

Pollutants on Coral



Photo by Jim Maragos

- Grades:** 3 – 6
- Focus Question:** What effect do indirect pollutants like carbon dioxide have on the reef ecosystem?
- Lesson at a Glance:** Students will perform experiments to examine what effect acid has on coral..
- Key Concepts:** Coral is the basic building block for reefs. The individual coral polyps are small and soft bodied with a hard external skeleton surrounding it. These small animals live in large colonies building off the skeletons of other polyps. While the coral is strong enough to be used as building blocks for houses it is very susceptible to some environmental factors such as acid rain.
- Objectives:** Students will be able to:
Describe the life cycle of a coral
Give examples of how coral is used by people and animals
Identify some of the factors that destroy coral reefs
- Time:** One class period.
- Materials:** Samples of coral, not collected from a living reef., diagram of a coral polyp and its life cycle, magnifying glass or microscope, pipette, vinegar.
- Teacher Background** Coral reefs have existed for over 500 million years. Most reefs

are in the tropics, the area between the Tropic of Cancer and the Tropic of Capricorn. These 'rain forests of the sea', contain approximately 25% of the ocean's species.

Coral begins as an individual polyp the size of a pea. The soft-bodied polyp builds a cup-shaped skeleton made of calcium carbonate around its soft body. They reproduce by creating new branches or sprouts. While the individual animals are small a colony can be huge. The Great Barrier Reef in Australia is the only living structure that can be seen from space.

These structures made of living and dead skeletons are strong enough to withhold currents, salt water and temperature changes to name a few. Humans have used blocks made of coral for construction for many years. The Chamberlain House and Kawaiahao Church in Honolulu are examples of coral block construction from the mid-19th century. More recently coral has been used to help build up runways in the Northwestern Hawaiian islands.

The basic structure of the reef is strong but it is not invincible. The reefs reflect the environment around it. If the surrounding area is healthy the reef will often be healthy as well. Acids from our car exhaust eat away at our fragile reefs along with other pollutants. Reefs are especially vulnerable because they take so long to regenerate.

Procedure and Preparation

1. Brainstorm with the students everything that they know about coral reefs. Write all answers on the board.
2. Define and identify the different parts of a coral polyp.
3. Have students examine a piece of coral under a microscope. Can they identify the individual animals that made the up the piece that they are examining?
4. Using pipette, squeeze one drop at a time of acid (vinegar) onto the coral. Record what is happening.
5. Why did the coral fizz? The acid is eating away at the coral.
6. Brainstorm what we can do to prevent pollutants from reaching our reefs.

Extensions

Some of the research taking place on the expedition will be monitoring the species that live in the reef environment. Check into the website for updates on what the researchers have found.