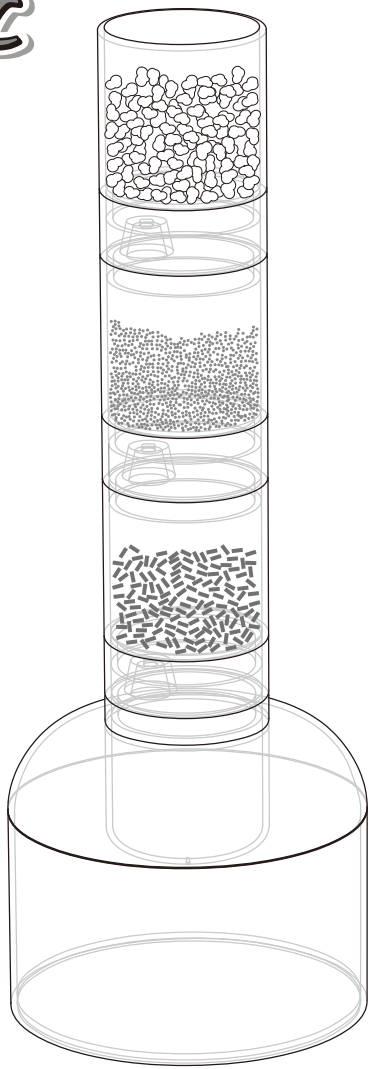
eco science

Assembly & Instruction

Manual

Water Filtration Kit

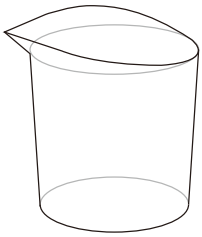


WARNING:
This set contains chemicals that may be harmful if misused.
Read cautions on individual containers carefully.
Not to be used by children except under adult supervision.

WARNING: Adult supervision required

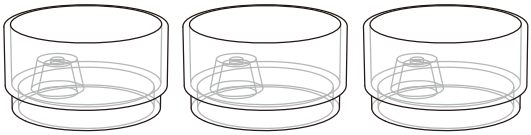
8+

Contents

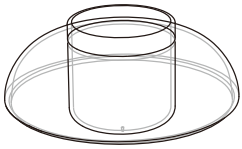


50ml measuring cup

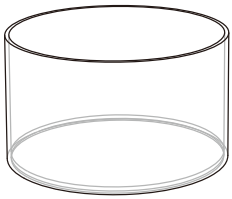
3 Filter Section



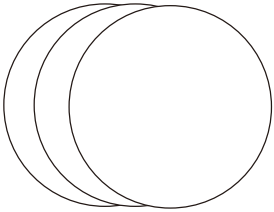
3 Observation Section



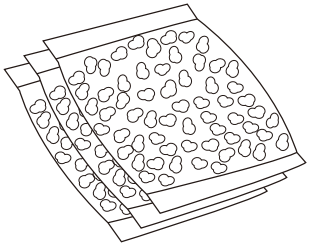
Reservoir Lid



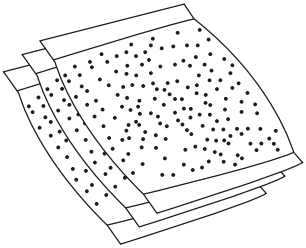
Reservoir



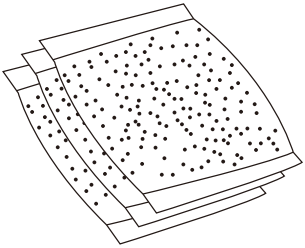
12 pieces of filter paper



3 bags of Gravel Rocks(65g each)



3 bags of Sand(65g each)



3 bags of Active Carbon (30g each)

General first aid information

In case of eye contact: Wash out eye with plenty of water, holding eye open if necessary. Seek immediate medical advice.
If swallowed: Wash out mouth with water, drink some fresh water. Do not induce vomiting. Seek immediate medical advice.
In case of inhalation: Remove person to fresh air.
In case of skin contact and burns: Wash affected area with plenty of water for 10 minutes.
In case of doubt seek medical advice without delay. Take the chemical together with the container with you.
In case of injury always seek medical advice.

Record the telephone number of your local hospital (or local poison centre) in the box below.

(write the number in NOW so you do not have to search for it in an emergency)

Telephone Local Hospital:

Take Chemical with you to the hospital

Advice for supervising adults

• Read and follow these instructions, the safety rules and the first aid information, and keep for reference.
• The incorrect use of chemicals can cause injury and damage to health. Only carry out those activities which are listed in the instructions.
• This chemical set is for use only of children over 8 years of age.
• Because children's abilities vary so much, even within age groups, supervising adults should exercise discretion as to which experiments are suitable and safe for them. The instructions should enable supervisors to assess any experiment to establish its suitability for a particular child.
• The supervising adult should discuss the warnings and safety information with the child or children before commencing the experiments. Particular attention should be paid to the safe handling of acids, alkalis and flammable liquids.
• The area surrounding the experiment should be kept clear of any obstruction and away from the storage of food. It should be well lit and ventilated and close to a water supply. A solid table with a heat resistant top should be provided.

The Safety Rules

Read these instructions before use, follow them and keep them for reference.
Keep young children, animals and those not wearing eye protection away from the experimental area.
Always wear eye protection.
Store this experimental set out of reach of children under 8 years of age.
Clean all equipment after use.
Make sure that all containers are fully closed and properly stored after use.
Ensure that all empty containers are disposed of properly;
Wash hands after carrying out experiments.
DO NOT use any equipment which has not been supplied with the set or recommended in the instructions for use.
DO NOT eat or drink in the experimental area.
DO NOT allow chemicals to come into contact with the eyes or mouth.
DO NOT replace foodstuffs in original container. Dispose of immediately.
Disposal of chemicals should be in accordance with local regulations.

Science of Water Filtration

Water goes on quite a journey to reach our taps, safe and ready to drink. One of many important steps in this process is filtration, which uses layers to sift contaminants out of the water. Edu-Toys introduces Water Filtration Kit telling kids how water gets cleaned by building a simple filtration system and more……

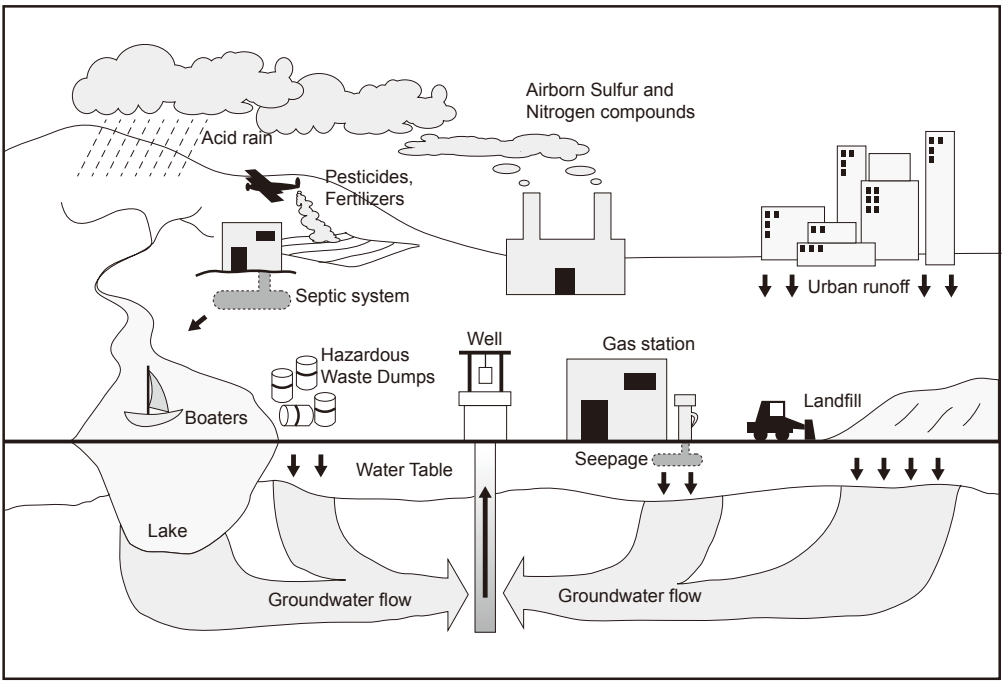
What's Water Contamination?

Water contamination is the term used to describe hazardous materials of any kind that are polluting a source of water. This could include both biological and chemical substances, and the water source may be ponds, lakes, seas, oceans, or reservoirs used for drinking and bathing by humans. The most common types of water contamination are chemical runoff from homes and businesses and sometimes human or animal waste materials.

In industrialized nations, water contamination is much less common than in third world and developing countries. That's because sophisticated water purification systems are in place to clean waste materials from the water, disinfect it using chemicals, and then purify it so that it is safe for consumption. Areas that do not have these technologies may encounter contaminated water due to animal wastes entering the water supply or household chemicals running from the ground into underground wells.

Most sources of water contamination in the industrialized world come from chemical pollution, either from the dumping of chemicals onto the ground or down drains, or through accidental spills. Oil spills, for instance, may occur from wells or ships and can contaminate water for miles from the spill site. Industrial plants may also dump wastes into water, although this is less common due to tighter government regulations regarding disposing of hazardous materials.

Any harmful material that enters water could be considered a form of water contamination. Drinking polluted water has been linked to gastrointestinal upset, the spread of certain illnesses, and sometimes death in severe cases.



What's a Water Filtration System?

Whether water is drawn from a well or sprayed from a faucet, sometimes it is not fit for human consumption. In some cases, it is even dangerous for many animals. A water filtration system can often solve this issue, as it separates contaminants in the water from the fluid. There are many methods, but the goal of most of them is usually to filter harmful substances from water.

One of the most common water filtration system types available uses carbon to filter contaminants. A carbon filter is particularly useful if a test indicates there are pesticides, chlorine, or other organic chemicals present in the water. This type of water filtration system is not helpful if there is chloroform, fluoride, lead, or microbes.

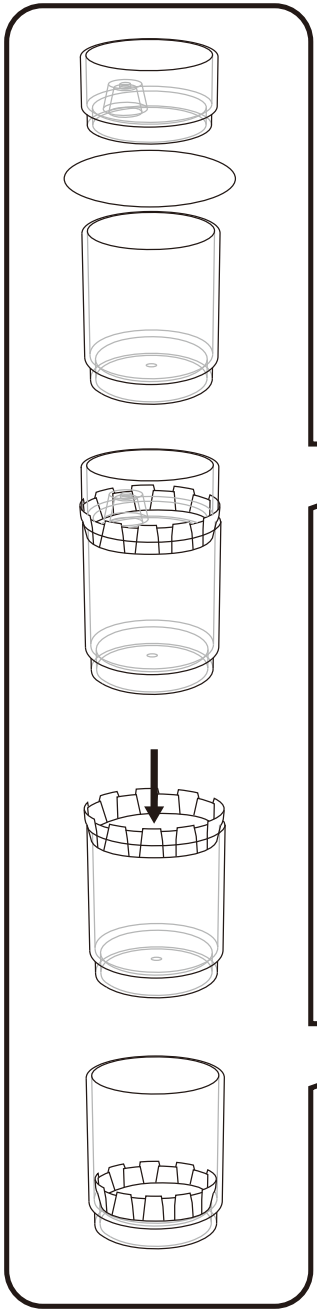
A water filtration system can be integrated into a plumbing line and is called a whole-house system. This will ensure that baths, showers, and both dishwasher and laundry cycles are as free of contaminants as faucets are. On the other hand, an approach that is usually less costly is to install only a faucet-mounted system. This kind often can be purchased at a local home improvement store and installed by the homeowner, but does usually require frequent filter changes.

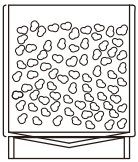
Consequences can result from unfiltered water. Some of the most harmful problems include impaired development, cancer, heart disease, gastrointestinal issues, and even death due to bacteria. Less serious issues range from constantly cloudy water to rust stains on appliances and clothes.

Not only is filtered water generally better for people to drink, it usually tastes better as well. Many whole-house filtration systems are quite expensive, and though the kind that is connected to a faucet is typically cheaper, it still needs to be purchased and installed. There are other options, such as small filtered pitchers that can be filled with water from the faucet to be purified. Additionally, many newer refrigerators come equipped with their own filtration systems in the door so that some purified drinking water is available.

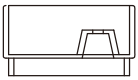
Edu-Toys Water Filtration Kit provides the giant size do-it-yourself stacking containers with layers enabling kids to observe and experience how running water can be cleaned up to drinking water.

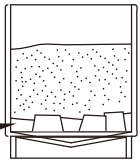
Construction





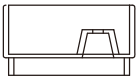
Gravel Rocks

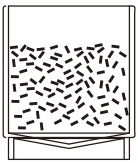




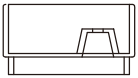
Sand

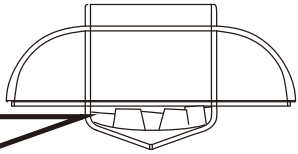
*Place a filter paper into the filter section before putting in sand to prevent them from falling off.



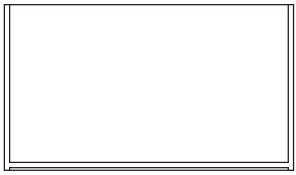


Active Carbon





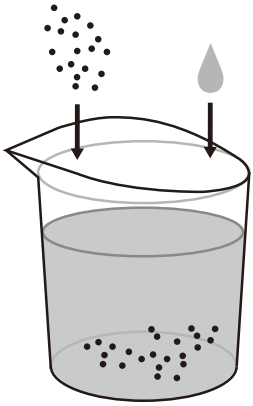
Filter paper



*Rinse the gravels, sand, and active carbon powder once with clean water before use.

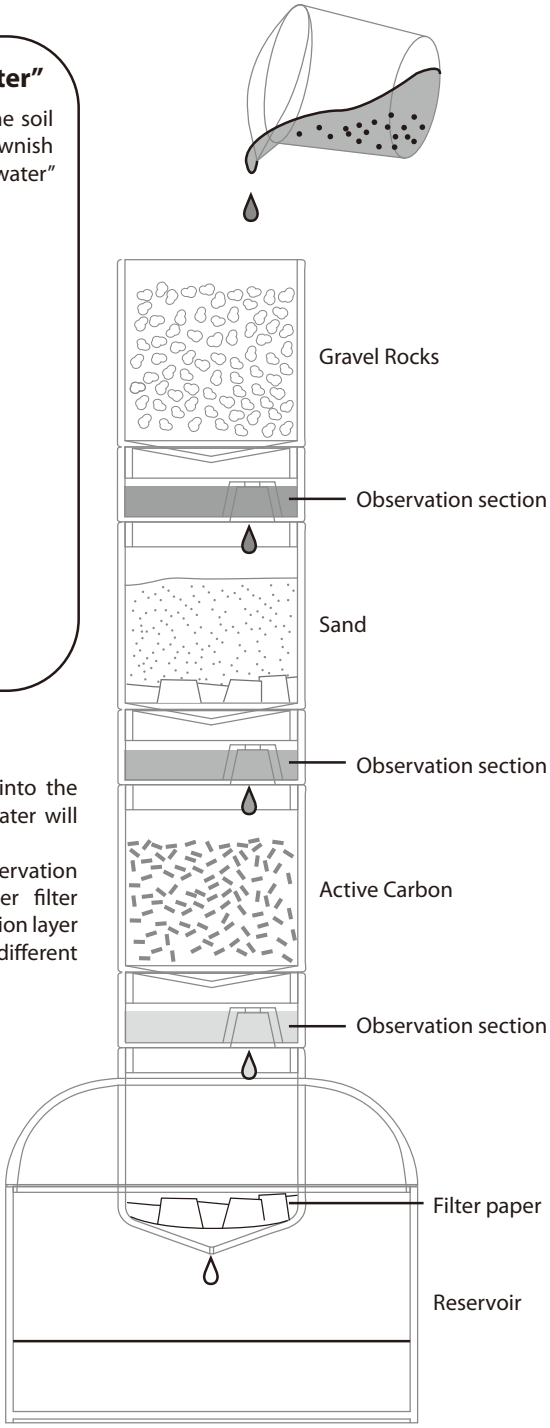
Preparing the artificial "dirty water"

Half fill a small glass with water. Add some soil and oil and stir it till it become a brownish colored mixture. This will be the "dirty water" used in the experiment.



Pour some prepared "dirty water" mixture into the top of the filter column very slowly. The water will trickle slowly down through the filters.
There will be water remains in every observation section before they drip off into another filter column. Compare the result of each observation layer and you will see the different functions of different filter materials.

*Warning: The filter column is not intended as a filtering device for drinking water. Do not drink the filtered water.



P38-CM055-81041000