

FACTivity

Time Needed

- 10 minutes for setup
- 1 week of observations, with 5 minutes for each observation and recording
- 35 minutes for final observation, graphing, and discussion

Materials (for each student or group of students)

- One 16 oz. plastic cup per student or group of students
- 12 oz. of water per cup
- 1 cup measure
- A solution of 12 oz. of water and 3 drops of Clorox® Regular-Bleach, mixed by the teacher prior to class and sealed in a plastic bottle
- Eye dropper
- One plastic bottle of chlorine test strips, such as is used for testing swimming pool or spa water (available at big box stores that sell swimming pool or spa supplies, a spa or pool supply store, or on the Internet)
- Plastic spoon
- Safety goggles
- Graphic organizer on page 42
- Recording device (optional)

The questions you will ask in this FACTivity are: What happens over the period of 1 week to chlorine that is added to a cup of water? How is the chlorine in water over 7 days similar to the verbenone in SPLAT Verb over 30 days? How is it different?

FACTivity continued

Methods

You or a member of your group should perform the following tasks. Get a 16 oz. plastic cup. If you are working in groups, label your cup with your group name or number. Using the cup measure, fill the cup

with 12 oz. of tap water. Your teacher will add 10 drops of a solution of Clorox® and water to the water in your cup. Gently stir the water to mix in the Clorox® solution.

For Educators

How Should You Dilute the Clorox® Before Bringing It to Your Classroom?

The evening before you do this FACTivity, put 3 drops of Clorox® into 12 oz. of water. Store in a plastic container and seal with a removable lid. In the classroom, put 10 drops of this solution into each student's 12 oz. cups of water. This method should produce a chlorine concentration that is the standard for swimming pools. Your students should not drink this water, and students should use safety goggles as a precaution. When you are finished with the FACTivity, dilute the mixture with more water and discard this solution down the sink.

What Are Clorox® and Chlorine?

Clorox® is a brand name for a cleaner and disinfectant. Clorox® Regular-Bleach is made of the following ingredients: water, sodium hypochlorite, sodium chloride, sodium carbonate, sodium chlorate, sodium hydroxide, and sodium polyacrylate.

Chlorine is a member of the series that forms group 17 of the periodic table of the elements. Chlorine forms chemical compounds with almost all of the elements to produce compounds that are usually called chlorides. Clorox® contains chlorides. Identify the chlorides in the list of Clorox® ingredients. Clorox® also contains what common element? If you do not know, look up the word "sodium" to find out.

Dip one chlorine test strip into the water for 2 to 3 seconds, then withdraw it. Wait 15 seconds, then observe the color of the pad on the test strip that measures free chlorine. Compare the pad's color with the color key for free chlorine on the test strip bottle (figure 14). (Usually, a pool chlorine test strip will test for more than chlorine.) The measurement should be in parts per million (ppm). Record the date and the chlorine concentration in ppm on the graphic organizer on page 42. Place your cup on a shelf in a secure place in the room, where it will not be disturbed. Do not cover your cup.

Measure the chlorine concentration in the water every day for 1 week, and record your findings on the graphic organizer. At the end of 1 week, take your final measurement and record it.

Graph your findings on a line graph with ppm on the y-axis. Provide a title for your graph. Label the x-axis and the y-axis. Compare your final chlorine concentration measurement with your first measurement by observing your graph. What do you notice?

Now answer the questions posed at the beginning of this FACTivity.



Figure 14. Compare the chlorine test strip pad color with the free chlorine color key on the back of the test strip bottle.

Photo by Brian Cooke, Cradle of Forestry in America Interpretive Association.

How Much Is One Part Per Million?
One part per million is equal to:
1 inch in 16 miles
1 second in 11.5 days
1 minute in 2 years

FACTivity continued

SPLAT! Graphic Organizer

Group Members: _____

Date	Chlorine Concentration (ppm)