



How the Purity of Salt Water Could Change

1. Put a check mark (✓) next to the answer that is most correct.

a) Which of these would take the longest to decompose in the ocean?

- A a cotton sock
- B a plastic bottle
- C an orange peel
- D a wooden barrel

b) Which of these is most hazardous to marine wildlife when spilled from a ship?

- A oil
- B coal
- C lumber
- D vegetables

c) All of these are types of ocean pollution, except

- A plastic
- B fertilizer
- C greenhouse gases
- D spills from oil tankers

2. Circle the word **TRUE** if the statement is TRUE or Circle the word **FALSE** if it is FALSE.

a) Most plastic objects quickly dissolve in salt water.

TRUE **FALSE**

b) Sailors never threw things overboard in the early days of shipping.

TRUE **FALSE**

c) Fertilizer runoff can make parts of the ocean unable to support sea life.

TRUE **FALSE**

d) Toxic chemicals tend to concentrate in the animals at the top of a food chain.

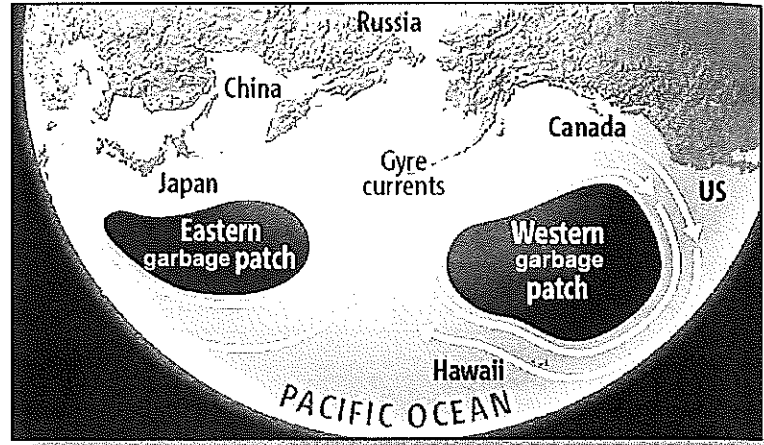
TRUE **FALSE**



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I magine you are on a boat in the middle of the ocean with no land in sight. You can sail for days and days and see nothing but water. From this viewpoint, the ocean seems enormous, powerful, and mysterious. People once thought the ocean was so large and full of life that the actions of people could not change it. They thought that, no matter what people did to the ocean, it would be the same for all time. But they were wrong.

Not long ago, ships at sea disposed of all their trash, garbage, and sewage directly into the ocean. Some cities and factories also discharged anything they didn't want into the ocean. For hundreds of years the ocean seemed to swallow all these materials and leave hardly a trace.



Marine Debris



Debris in the Great Garbage Patch

But finally we have reached the point where the ocean is no longer able to absorb everything we would like to throw into it. There is a lot of junk floating on the ocean, and some parts of the ocean have more junk than others. Ocean currents cause floating trash to collect in large trash islands. One of the largest of these, the "Great Pacific Garbage Patch," in the North Pacific Ocean is at least as large as



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Texas. Millions of tons of plastic and other debris collect in this area and wash up on the beaches of islands located there.



Name two things you might find in the "Great Pacific Garbage Patch" that are not a part of the natural ecosystem.

Some ocean debris comes from ship cargo lost at sea in storms or from trash intentionally thrown overboard. Other trash is blown into the ocean from landfills or washes down streams and storm drains. It is not just that the amount of trash thrown in the ocean has increased, the materials from which it is made has changed. Before the 20th Century, many discarded items were made of **biodegradable** materials, like wood and cloth. Today much of the debris is made of plastic, which can last hundreds of years.

Oil spills have been especially harmful because they kill sea life, destroy habitat, and are hard to clean up. Mercury is another pollutant that has entered marine food chains. Heavy metals like mercury usually become more concentrated as they move up the food chain to the predators at the top. Sharks, for example, have high levels of mercury in their flesh that can be hazardous when eaten by pregnant women and babies.

When fertilizers and other nutrients run into the ocean they encourage the growth of algae. When algae die, they are decomposed by bacteria that remove oxygen from the water. In some parts of the ocean, the oxygen level has become too low to support sea life. A part of the ocean that cannot support fish and other marine animals is called a **dead zone**.



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1. Fill in each blank with a word from the list.

biodegradable

dead zone

mercury

habitat

fertilizer

- a) _____ runoff from fields can create an ocean _____.
- b) _____ tends to concentrate in species at the top of a food chain.
- c) Wood is more _____ than plastic.
- d) Oil spills cause damage to marine _____s.

2. Put a check mark (✓) next to the answer that is most correct.

a) If a material is biodegradable, it means

- A it is toxic to most animal life.
- B it is natural rather than synthetic.
- C it serves as food for several different species.
- D it is decomposed quickly by natural processes.

b) What is the main reason marine debris tends to collect in certain parts of the ocean?

- A ocean tides
- B trade routes
- C wind patterns
- D ocean currents

c) What do ocean dead zones lack that is needed to support fish and other marine animals?

- A oxygen
- B plant life
- C nutrients
- D carbon dioxide



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3. Answer the questions in complete sentences.

a) Other than the greater amount, what makes today's ocean trash more of a problem than trash thrown in the ocean 200 years ago.

b) Explain why an oil spill is more destructive to ocean habitat than a coal spill.

Extension & Applications

Spreading fertilizer on a field can lead to the death of fish in an area of the ocean. Explain the steps in the processes that lead from fertilizer to dying fish. You will need to describe at least three steps and use the words "runoff", "algae", and "oxygen."
