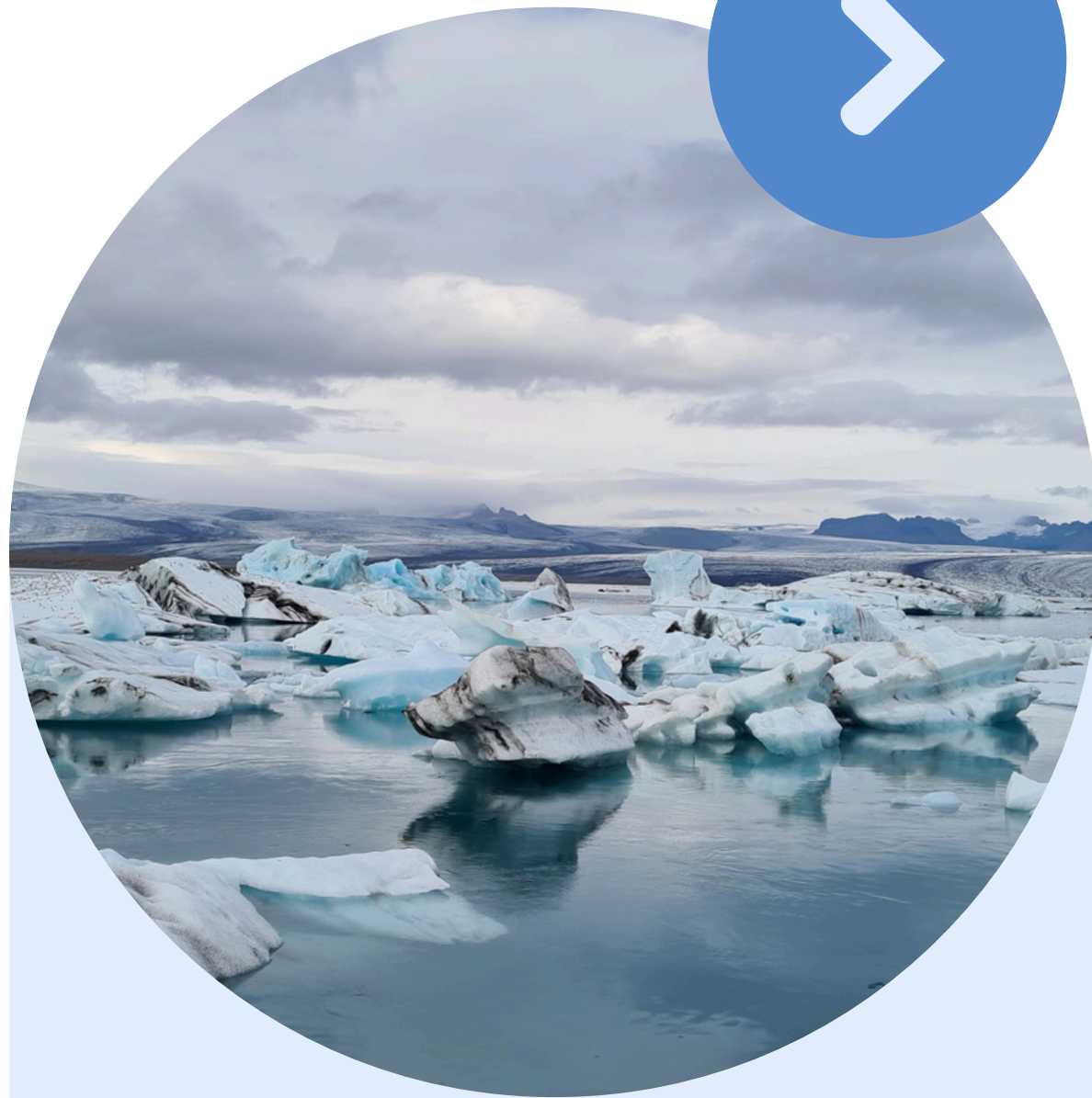


8 GLASSES CLEAN WATER PROGRAM - REVERSE OSMOSIS SYSTEM

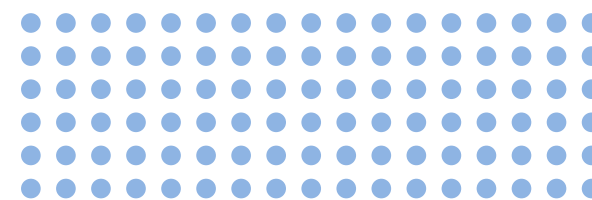
National University of Laos





Learning Outcomes and Goals

This training manual hopes to enable you to understand and operate a small RO water treatment system. Our aim for you is that at the end of these 4 weeks, you should be able to explain how the system works, identify its parts, monitor its performance, and carry out basic operating and maintenance procedures.



Week 1: Introduction to Water Treatment and Reverse Osmosis Basics

The objectives for your first week include:



Recognizing why water treatment is important.



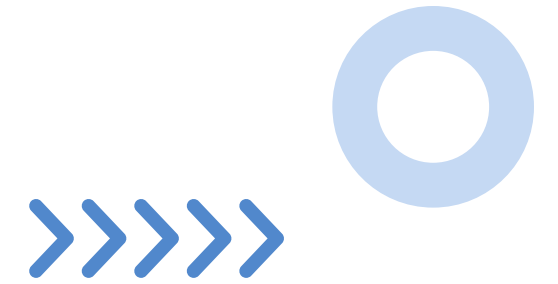
Learning about common water contaminants and the need for filtration.



Understanding the concept of osmosis.



To receive an overview of the pilot-scale RO system at NUOL



Why Treat Water?

Water Contamination

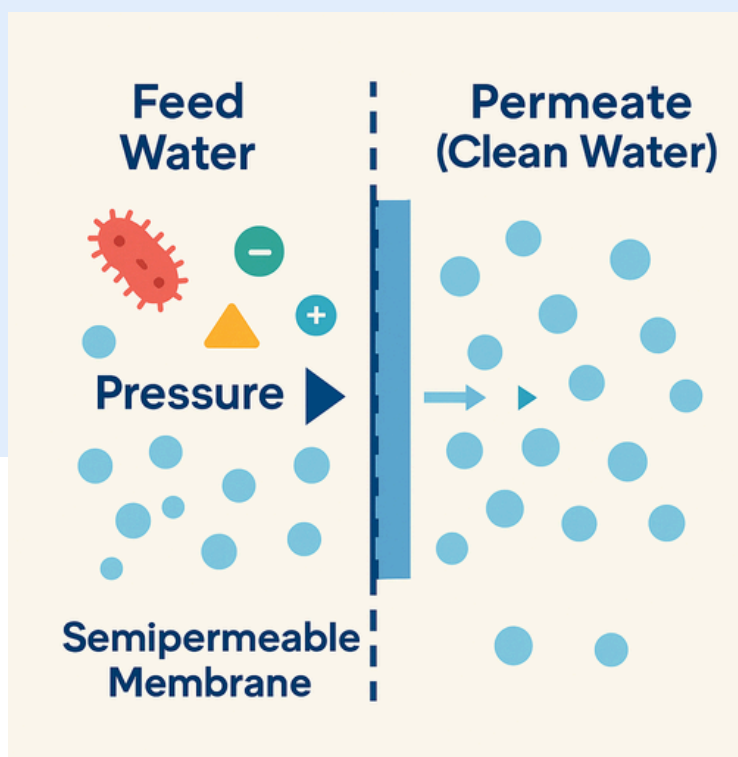
Most water from natural sources (rivers, wells) contains impurities like dirt, germs, or chemicals. Drinking untreated water can cause illness.

Water Treatment

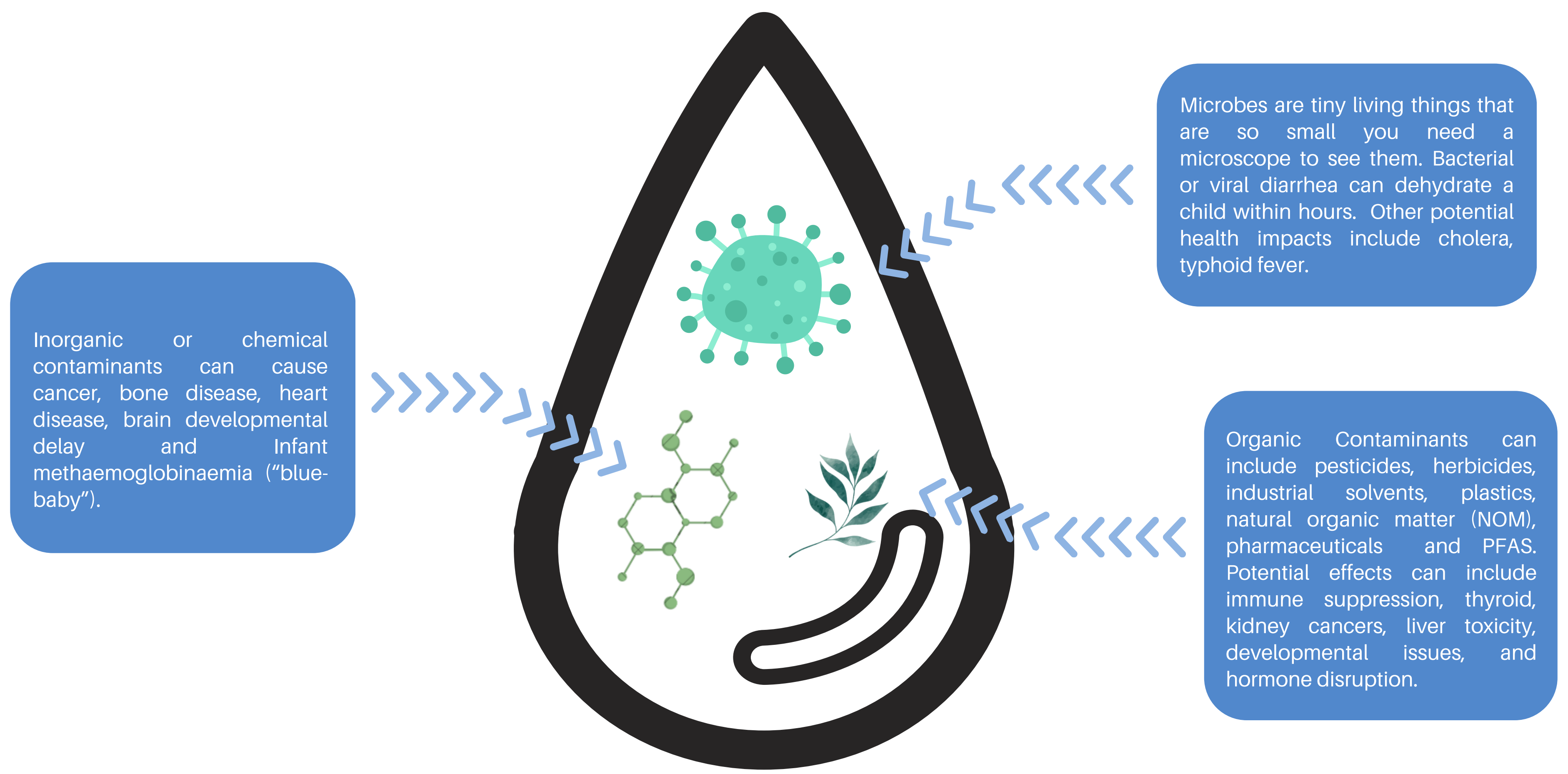
Water treatment removes harmful substances to make water safe.

Filtration

Filters can be considered a barrier to remove particles, similarly to how using a cloth can strain out sand from water.



Though clear-looking water looks okay, it can that still makes people sick - what might be in it?



Inorganic or chemical contaminants can cause cancer, bone disease, heart disease, brain developmental delay and Infant methaemoglobinaemia ("blue-baby").

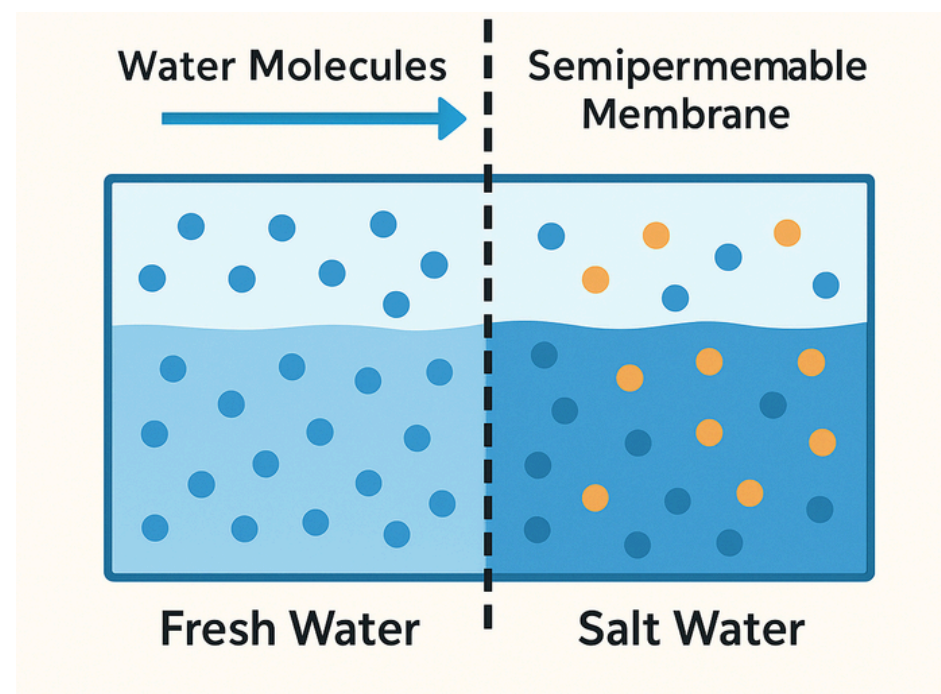
Microbes are tiny living things that are so small you need a microscope to see them. Bacterial or viral diarrhea can dehydrate a child within hours. Other potential health impacts include cholera, typhoid fever.

Organic Contaminants can include pesticides, herbicides, industrial solvents, plastics, natural organic matter (NOM), pharmaceuticals and PFAS. Potential effects can include immune suppression, thyroid, kidney cancers, liver toxicity, developmental issues, and hormone disruption.

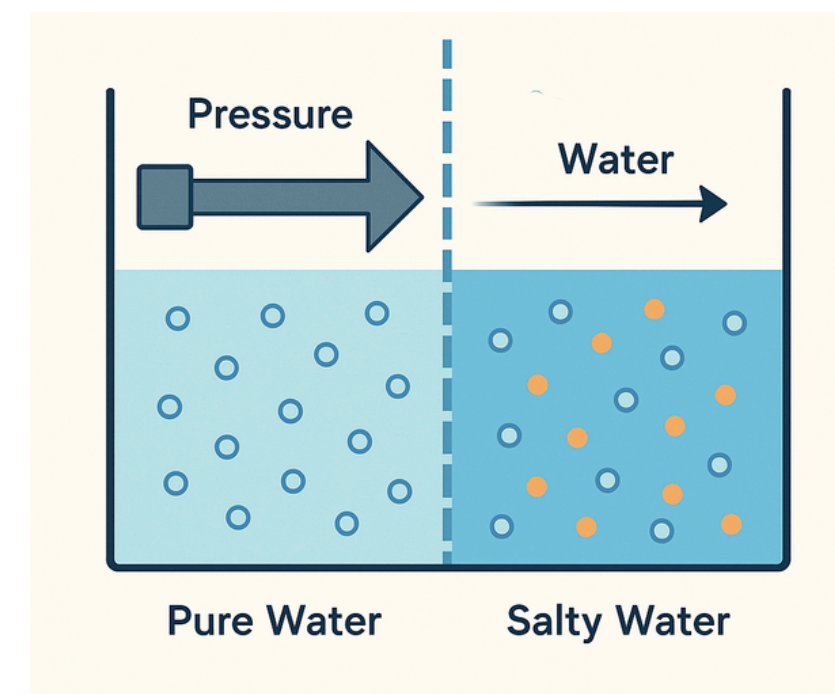
Osmosis and Reverse Osmosis

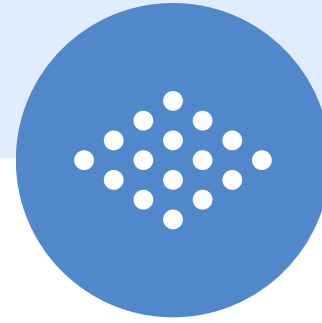
Osmosis is the automatic movement of water through a thin “selective” barrier (a semipermeable membrane) from the side where the water is more pure (fewer dissolved particles) to the side where the water is less pure (more dissolved particles) until the two sides even out.

in normal osmosis, water moves from less salty to more salty by itself to balance concentrations.



Reverse osmosis is when we force water in the opposite direction (from salty to fresh) by applying pressure.





QUIZ 1



Add email contact