KS4-17-10: Using Resources - Explore potable water - practical

- Describe methods of producing potable water from salty water
- Describe how to carry out the distillation of a water sample
- Describe the differences between the water samples before and after distillation and how to test for these

You must write in full sentences and use a minimum of 23 words.

Suggest how we could test the pH of a substance.

Suggest how we could test the presence of dissolved solids in a substance.

In this investigation you will test 3 water samples from different sources of pH and the presence of dissolved solids. After distillation of the sea water, you will test the water again to check that dissolved solids have been removed, making the water fit to drink.

Water	pH	Mass in grams		
		Watch glass	Watch glass and dissolved solids	Dissolved solids
Sea				
Spring				
Rain				

Compare potable and pure water.

Define particulate and suggest their effect on our health.

Suggest how we could separate a mixture of salt and water.

Explain why carbon monoxide is so dangerous.

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Hypothesis:
I predict that…

Equipment:
List the equipment you will be using…

Variables:
Control variables: (what you keep the same)
Independent variable: (what you change)
Dependent variable:
(what you measure)

Method:
Detail the steps you will take during your investigation…

Results table:
Construct a suitable table for your results.

You will be doing the test 3 times and then calculating an average.

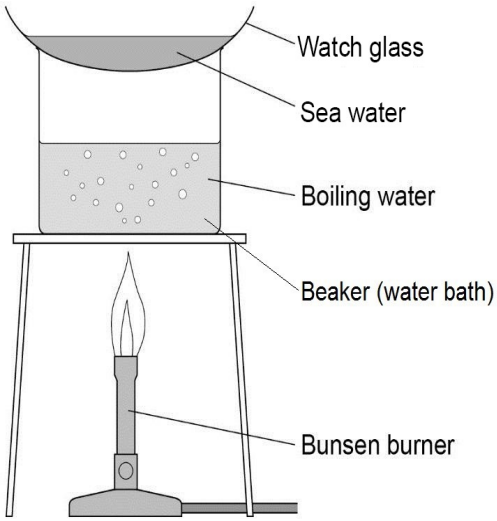
The IV (independent variable) goes in the left column.

Watch Glass Evaporation – Sea Water

1)Weigh a dry **watch glass**. Record its **mass** in the table. Pour **4 cm^3** sea water (less if your watch glass is small) into it and place it above a beaker acting as a **water bath** as shown in the diagram.

2) Allow all the water to **evaporate** from the watch glass. Do not let the water bath boil dry.

3) You should see **dissolved solids on the glass.** Remove the watch glass with tongs and **allow to cool**. Dry the bottom of the watch glass with a cloth and **reweigh** it. Record the new mass in the table. **Subtract** the mass of the watch glass alone and record the **mass of the dissolved solids.**
Wash the watch glass and dry it.



BE CAREFUL AS THE EQUIPMENT IS HOT AND MAY NOT BE STABLE.

Watch Glass Evaporation – Spring Water

1)Weigh a dry **watch glass**. Record its **mass** in the table. Pour **4 cm^3** sea water (less if your watch glass is small) into it and place it above a beaker acting as a **water bath** as shown in the diagram.

2) Allow all the water to **evaporate** from the watch glass. Do not let the water bath boil dry.

3) You should see **dissolved solids on the glass.** Remove the watch glass with tongs and **allow to cool**. Dry the bottom of the watch glass with a cloth and **reweigh** it. Record the new mass in the table. **Subtract** the mass of the watch glass alone and record the **mass of the dissolved solids.**
Wash the watch glass and dry it.

Watch Glass Evaporation – Rain Water

1)Weigh a dry **watch glass**. Record its **mass** in the table. Pour **4 cm^3** sea water (less if your watch glass is small) into it and place it above a beaker acting as a **water bath** as shown in the diagram.

2) Allow all the water to **evaporate** from the watch glass. Do not let the water bath boil dry.

3) You should see **dissolved solids on the glass.** Remove the watch glass with tongs and **allow to cool**. Dry the bottom of the watch glass with a cloth and **reweigh** it. Record the new mass in the table. **Subtract** the mass of the watch glass alone and record the **mass of the dissolved solids.**
Wash the watch glass and dry it.

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Conclusion

The results show…
The investigation has shown…

P- point?
E – evidence from your results
E – explain
A – anything else? PEE again?

Evaluation

Over all the experiment went well because…
The experiment could have been improved by…
If I was to carry out this experiment again I would…
One error present was… I could reduce this by…

What went well?
What didn't go so well?
How could you improve?

YOU MUST INCLUDE THE WORDS: accuracy, repeatability, 'X' error and reliability.

Using the prompts write your conclusion below

Using the prompts write your evaluation below

Which water sample is most acidic?

Why might this be?

Which water sample contains the most dissolved solids?

Why might this be?

During the distillation step, why is the test tube placed in a beaker of ice water?

Name the piece of equipment that could be used instead of the beaker of ice water.

How did the sea water sample change after being distilled?

In the real world, when is desalination of water necessary?