

B2.1 Purifying water with soil



Mia and her brother, Ben, are hiking in the mountains with their parents. They are both very thirsty, but their water bottle is already empty. Finally, they reach a spring with clear water bubbling out of it. Mia starts drinking from the water. However, Ben says, “Mia, you shouldn’t drink the water. It’s dirty.” “Why do you think that?” Mia asks. “It looks very clean, so nice and clear.”



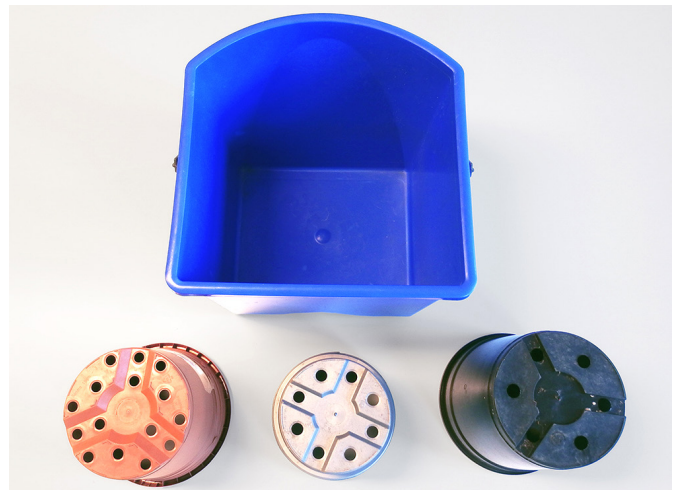
Why does the water come out of the spring so clear?



Write down your ideas and guesses:

You need the following for the experiment:

- ☐ 3 flowerpots (with holes of different sizes in the bottom)
- ☐ 1 large plastic tub



Required materials.

- ☐ 1 drinking glass
- ☐ 1 magnifying glass
- ☐ 1 mixing spoon
- ☐ Large and small stones, sand, soil, small sticks (approx. four handfuls of each)
- ☐ Water



Required materials.



How to set up the experiment:

Lay out all the materials as shown in the photo.

Make a sludgy mixture:

1. Take the drinking glass and fill it halfway with water.
2. Now add sand, soil, small stones, and the sticks.
3. Stir the mixture so that you have really dirty water.



How to conduct the experiment:

Tip: Maybe you can slightly elevate your “flower-pot tower” so that the experiment works better.

1. Fill the flowerpot with the biggest holes halfway with the larger stones.
2. Fill the flowerpot with the medium holes halfway with soil.
3. Fill the flowerpot with the smallest holes halfway with sand.
4. Place the flowerpot with the sand in the plastic tub.
5. Then place the flowerpot with the soil on the first flowerpot.
6. Lastly, place the flowerpot with the stones on top.
7. Now, slowly pour the contaminated water into the flowerpot tower.
8. Wait until the water runs into the plastic tub (which can take a while), and then observe it with the magnifying glass.

**Write down your observations:**

Describe what the water looks like when it flows out of the tower and into the plastic tub. Look at the water with the magnifying glass.

**Evaluate your observations:**

1. What role did the materials in the individual flowerpots play?

2. Now you can explain to Ben why clean water can come out of the ground. Write down the explanation in a sentence.

**Doing further research:**

1. Make a sludgy mixture again!
2. Stir it very carefully.
3. Place the drinking glass in the middle of the table and observe. Use the magnifying glass as an aid and be patient!
4. Write down step by step what you notice!