ICY Awesome: an energy and change project

I'm interested because the other day there was ice on the slide even though it was 36-38 degrees. That doesn't usually happen and I like snow and all that stuff.

These are my questions:

What’s the highest temperature of water can freeze at and what’s the lowest temperature we can keep water from freezing?

What will happen?

Do you think that the more impure water will will freeze at higher temperatures and the more pure water will freeze it lower temperatures

Research

I learned if water is completely pure ice may not form until it's -51°.

Even the Tiniest impurities can make water freeze warmer.

So that is how it was 36 -38° and there was ice on the slide and frozen grass and ice on the ground the other day.

Hypothesis (experiment) or Problem/solution (engineering project)

The more impure water will will freeze at higher temperatures and the more pure water will freeze at lower temperatures and faster

Procedures

Materials:

distilled water

impure water (tap water, salt water (1/2 tsp salt with tap),

ash water(tap water with ½ tsp of ash bbq),

glass bottles

Method

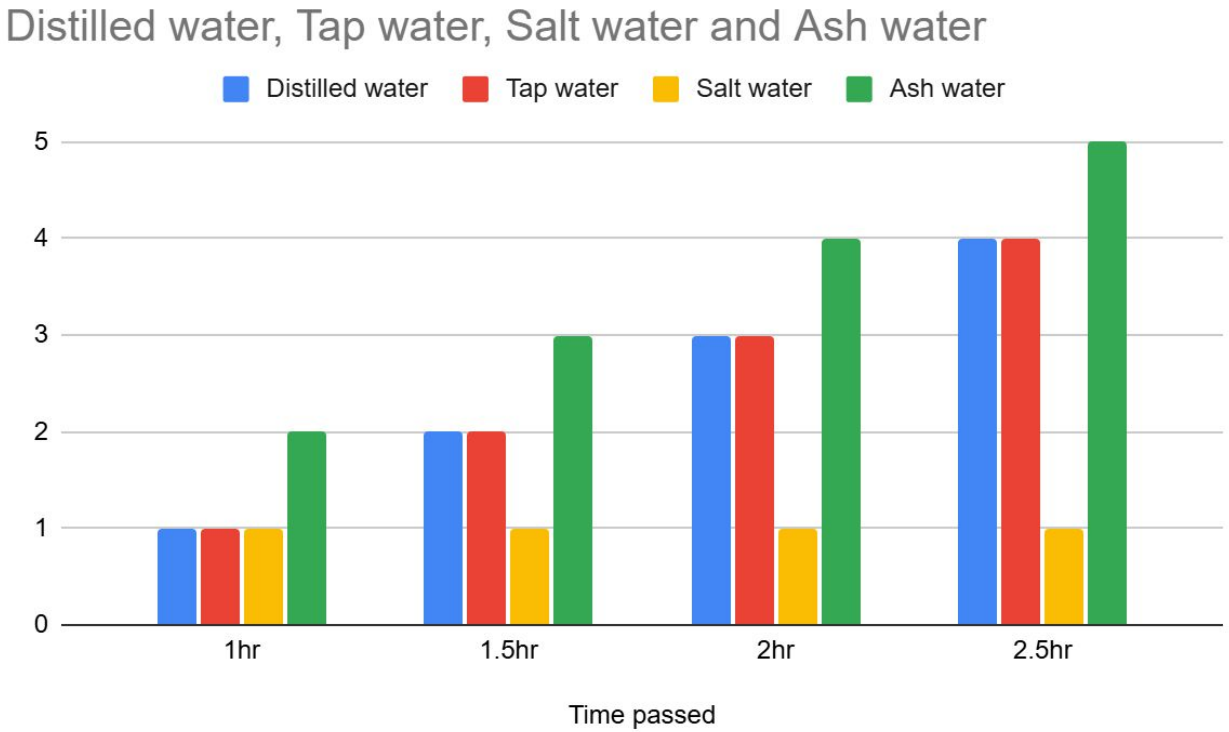
Our first Test we Put water in 4 glass jars and One distilled water one tap water 1 salt water and one ash water. For the salt water we use tap water and added half a teaspoon of salt for the ash water we added half a teaspoon of ash from the BBQ we put them in the freezer and checked every half hour when we checked we looked at how much was frozen and checked the chump picture we used our main freezer.

For the second test we did almost the same method as the first Test but we used a different freezer and we put labels on the top because they were falling off before.

Results
(First attempt)

Time passed	distilled water	tap water	salt water	ash water
1hr	26° liquid	29° liquid	28° liquid	32° partially frozen
1.5hr	32° partially frozen	32° degrees partially frozen	28° liquid	33° halfway frozen
2hr	32° Halfway	32 degrees Almost halfway	29° liquid	32° more than half
2.5hr	32° More than halfway	32° More than halfway	32° liquid	32° almost completely

Results

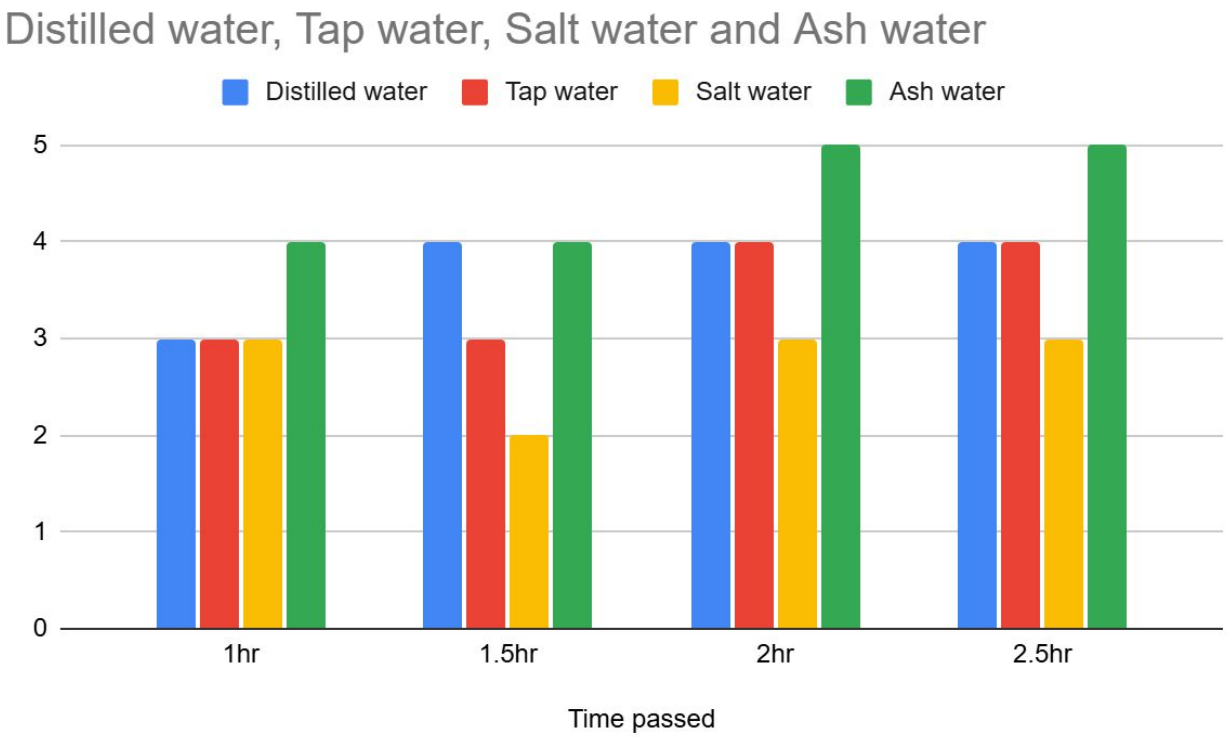

Distilled water, Tap water, Salt water and Ash water
Distilled water
Tap water
Salt water
Ash water
5
4
3
2
1
0
1hr
1.5hr
2hr
2.5hr
Time passed

Results

(2nd Attempt)

Time passed	distilled water	tap water	salt water	ash water
1hr	34° more than halfway	35° more than halfway	23° more than halfway	33° almost completely
1.5hr	32°almost completely	32° degrees more than halfway	21° slushy more than half	32° almost completely
2hr	32°almost completely	32 almost completely	20° completely slushy	32° frozen
2.5hr	32° Almost completely	32° Almost completely	18° completely slushy	32° frozen

Results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2hr
2.5hr
Time passed

Conclusion/Discussion

From this data I learned that water can freeze over 32°F. I learned that higher impurities of water will make water freeze warmer and and faster. I also learned that a different Freezer with less stuff will make water freeze faster

I learned that salt water Freezes at a lower temperature because it froze at least 23° degrees and the other waters started freezing at 35 degrees or less

I think I proved that impure water freezes faster but I’m not sure if more impure water freezes at a higher temperature but maybe over 32 degrees.

Next time I would use a freezer with less stuff. I would also like to do it for longer periods of time to see is it freezes more. Maybe I would try different impurities like using dirt or dust and other types of water like rain water or river water.

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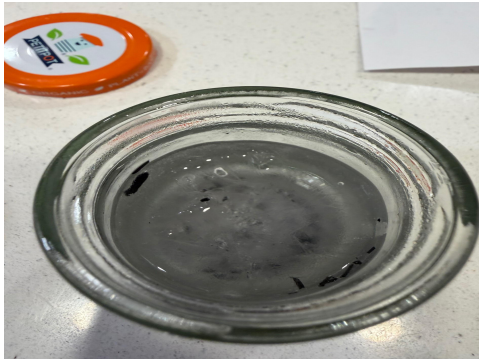
Setup

2 hour mark round 2

Ash Water Rd 1 2 hr



Salt Water Rd 1 2 hr

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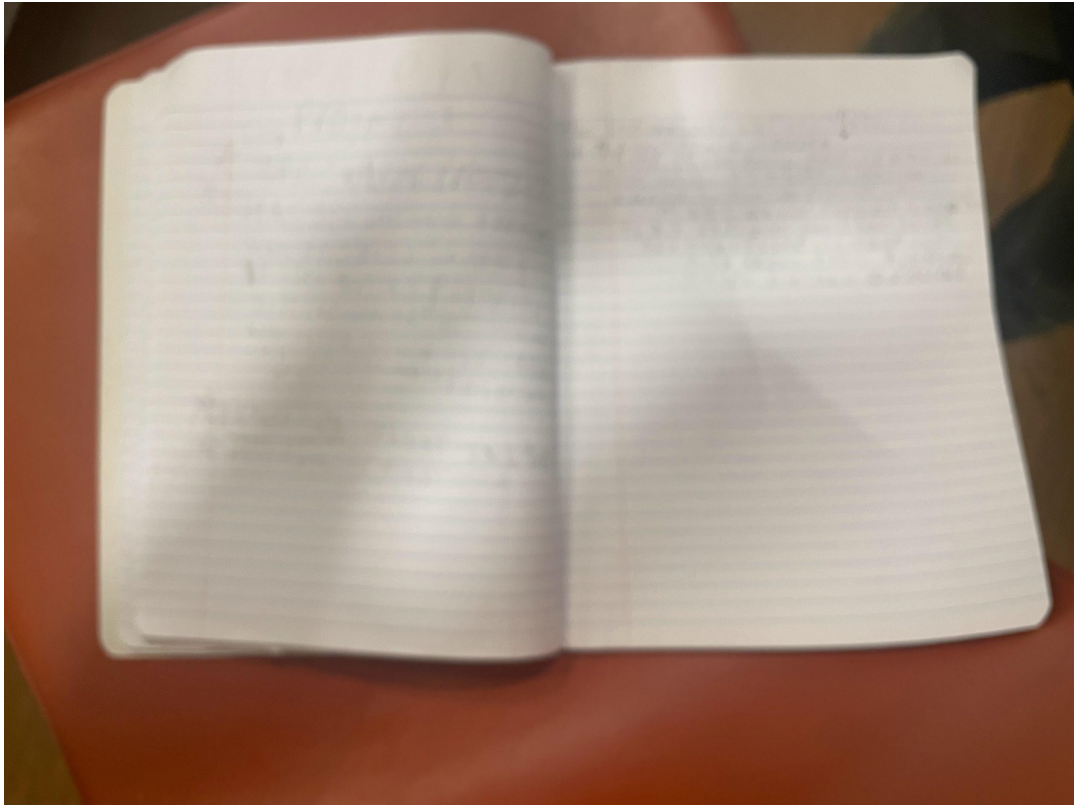
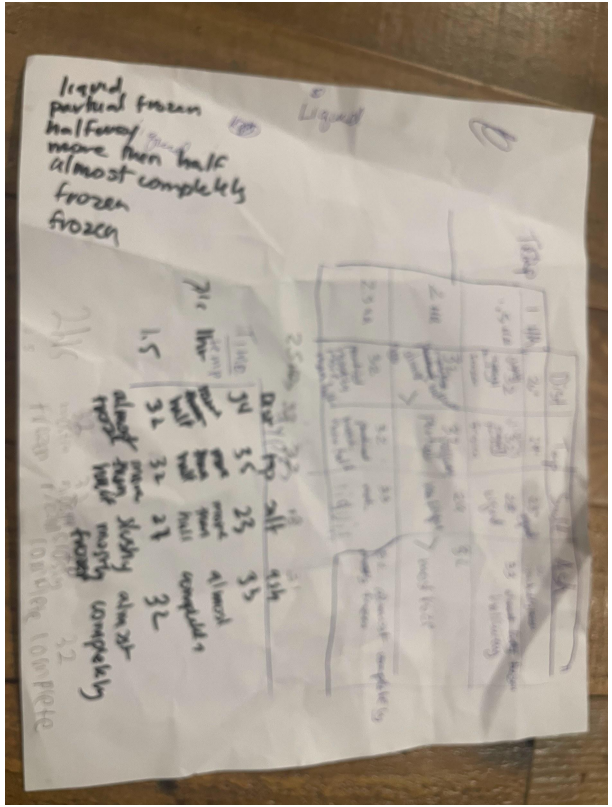
Journal



Data Collection



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