

What do you plan to research for your project?

Problem: Can I create a less expensive version of a water filter(s) which can filter water equivalent as the LifeStraw water filter?

Topics related to the problem:

1) What is a LifeStraw?

2) What is a homemade water filter?

3) How much would the materials I need cost to make a homemade water filter?

4) What is a TDS meter (Total Dissolved Solids)?

5) How much does the LifeStraw cost?

****Star three topics you will research during research time****

ONE MAIN IDEA I SHOULD RESEARCH IS... What is a LifeStraw?

A LifeStraw is a 9.25 inch tube that uses hollow fiber membrane to remove bacteria from unfiltered waters like ponds or lakes. The first iteration of the LifeStraw used iodine to kill bacteria. Iodine is a very toxic chemical element to people because too much iodine can cause thyroid gland inflammation and thyroid cancer to people which is not good. Thankfully the 2012 version of the LifeStraw contains no chemicals. Instead the product incorporates mechanical filtration using a hollow fiber membrane.

Website Address (copy exactly):

<https://science.howstuffworks.com/environmental/green-tech/remediation/lifestraw1.htm>

Barksdale, Martha, and Kate Kershner. "How Lifestraw Works." *HowStuffWorks Science*, HowStuffWorks, 8 Mar. 2023, science.howstuffworks.com/environmental/green-tech/remediation/lifestraw1.htm.

A SECOND MAIN IDEA I SHOULD RESEARCH IS... What is a TDS meter (Total Dissolved Solids)?

A TDS meter is a water tester to evaluate water quality to make sure it is safe to drink. A TDS meter measures solid substances dissolved in drinking water, including minerals, metal and organic material smaller than 2 microns.

High TDS levels are not necessarily unhealthy, but they can reflect significant water quality issues. People will buy TDS meters and measure their water at their house that is not filtered to see if it is safe to drink.

Website Address (copy exactly):

<https://qualitywaterlab.com/info/what-is-a-tds-meter/>

Ava. "What Is TDS – How They Work and What They Measure." *Best Water Filter Reviews*, 23 Jan. 2023, qualitywaterlab.com/info/what-is-a-tds-meter/.

A THIRD MAIN IDEA I SHOULD RESEARCH IS... What is a homemade water filter?

A DIY water filter is a design that has water being sent through sand, gravel and more to filter it. A homemade water filter only lasts for several rounds of filtering water. Water is necessary for survival; it can contain minerals and potential toxins which in high levels can cause sickness or worse. Some countries people often have to drink polluted water. The best case scenario is they only suffer from stomach ailments due to the contaminants in the water. The worst is that the people could develop dysentery which needs to be treated quickly. DIY water filtration can be more effective than no filtration at all.

Website Address (copy exactly):

<https://www.survivalworld.com/water/how-to-make-a-diy-water-filter/>

"How to Make a DIY Water Filter with No Tools." *Survival World*, 15 Sept. 2022, www.survivalworld.com/water/how-to-make-a-diy-water-filter/.

FIVE WORDS I NEED TO KNOW FROM MY RESEARCH ARE...

1) Word: Microns

Definition: *Physical Chemistry*

Website Address (copy URL from definition website exactly – No 'Google Search'):

<https://www.collinsdictionary.com/us/dictionary/english/micron>

a colloidal particle whose diameter is between 0.2 and 10 microns

2) Word: dysentery

Definition: a disease characterized by severe diarrhea with passage of mucus and blood and usually caused by infection

Website Address (copy URL from definition website exactly – No ‘Google Search’):

<https://www.merriam-webster.com/dictionary/dysentery#:~:text=dys%C2%B7%E2%80%8Ben%C2%B7%E2%80%8Btery%20%CB%88dis%2D%C9%99n%2D%CB%8Cter.%3A%20diarrhea>

3) Word: Membrane

Definition: a thin soft pliable sheet or layer especially of animal or plant origin

Website Address (copy URL from definition website exactly – No ‘Google Search’):

<https://www.merriam-webster.com/dictionary/membrane>

4) Word: Unfiltered

Definition: not filtered

Website Address (copy URL from definition website exactly – No ‘Google Search’):

<https://www.merriam-webster.com/dictionary/unfiltered>

5) Word: Filter

Definition: a porous article or mass (as of paper or sand) through which a gas or liquid is passed to separate out matter in suspension

Website Address (copy URL from definition website exactly – No ‘Google Search’):

<https://www.merriam-webster.com/dictionary/filter>

Filters Vs Filter

Do we really know which water filter is truly better or equal to each other? The LifeStraw filter, at a cost of 19.99, hypes itself as a good water filter but a homemade water filter can surprise anyone. Let's find out more about each water filter and how I am going to test both LifeStraw and my homemade water filter, to see which one is better or if they are equal to each other. Not everyone around the world has access to 19.99 but everyone around the world should have access to clean water. A homemade water filter can give people all around the world safe drinking water at minimal cost. Water is essential in our lives, without clean water our bodies will have trouble moving nutrients and removing waste from our systems.

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In conclusion, drinking water is essential for survival. Drinking clean water isn't always available throughout the world. So being able to create an inexpensive water filtration system which works equally as good as a more expensive filter can change the well being for many people.

Bibliography

<https://science.howstuffworks.com/environmental/green-tech/remediation/lifestraw1.htm>

Barksdale, Martha, and Kate Kershner. "How Lifestraw Works." *HowStuffWorks Science*, HowStuffWorks, 8 Mar. 2023, science.howstuffworks.com/environmental/green-tech/remediation/lifestraw1.htm.

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