter would cause nutrient loading, muddy the waters, and consume oxygen from the water. Excess nutrients eutrophicate marine areas.
- Most of the harmful substances that end up in sewage originate from ordinary homes.

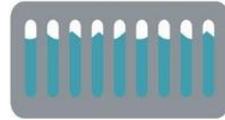
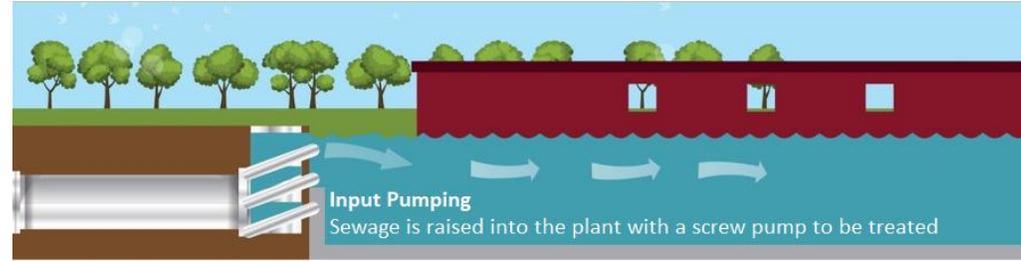


Sewage from Oulainen is purified in the water treatment plant in Taskila

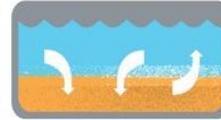
- Sewage purification is a multi-stage process.
- At the treatment plant sludge and sewage is separated from the water.
- Purified water is released into the sea, and it does not harm wildlife.



Sewage Purification Treatment



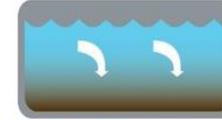
Screening
Solid trash is separated from the sewage with a sieve.



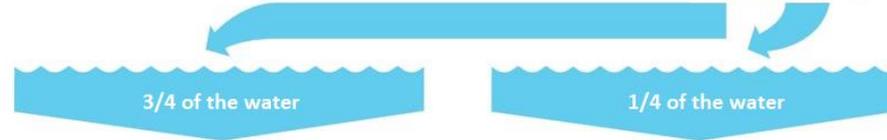
Sand Separation
Air is used to separate sand from the sewage.



Flocculation
Flocculants bind impurities into larger solid particles.



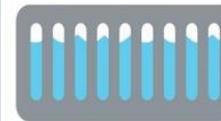
Pre-Clarification
Settling process separates the water and the sludge, which is pumped to be processed further.



Aeration Basin
Inside the aeration basins the sewage is purified biologically with the help of microbes.



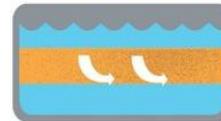
After-Clarification
Sludge is separated from the sewage and it is returned to the aeration basin.



Screening
Solid trash is separated from the sewage with a sieve.



Aeration Basin
Inside the aeration basins the sewage is purified biologically with the help of microbes.



After-Filtration
Water is pushed through a sand filter.



Membrane Filtration
Sludge is separated from the sewage with a membrane filter. Sludge is returned into the aeration basins.



Save Water Everyday



- We use water everyday for washing, cooking, drinking, doing the dishes, and using the toilet.
- Water preparation and sewage treatment requires chemicals and energy.
- When you save water you also save energy!

Shower only when Needed

1 minute in the shower = 12 liters of water



5 minutes in the shower = 60 liters of water



15 minutes in the shower = 180 liters of water



Water Footprint

- Water footprint illustrates the importance of water in our lives.
- A water footprint consists of all our water use: water straight from the tap as well as so-called virtual water.
- You can calculate your own water footprint conveniently with [the Water Footprint Calculator](#) made by the Finnish Environment Institute. (In Finnish)

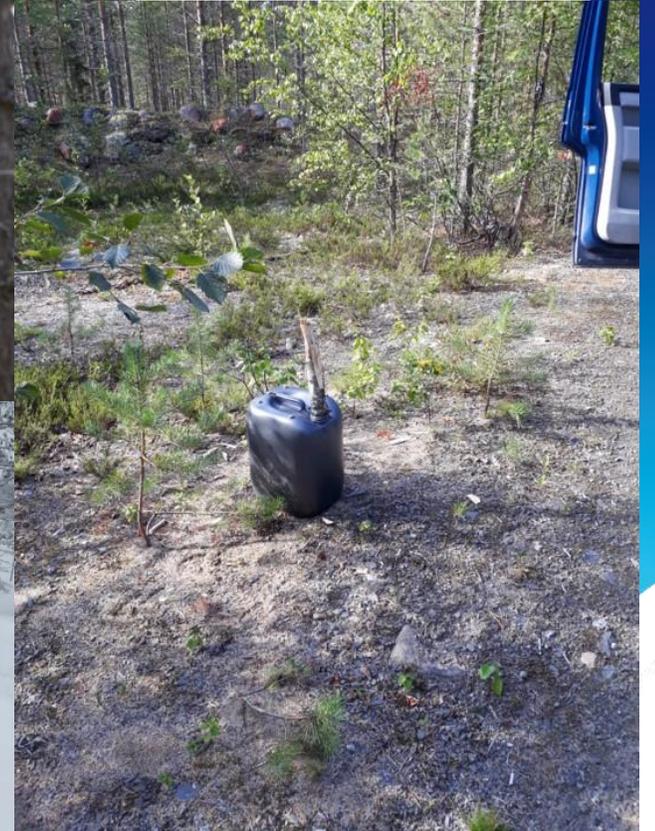
Water Footprints of some Products

<https://waterfootprint.org/en/resources/interactive-tools/product-gallery/>

- Milk, 1020 l/kg
- Cotton, 10 000 l/kg
- Coffee, 18 900 l/kg. ~130 l per cup
- Tea, 8 900 l/kg
- Chocolate, 17 200 l/kg
- Beef, 15 500 l/kg
- Banana, 790 l/kg
- Apple, 822 l/kg
- Potato, 290 l/kg

Be Observant around Groundwater areas!

- One important responsibility around groundwater areas is observation.
- At worst, trash and garbage thrown into nature could even contaminate groundwaters.



What can I do?

- Use water sparingly
- Take care of nature: don't throw trash into waters or sewers
- Don't flush anything down the toilet that doesn't belong in the waterways
- Admire our beautiful rivers and lakes, and enjoy clean Finnish tap water with a smile on your face 😊



**Thank you for
your interest**

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