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Water for Everyone

After reading the article, answer the following questions. Use complete sentences when appropriate.

1. List five reasons why water is an important nutrient for you.
   a. Transports _____ and _____
   b. Helps absorb _____
   c. Helps eliminate _____
   d. Cushions _____ and _____
   e. Regulates _____

2. Complete the following:
   a. Your body is _____ percent water.
   b. Your blood is _____ percent water.
   c. Your muscles have _____ percent water.
   d. Your bones have _____ percent water.

3. Why does Kofi Annan, Secretary General of the United Nations, believe potable water is an important issue?

4. What is significant about the year 2015 and how is it related to the MDG?

5. What is LifeStraw and who invented this device?

6. Complete the following table to describe the filtering mechanisms of LifeStraw.

Filter Layer	Description	Purpose

7. How will LifeStraw help humankind?

8. How much will one LifeStaw cost and how much water will it filter?

name _____ date _____ period _____

Photo courtesy Vestegaard Frandsen, Inc.

Water for Everyone

If you've seen the food pyramid, then you know that grains, vegetables, fruits, milk, meat and beans, and oils are essential food groups. The pyramid is designed so that your daily diet will provide you with vital nutrients. Although it's not listed on the food pyramid, one other nutrient is necessary for your survival. That nutrient is water. Even though it isn't specifically mentioned, water actually is an important part of the food pyramid. Water can be found in vegetables, fruits, milk, meat and even grains. But the water you get from those food sources isn't really enough to keep you going. That's why it's recommended that you drink several 8-ounce glasses of water a day.

Water is colorless, odorless and tasteless. So you might be thinking, "What's the big deal? Why do I need it?" Water carries out some very important roles in your body. Water helps transport nutrients and oxygen throughout your body. It also helps your body absorb those nutrients. Water helps eliminate waste from your body. Water cushions your organs and joints. And, water helps regulate your body's temperature. Water is so important that your body is somewhere between 50 to 70 percent water. That water is everywhere. Your blood is 83 percent water, muscles consist of 75 percent water and bones are 22 percent water. Now you're beginning to see why you need water to live.

An alarming 18 percent of the world's population does not have access to safe drinking water. In sub-Saharan Africa, 42 percent of the population lives without direct access to safe water.

But what if you couldn't get any water? Or, imagine that what you could get made you really sick. This might be difficult to picture. Most of us here in the United States have access to plenty of potable water. Potable water is also known as drinking water - meaning that it's clean and fit for human consumption. When you're in school or at the library, you can go to the water fountain. At home, you can simply put a glass under the faucet, or grab a pitcher or jug from the fridge. And voila, you have fresh, safe drinking water. But what if you couldn't do that?

People around the world - but most especially in Asia and Africa - face this very serious dilemma every day. In fact, according to the World Health Organization, more than 1.1 billion people do not have access to safe drinking water! Because of unsafe water supplies, it is estimated that almost 1 million people die every year. A huge percentage of those people are children. Some reports indicate that unsafe drinking water kills approximately 3,900 children every day.

Kofi Annan (Secretary-General of the United Nations) has said, "We shall not finally defeat AIDS, tuberculosis, malaria, or any of the other infectious diseases that plague the developing world until we have also won the battle for safe drinking water, sanitation and basic health care." It's true - this is how very important clean water is.

The United Nations has developed a set of goals -- The Millennium Development Goals (MDG) - aimed at improving the human condition around the globe by 2015. A big part of those goals is to improve access to safe water. Many individuals and groups around the world are working to help make the MDG a reality. One such organization is the Vestergaard Frandsen Group.

Photo courtesy Vestegaard Frandsen, Inc.

The LifeStraw

The Vestergaard Frandsen Group has developed an amazing, yet simple device called LifeStraw®. It could be a huge help in the battle for safe drinking water. LifeStraw, as its name indicates, is a straw. But it is no ordinary straw. Its purpose is to turn surface water into drinking water. LifeStraw looks a little bit like a musical instrument - a fat, blue plastic recorder or flute (minus the finger holes). It is 9.8 inches (25 cm) long, 1.14 inches (29 mm) wide and is made of a high-impact polystyrene material.

The idea for LifeStraw came up while the company was working on another project to develop a filter to remove guinea worm larvae. "The question then came up that if we can filter out one parasite, why not all, why not also filter out all bacteria and viruses at the same time?" said LifeStraw inventor, Torben Vestergaard Frandsen. "The real spur for this," continued Vestergaard Frandsen, "was the realization that you can create the necessary force for the filtration with your personal sucking power."

While LifeStraw can filter out some parasites, its main goal is killing bacteria. According to lab studies, the mechanism can successfully filter bacteria like Salmonella, Staphylococcus Aureus and even E. Coli. Furthermore, these studies also indicate that the resulting water is actually better than municipal tap water from many developed countries. After getting such good results in lab tests, LifeStraw is now being tested in the field.

By making safe drinking water more available, LifeStraw will fight potentially deadly health issues such as Cholera, Dysentery and Typhoid. LifeStraw could also be a lifesaver in disaster relief. Fresh drinking water was a huge concern for victims of the Tsunami and Hurricane Katrina. LifeStraw could provide much needed water to victims of future disasters. And, as if this technology wasn't already cool enough -- it's actually affordable, too. For an estimated price of around $3 to $5, one LifeStraw can filter as much as 185 gallons of water. That's one person's required supply for an entire year!

Here's how it works:

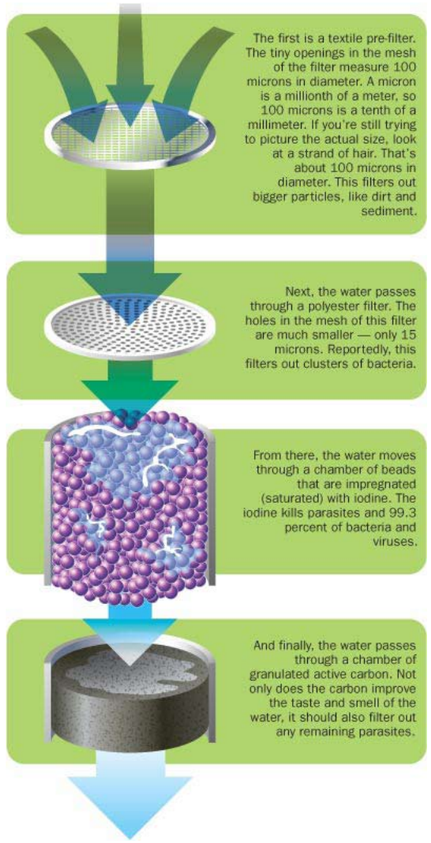

Photo courtesy Vestegaard Frandsen, Inc.

Other LifeSavers

Vestegaard Frandsen has created some other remarkable technologies to help with the Millennium Development Goals. Malaria, a potentially deadly disease caused by mosquitoes, is still a major concern in many areas around the world. For example, according to the CDC, in Africa, a child dies from malaria every 30 seconds. Vestegaard Frandsen's other technologies, PermaNet® and ZeroFly® both work to combat the incidence of Malaria.

PermaNet®

PermaNet is polyester bed netting that protects you from mosquitoes while you're sleeping. It is both affordable and practical. The netting is treated with a long lasting insecticide that lasts up to 20 washes.

ZeroFly®

ZeroFly is plastic sheeting that has been treated with an insecticide. The sheeting can be used in emergency situations to create tents. Not only does the sheeting act as much needed shelter, but because of the insecticide, it also works to prevent malaria.

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Teacher Key

Water for Everyone

After reading the article, answer the following questions. Use complete sentences when appropriate.

1. List five reasons why water is an important nutrient for you.
   a. Transports ___***nutrients***___ and ___***oxygen***___
   b. Helps absorb ___***nutrients***___
   c. Helps eliminate ___***wastes***___
   d. Cushions ___***organs***___ and ___***joints***___
   e. Regulates ___***body temperature***___

2. Complete the following:
   a. Your body is ___***50-70***___ percent water.
   b. Your blood is ___***83***___ percent water.
   c. Your muscles have ___***75***___ percent water.
   d. Your bones have ___***22***___ percent water.

3. Why does Kofi Annan, Secretary General of the United Nations, believe potable water is an important issue?
   More than 1.1 billion people do not have access to clean water. One million people die each year, including 3,900 children each day, from unsafe drinking water.

4. What is significant about the year 2015 and how is it related to the MDG?
   By 2015, the United Nation hopes to improve the human condition around the globe. The Millennium Development Goals, or MDG, were established by the United Nations. A major component of these goals is to improve access to clean water.

5. What is LifeStraw and who invented this device?
   LifeStraw is an instrument that can turn surface water into drinking water. It was invented by Torben Vestergaard Frandsen.

6. Complete the following table to describe the filtering mechanisms of LifeStraw.

Filter Layer	Description	Purpose
Textile Prefilter	*The textile mesh has openings of 100 microns in diameter*	*Filters out particles such as dirt and sediment*
Polyester Filter	*The polyester mesh has openings of 15 microns across*	*Filters out clusters of bacteria*
Chamber of beads	*Beads are impregnated with iodine*	*Kills parasites and 99 percent of bacteria and viruses*
Carbon	*Granulated active carbon*	*Improves taste, smell and remaining parasites*

7. How will LifeStraw help humankind?
   LifeStraw kills bacteria in water and will fight deadly health issues such as Chloera, Dysentery and Typhoid. It could also be used in disaster relief.

8. How much will one LifeStaw cost and how much water will it filter?
   LifeStraw will cost $3-$5 each and can filter as much as 185 gallons of water.