

Investigation Report (Year 7): Water purification

Water purification: comparing household filters

Aim

The aim of this investigation is to compare the effectiveness of different materials as filters for polluted water. The materials that will be tested are a tea towel, a kitchen chux and a sponge.

Introduction

Different materials filter water in a range of ways. This is due to the threads that are inside the material used.

Hypothesis

It is expected that the sponge will be the most effective material for filtering polluted water. This is because the sponge material will be able to trap the dirt from the polluted water.

Materials

- Polluted water
- 3 jars
- Measuring cylinder
- Tea towel
- Kitchen chux
- Coffee filter paper
- Sponge
- Scissors
- Electric scale
- Rubber bands

Method

1. Fold tea towel and chux to make them the same thickness as the sponge.
2. Measure the weight of each piece of filtering material using the electric scale.
3. Cut the filtering materials to a size that fits over the jar, with the extra material to hang over the edge.
4. Attach filtering materials to the tops of jars using a rubber band.
5. Measure 50 ml of polluted water with a measuring cylinder.
6. Pour the polluted water slowly over the tea towel on the first jar.
7. Measure another 50 ml of polluted water with a measuring cylinder.
8. Pour the polluted water slowly over the chux on the second jar.
9. Measure 50 ml of polluted water with a measuring cylinder.
10. Pour the polluted water over the sponge on the third jar.
11. Record the appearance of the filtrates in the three jars in the results table.
12. Leave the jars overnight to let the filtering materials and sediment dry.
13. Remove the filtering material from the jars and weigh them with the electric scale.
14. Record the weights in the results table.

Clear title and section headings to identify the stages of the report

Third person

Present and future tenses used in Aim and Hypothesis sections

No contractions

Bulleted list of required items

Verbs to begin each step of the procedure

Use of scientific terms (eg. *filtering material, sediment, measured, filtrates*)

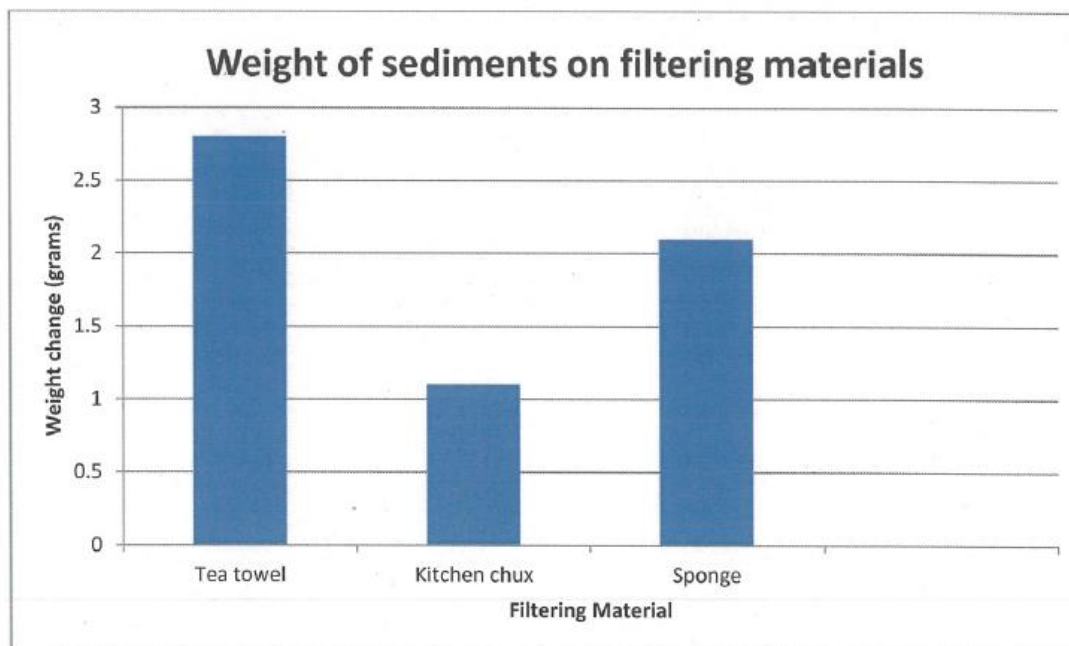
Results

Table 1 – Results of filtering

Filtering material	Weight before (grams)	Weight after (grams)	Weight change (grams)	Appearance of filtrate
Tea towel	22.1g	24.9g	2.8g	Clear mostly Slight orangey colour No sediment
Kitchen chux	15.7g	16.8g	1.1g	More orangey colour Little bit of sediment
Sponge	18.5g	20.6g	2.1g	Clear mostly Medium orangey colour Very tiny bits of sediment

Recording of research results in appropriate format with observations (quantitative and qualitative data)

Figure 1 – Weight of sediments on filtering materials



Discussion

The results show the best filtering material for polluted water. The two pieces of information are the appearance of the filtrate and the weight of the sediment collected on the filtering material. From this information it can be seen that the tea towel was the most effective material for filtering since it collected the most sediment and also had the clearest filtrate. This was not what was expected as the hypothesis said that the sponge would be the best at trapping the dirt but it was still pretty good. The reason that the tea towel was the best must have been because it was folded over which meant that there were more layers to trap sediment and so it became a better filter than the sponge.

Mixture of past, present and future tenses

Discussion

<p>Some of the ways to control the variables went wrong. It was difficult to get the thickness of all three of the materials to be exactly the same and maybe it was not fair to have layers of tea towel and kitchen chux when the sponge was only one layer. Also some of the sediment stayed in the measuring cylinder and since different amounts stayed in for each test it cannot be said that it was fair each time. Next time extra clean water could be used to rinse out the measuring cylinder and as long as the same amount of water was used for each test then it would be fair.</p> <p><u>Conclusion</u> The results show that the tea towel was the most effective filtering material for polluted water. This contradicts the hypothesis which said that the sponge would be the best.</p> <p><u>Bibliography</u> Milton, Chris, 2013, <i>Australian Science in Action</i>, Oxford, South Melbourne, Victoria.</p>	<p>features paragraphs</p> <p>Relevant scientific language adds authenticity analysis and conclusions presented</p> <p>Cause and effect language and phrases used when discussing results</p>
<p>Adapted from: ACARA, Work Sample 2, Work Sample Portfolio Year 7 Above Satisfactory. Retrieved 27 October, 2014.</p> <p>http://www.acara.edu.au/curriculum/worksamples/Year_7_Science_Portfolio_Above.pdf</p>	