Name: _____ Date: _____

Why Is the Ocean Salty?

Reading level 9 (5th grade) · 616 words

Take one sip of sea water and you will never forget it. Salt, salt, salt! Nobody poured the ocean out of a salt shaker, so where did all that salt come from? The answer is a long story, and it starts on dry land, with rocks that look as if they could never become part of the sea.

First, how much salt is there? In every 1,000 grams of sea water, about 35 grams are salt. That is 3.5 percent, and the rest is plain water. It does not sound like very much, but your tongue is very good at finding it. But most of Earth's water is in the ocean, so a little salt in every spoonful adds up to a great deal.

Clue one is rain. Rain that falls on land is very slightly acidic, which means it is a tiny bit sour. It cannot hurt you. But rain keeps coming, and over a very long time it wears rock away. As the rock wears, it lets go of tiny bits of salts and minerals. They dissolve in the water the way sugar dissolves in tea.

Clue two is rivers. The rain water runs downhill into streams, and the streams join rivers. Rivers carry the dissolved bits along with them, and they eventually feed into the ocean. Each river carries only a small amount. But the ocean is where they all end up, and the rivers keep running, day and night, year after year.

Clue three is hidden under the sea. Sea water seeps down into cracks in the ocean floor. Down there, hot rock heats it up. The hot water dissolves minerals and metals out of the rock, and it flows back out through openings called vents. So salts and minerals arrive from below the sea as well as from the land above it.

Now for the puzzle. If salt keeps arriving, why does it stay in the sea? A lake with no outlet can show you. Great Salt Lake, in Utah, has rivers flowing in but none flowing out. Water leaves only by evaporation, which means it rises into the air as vapor. The minerals cannot leave that way, so they pile up, and the lake grows very salty.

The ocean works in a similar way. When the sun's heat lifts water from the surface of the sea into the air, only the water goes. The salt stays behind. Then that water falls as rain, far away, and the whole trip starts again. Over a very long time, the salt that was left behind has added up.

Does that mean the sea gets saltier and saltier forever? It is not so simple. Some sea creatures use up certain dissolved bits. Some salts react with rock on the sea floor and drop out of the water. So salt is added in some ways and taken away in others, like a bathtub with the tap running and the drain open.

What kind of salt is it? Most of the dissolved bits in sea water are sodium and chloride, nine

out of every ten of the tiny pieces called ions. Put sodium and chloride together and you get the salt that you sprinkle on your fries. The rest is a mix of other minerals, in much smaller amounts, and they came from rock, too.

So the next time you taste the sea, you are tasting rock. It is rock from far-off hills, worn down by rain, carried by rivers, warmed in the sea floor, and left behind when the sun lifts the water away. Nobody is grinding it out at the bottom. The ocean is salty because of rocks, rain, and a very long time.

Questions

1. About how much of sea water's weight is salt?

A. 3.5 percent
B. 35 percent
C. Half

2. What wears away rock on land, according to the book?

A. Sand
B. Rain
C. Moonlight

3. What carries dissolved bits to the ocean?

A. Birds
B. Boats
C. Streams and rivers

4. What does dissolve mean here, as in sugar in tea?

A. Mix in so you cannot see it
B. Freeze solid
C. Float on top

5. Why is Great Salt Lake so salty?

A. Someone pours in salt
B. Water leaves, but minerals stay
C. It is very cold

6. What happens to salt when the sun lifts water from the sea?

A. It goes up too
B. It stays behind
C. It turns to rain

Words to know

dissolve: mix in
minerals: bits of rock
acidic: slightly sour
evaporation: turning to vapor
vents: openings

Answer key: Why Is the Ocean Salty?

1. A. 3.5 percent
2. B. Rain
3. C. Streams and rivers
4. A. Mix in so you cannot see it
5. B. Water leaves, but minerals stay
6. B. It stays behind