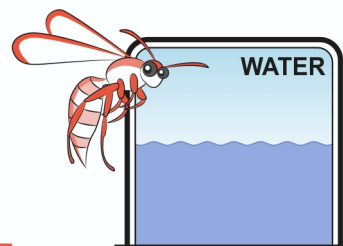


## Filtering – Teacher Notes



**Filtration involves passing a liquid and solid mixture through a solid permeable barrier that separates solids from liquids.**

Kitchen sieves separate rice from water, tea strainers separate tea leaves from liquid tea and lettuce spinners separate leaves from washing water. All are **filters**.

The liquid that passes through a filter is called **filtrate**.

Filter paper comes in varying qualities which are rated to control filter speed and size of solids retained. Schools without filter paper may use Chux towel or equivalent kitchen towels cut to size. They are however less efficient.

Students should not prod or probe damp filter paper as holes created will allow solids to escape.

If schools do not have filter funnels or beakers use scissors to cut washed clear cool drink bottles as shown in the picture alongside



Sand used for the rough filtering activity must be pre-washed to remove fines. Place it in a bucket, cover with water, give it a good swirl and quickly decant the coloured water. Repeat four times. Coarse sand is easier to clean than fine sand.

### Control of variables

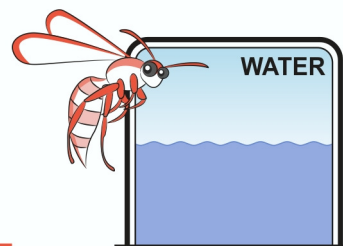
In a fair test, all variables must be controlled (kept the same) except the one we are testing. In this experiment the controlled variables are:

<b>Sand</b>	<b>equal measures</b>	<b>E.g. 3 tablespoonsful</b>
<b>Bottles</b>	<b>equal volumes</b>	<b>E.g. All same cool drink bottles of same size,</b>
<b>Dirty water</b>	<b>equal solids</b>	<b>E.g. Stir before collecting same volume of water</b>

### Sari experiment

A sari is the dress worn by many women in the Indian sub-continent. It can be from four to eight metres in length and made from woven materials ranging from silk to cotton. The World Health Organisation has tested using sari material as a filter to decrease water borne diseases during times of flood. They have found that four layers of sari are sufficient to filter out all but the smallest diseases. Even the poorest woman can give a fair protection to her family using her own clothes. An old sheet or pillowcase can be cut into squares larger than the diameter of the filter funnel for the sari experiment. Unbleached calico is useful and inexpensive.

## Filtering – Teacher Notes



### DANGER

**Filtering water only removes solids. It does not remove germs and dissolved substances.** This can be demonstrated by paper filtering a clean solution of tap water and dissolved salt. Students are asked to vote on whether the filtrate will taste salty. Those who think it will not are encouraged to taste the filtrate. Similarly food colouring can be added to water before filtering

Filtrate can be tested for bacteria and fungi by growing drops in a nutrient gel (see 'Growing Bacterial & Fungal Colonies – Teacher Notes').