

**Your task is to design a water filter that can clean and reuse dirty water used to wash cars!**

A **water filter** is a tool that can remove objects like dirt from water so that it is clean. Water filters are used in different places to create clean water that can be used for washing cars, watering plants, and for drinking water. **Your challenge is to create a water filter tool that can catch and clean 1 cup of water that you will use to clean a toy car covered in dirt.**



### **Step One: Get inspired!**

In 2022, it hasn't been raining very much in California so there isn't a lot of freshwater available for us to use for things like baths, showers, car washes, and washing dishes. People that live in California will have to come up with new ideas to save the freshwater that we have and not waste it.

Did you know that around half of the water used to wash a car at a car wash has to be caught, cleaned, and reused so that we don't waste the limited freshwater that we have. How can you design a water filter tool that can catch and clean the 1 cup of water you use to wash a dirty toy car?

For this challenge, it might help to think about how a screen door can let fresh air in but keep flies out. How can you make your water filter so that it lets water through but keeps dirt out?

**For this engineering challenge, NEVER drink the water - even after it has been filtered.**

### **Step Two: Choose your Materials to make your water filter**

- You can make your water filter using many different materials. Remember that your water filter device must be able to catch AND clean the 1 cup of water that you use to wash your dirty toy car.
- Think about what you might use to catch the water as the car is being washed. Could you use a bowl, cup, or something else?
- How will your water filter clean the dirty water? What kind of materials have big enough holes to allow water to pass through but small enough holes to catch the dirt?
- Will your water catcher and filter be connected? What type of materials will you need to connect them? Will you use tape or glue?

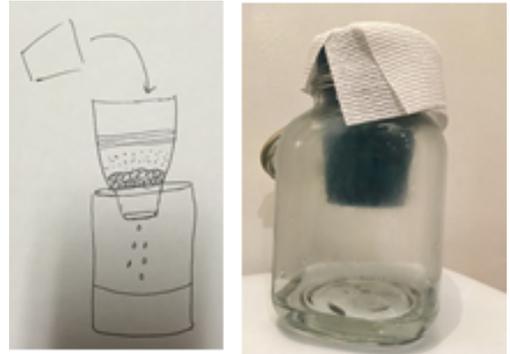
### Step Three: Designing your water filter

First draw a sketch of your water filter! Think of materials you have at your house that you can clean the water with.

### Step Four: Building your water filter

Next start building your water filter! Even if your filter does not work right away, keep at it!

Once you have successfully built your water filter tool, test it out by washing your toy car. Was your tool able to catch the water? Did your water filter clean the water? Try and think of new ways that you can make the water even cleaner by changing the design of your filter. You may want to consider using different materials to make your filter.



If you would like more inspiration click the links below:

- [Sesame Street: Power of Yet](#)
- [Sesame Street: Don't Give Up](#),

If you liked this challenge, click the links below to find out more!

Video shows why water filtration is important for Space Travel!

- [STEM water filtration](#) about the international space station
- [water Recycling](#) about filtration on the international space station

- [PBS video](#) on how we treat and filter drinking water that is stored in a reservoir.

### Step 5: Sharing your water filter on Instagram or email.

We want to see your water filter! With permission from your parent, or guardian, share a picture of your water filter for our instagram page. Direct messaging or emailing an image of your challenge gives us the written consent to redistribute the image on our [website](#) and official instagram page.



**Instagram:** @sciencecircuswhittier **Email:** [sciencecircuswhittier@gmail.com](mailto:sciencecircuswhittier@gmail.com)