

June 7 - Clean Water

With it starting to heat up outside, I thought that we could try this solar water cleaner, you need a clear sunny day for it to work. With a few things you can find in your house and a clear sunny day you can make a simple water cleaner, and clean that muddy water you may see out in the backyard after all the rain we have been getting.

***Always remember to ask an adult before doing any Science experiment.**

Materials

A large pan or tub

Glass – it needs to be shorter than your pan

2 small rocks that have been cleaned

Plastic wrap – big enough to fit over the pan

Masking tape

Procedure

1. Find a nice sunny place to work, where the sun will shine all day on your pan
2. Fill the pan with muddy water; you want it to be about 5 cm deep.
3. Put the glass in the middle of the pan right side up and place one of the clean rocks in the glass to keep it in place.
4. Cover the pan with the plastic wrap and tape it so that it won't move, it needs to be tight and securely in place.
5. Place the other rock on the plastic wrap right above the glass, make sure there is room between the plastic wrap and the top of the glass, if there isn't pull the plastic wrap tighter and tape it again.
6. Leave your water clean in the sun all day and watch what happens.

Explanation

You should have collected clean water in the glass through out the day, so how did it happen? The heat from the sun, heats the water up, turning it into water vapour. The Vapour then rises, when it hits the cooler plastic wrap it condenses back into water droplets. The water droplets roll along the plastic wrap to the lowest point (where you have the rock) and once enough droplets collect the water falls into the glass and collects there. The water that collects has been purified through a process called distillation, it has very few impurities in it (but you still shouldn't drink it, even though it will look clean enough to drink). The dirt and other things that make up the mud in the water don't evaporate at the same temperature as the water, so as the water vaporizes and rises it leaves the mud behind.

Please use distillation a lot to separate different substances from mixtures. It can be used to make fresh water out of salt water. And a lot of the bottled water that you buy in the store has been cleaned using distillation.

Have a great week!

Erin Dunham-Greggains

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June 14 - Colourful Tees

I have been holding onto this experiment for a while now, waiting to use it for one of my weekly columns for everyone else to try. Years ago I remember tie-dying shirts at brownie and guide camps by wrapping parts of shirts with elastic bands and then dipping the whole shirt into dye. My shirts were always just the one color, now I have found a way to make your shirt as many colors as you want.

You will be using Rubbing Alcohol to make you shirt so you need to be in a well ventilated area – either outdoors or in a room with lots of open windows, and you need to keep any flames away from it, rubbing alcohol is very flammable.

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Materials:

White preshrunk cotton t-shirt
Sharpie markers in different colors
Plastic cup
Elastics
Rubbing alcohol
Eye dropper

Procedure:

1. Place the t-shirt over the cup and place the section of the shirt that you want to color over the opening of the cup. Use the elastics to hold the shirt in place tightly.
2. Dot the fabric a couple of times with one of the markers. You can put dots of another color in the spaces too if you want to. You should have about a quarter sized circle of dots.
3. Drop about 15 drops of rubbing alcohol on the middle of the marker dots and watch them spread. The colors will be carried by the rubbing alcohol.
4. You can add as much or as little rubbing alcohol as you want. Your pattern will vary depending on how much rubbing alcohol you use. Just don't let the rubbing alcohol go past the edges of the cup.
5. Let your design dry before you move on to another area, it should take about 3 to 5 minutes, depending on how much rubbing alcohol you used.
6. When you are done designing your shirt you need to set the design in, to do this put your shirt in the dryer for about 15 minutes.

Explanation:

Sharpie markers are permanent ink, that won't be washed away with water, but they are soluble in rubbing alcohol, so as the rubbing alcohol moves along the shirt it carries the color molecules along with it as it spreads out in a circular pattern.

Your shirt design is only limited by what you come up with to try. Try making different shapes other than just a circle, try different color combinations. Use different amounts of rubbing

alcohol, maybe try dropping some more alcohol on a spot that is almost dry to see what happens then.

Have some fun this week making a new shirt, using your imagination.

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