

## Waters of the Earth Activity

Original Source: [http://www.sea.edu/academics/k-12\\_detail/waters\\_of\\_the\\_earth](http://www.sea.edu/academics/k-12_detail/waters_of_the_earth)

For use with American Spaces Introduction to the Ocean Activity Guide by the Smithsonian Ocean Portal



Earth as seen from space is clearly a water planet. About 71% of the surface of the planet is covered by water. Water is found in the oceans, rivers, ponds, lakes, groundwater, ice caps, glaciers, and in the atmosphere as water vapor and clouds. Water changes state and moves from place to place through the water cycle of evaporation, condensation, and precipitation. Although earth's water supplies seem almost limitless when viewed from an ocean beach, water forms only a thin film on the surface of the planet. The average depth of the oceans is about 3.5 - 4.0 km, while the average radius of earth is 6371 km.

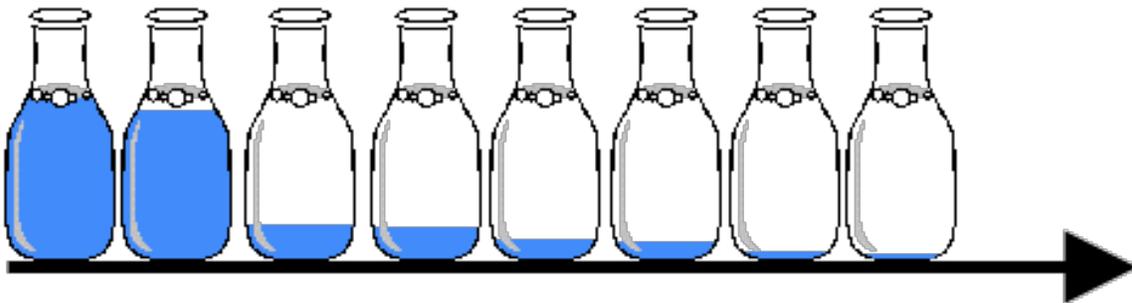
What to Expect: Some of these volumes are so small the class will need to gather around the display to see the water being added. The clear bottles with blue colored water in them clearly labeled, make a dramatic display for the school or community.

Materials:

- Seven two-liter bottles
- Food coloring
- Water
- Labels for bottles
- Graduated cylinders
- Calibrated droppers for 1 ml.

Procedure:

1. Color about 2 liters of water blue with food coloring.
2. Using the chart below, fill each two-liter bottle with the amount of water for each category. For younger students: have students measure out the volumes, add each amount to a separate bottle. (For older students: have students use these figures to calculate volumes. Students can fill the bottles and set up a display for the school in a prominent place.)



Type of Water	Percentage of Earth's Water Supply	Volume of Water to Use in Bottle
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All of the Earth's water	100%	2000ml
All Earth's salt water (oceans)	97.2 %	1944 ml
All Earth's fresh water	2.8%	56 ml
Fresh water locked up as ice	2.3%	46 ml
Underground fresh water	0.4%	8 ml
Surface fresh water	~0.05%	1 ml
Water in soil and air	~0.01%	0.2 ml

Discussion:

- 1) What did you find surprising about this activity?
- 2) Was there more of less surface water than you expected?
- 3) What types of water can people and animals drink? Is that a lot or a little of the world's total?

Evaluation:

- 1) Students can make a bar graph showing the percentages of water in different forms.
- 2) Students can calculate volumes for each percentage, answering the question, "If ocean water volume is about 1,360,000 km<sup>3</sup>, what is the volume of water in each of the other categories?"

Extensions: Have students calculate the average volume of water used per person per day in your community. How much water is used by the community annually?

Source: Demonstration set-up by Pete Barsness. Adapted from Project Wild Aquatic, "How Wet is Our Planet." 1987, Western Regional Env. Ed. Council.