

## Kidney Filtration Demo

Kids and parents can create a visual example of how a kidney filters using simple household items.

Ages: Elementary (with assistance) or middle school

### Things you will need:

- Coffee filter
- Sand (can also use sugar, table salt, ground coffee or other granular material)
- Two clear glasses or jars
- A rubber band
- Water
- Food coloring (optional)

### Instructions:

1. Fill one glass with water and add a drop or two of red food coloring (if desired). Add a spoonful or two of sand to the water.
2. This first glass (glass with red water and sand in it) represents your blood, and the sand represents the waste products. These waste products are created naturally by our body when it does things like digest food or when we exercise and use our muscles. But too many of these waste products can make our body not function right. The kidneys are in charge of filtering out these waste products
3. Place a coffee filter over the top of the second glass and secure with a rubber band. If you have a cone shaped filter you can set the filter inside the glass.
4. The second glass (glass with filter on it) represents your kidneys. The coffee filter around the top represents tiny structures within the kidneys called nephrons.
  - a. There are around 1 million nephrons working in each of your kidneys!
  - b. Nephrons are what actually filter blood, removing the waste products our bodies don't need so that our muscles and organs can work properly
5. Very carefully pour the contents of the first glass (with red solution and sand into the second glass)
  - a. Watch how the coffee filter (the nephrons) captures the waste products
  - b. If some of the liquid won't filter through gently shake or push the sand around to get all liquid through
6. After all liquid has filtered through, you can see the nice, clean liquid in the bottom of the glass which is your clean blood, and that will get sent back throughout your body.
7. Now look at the coffee filter. It has all the sand (waste product). In your kidneys these waste products would be taken to the bladder, in the form of urine to be removed from the body.

Try this activity at home to see for yourself how the kidneys work. Record yourself filtering “blood” and share with your friends and family so they can learn how the kidneys work too.