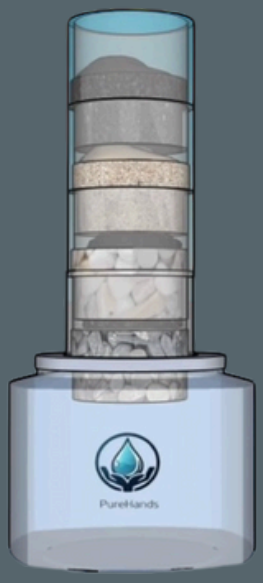
PureHands Lab Instruction Manual



Clean Water Science Kit For Young Scientists

Ages 5–12

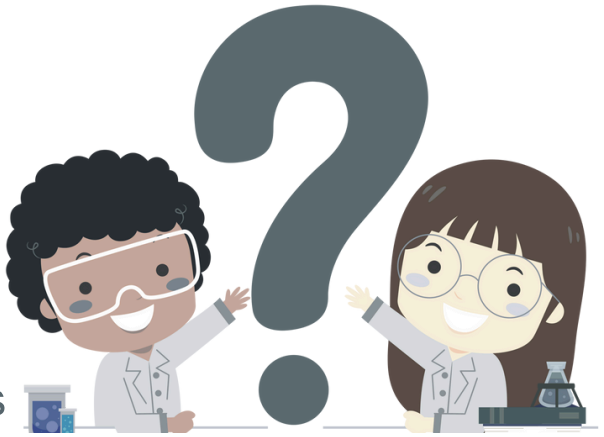
*adult supervision required

OUR MISSION

MILLIONS OF PEOPLE AROUND THE WORLD DON'T HAVE CLEAN WATER.
BUT YOU CAN HELP US TEST WAYS TO MAKE IT!
PUREHANDS LAB LETS YOU BECOME A CLEAN WATER SCIENTIST

WE WANT TO DISCOVER

- What works best ?
- What needs fixing?
- How to build better ideas



Format:

This activity can be completed individually, in pairs, or in small groups.

Each kit includes

- Large canister
- 4 interlocking canisters
- Coarse gravel
- Fine gravel
- Sand
- Activated charcoal
- Testing strips
- Goggles
- Instruction Manual
- Filters

EXPERIMENT SUGGESTIONS

BEFORE YOU BEGIN

Your job is to clean dirty water. But first, let's make some!

Here are some safe and fun ways to make dirty water:

- Mix water with a little soil or sand from outside
- Add a few pieces of crushed leaves or grass
- Stir in a small amount of cocoa powder or instant coffee
- Add a drop of dish soap (just one!)

EXPERIMENT 1: STARTING OUT 

- Add layers from bottom to top: Charcoal, Sand, Fine gravel, Coarse gravel
- Connect canisters, lock into larger repository
- Slowly pour in your dirty water.
- Use your testing strip and your eyes! Write down the results.

Try Again Tip: Did water go through too fast or too slow? Try adjusting the amounts of each layer.

EXPERIMENT 2: UPSIDE DOWN CHALLENGE 

- Reverse layers from bottom to top: Coarse Gravel, Fine Gravel, Sand, Charcoal
- Connect canisters, lock into larger repository
- Slowly pour in your dirty water.
- Use your testing strip and your eyes! Write down the results.

Take notes: Did adjusting the layers change the results?

REMEMBER, NEVER DRINK THE WATER YOU TEST, EVEN IF IT LOOKS CLEAN OR THE TESTING STRIPS SAY IT'S SAFE. THIS WATER IS FOR LEARNING ONLY — NOT FOR DRINKING!

EXPERIMENT SUGGESTIONS

EXPERIMENT 3: ROLE OF PAPER FILTER

- Add layers from bottom to top: Charcoal, Sand, Fine gravel, Coarse gravel- **but this time use the provided cellulose filter (it's the round circle included in the box)**
- Put the filter in each canister, then layer as noted above.
- Connect canisters, lock into larger repository
- Slowly pour in your dirty water.
- Use your testing strip and your eyes! Write down the results.

Observe: How did the additional barrier affect filtration?

EXPERIMENT 4: THE MISSING MATERIAL

- What if you had to clean water, but were missing one of the materials?
- Remove that material from your filter
- Build the filter as usual.
- Pour in your dirty water
- Observe and test the results.

Ask yourself: What happens when a layer is missing? Which material seems the most important?

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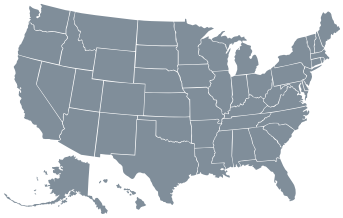
WHY CLEAN WATER MATTERS

THE BIG PICTURE

- 1 in 3 people around the world don't have access to safe drinking water.
- Over 700 children under 5 die every day from unsafe water and poor sanitation.
- In some parts of the world, families walk over 3 miles just to collect water —often dirty water—from rivers or ponds.

CLOSER TO HOME



- More than 9 million households in the U.S. still get water through lead pipes —which can poison the water they drink.
- Flint, Michigan faced a water crisis for over 5 years after dangerous levels of lead were found in the tap water.

DID YOU KNOW?

- Clean water for hand-washing can cut the spread of illness by 50%.
- It takes over 3,000 gallons of water to make just one pair of jeans.
- One plastic bottle breaks into more than 10,000 micro-plastic pieces—many end up in our water.

THINK ABOUT

- What if you had to walk for your water?
- What if you had to choose between going to school or collecting water for your family?

WHAT YOU CAN DO

You're already a clean water scientist. Now let's take the next step.

TEN THINGS YOU CAN DO TO PROTECT WATER

1. Use a reusable water bottle instead of plastic ones.
2. Turn off the tap while brushing your teeth.
3. Give a short presentation about what you learned.
4. Write a letter or draw a picture for a local leader asking them to protect clean water.
5. Organize or join a clean-up day at a park or stream.
6. Film yourself explaining water filtration in under 10 seconds—then share on social media.
7. Make signs for school bathrooms to remind others to save water.
8. Raise funds with friends—try a lemonade stand, bracelet sale for clean water causes.
9. Research a country with limited clean water and share one thing you learned.
10. Start a plastic-free challenge at your school or with friends.

YOUR WATER LITERACY TOOLKIT

Learn how water works, and how you can help save it!

PureHands Lab

What Is Water Literacy?

Water in your house usually comes from big pipes underground or from wells. Some homes collect rainwater too! We use water to drink, cook, bathe, and wash things.

What Happens to Dirty Water?

After we brush our teeth or flush the toliet, the water goes down drains and travels to a treatment plant to be cleaned before it goes back to nature.
Never flush wipes, paper towels, or garbage—those can clog pipes!

Can Water Make Us Sick?

Yes! Dirty water can contain germs or chemicals! That's why clean water is so important!

How Can We Help at Home?

Turn off the tap while brushing your teeth.
Help your family check for leaks

What Does PureHands Lab Do?

Learn. Test. Save. Share.

Be a Water Hero in your home, school, and community!

My Water Pledge

I pledge to:

- [x] Conserve water during everyday activities
- [x] Never waste water at home or school
- [x] Teach others about water issues and solutions
- [x] Learn more about water in my community and the world

Sign your name and date:

_____

Congratulations!

You're now part of the PureHands Lab team. Keep exploring, build solutions, and inspire others to take care of water.