



# CLEAN YOUR WATER

## BACKGROUND

The astronauts onboard the International Space Station (ISS) join those of us on Earth in the recycling effort. The astronauts recycle their water. This includes the moisture they exhale and sweat, as well as the water they use to shower and shave. These wastewaters are purified and then used as drinking water. The ISS uses filtration and temperature sterilization to ensure the water is safe to drink. Water is checked often to ensure it meets the water quality requirements and monitored closely for bacteria and pollutants.

## MATERIALS

2 liters of dirty water (add 1 cup of dirt to 2 liters water to make thin but opaque liquid)  
2-liter soda bottle cut in half (by an adult)  
Alum (found in spice aisle in grocery store)  
beach sand or play sand  
coarse sand napkins or paper towels  
small pebbles (natural colored aquarium rocks work well)  
cotton balls, coffee filters, old clean socks, tulle and/or gauze squares



## PROCEDURE

Put the top half of the soda bottle upside-down (like a funnel) inside the bottom half.  
The top half will be where you build your filter; the bottom half will hold the filtered water.  
Layer the filter materials inside the top half of the bottle.  
Think about what each material might remove from the dirty water and in what order you should layer the materials.

Pour the dirty water through the filter. What does the filtered water look like?

Take the filter apart and look at the different layers. Can you tell what each material removed from the water?

Wipe the bottle clean and try again. Try putting materials in different layers or using different amounts of materials.

Now it's time to experiment.

Think of a question you want answered. Like, are there better materials for cleaning water?

Be sure to predict what you think is going to happen. Then, test it out using different materials.

For an added challenge, try using only two or three of the materials to build your filter.

**NOTE: The water you have cleaned is not disinfected. Do not drink.**