

HOMEWORK: READING

Anna Brendle for National Geographic News, November 4, 2002

1. Match words that go together (more than option is possible).

1) discover	a) a pollutant
2) clean up	b) into the atmosphere
3) publish	c) supplies of drinking water
4) leech	d) a scientific paper
5) contaminate	e) a strain of bacteria
6) release	f) physiological studies
7) conduct	g) into groundwater

Bacteria May Be Star Player in Toxic Cleanup

Scientists have discovered a strain of bacteria at the bottom of New York's Hudson River that might prove useful as an agent for cleaning up a common pollutant.

The microbe "breathes" a synthetic chemical known as TCA (1,1,1-trichloroethane), transforming it into a cleaner substance.

TCA is used as a solvent in many common products such as glue, paint, industrial degreasers, and aerosol sprays. It can also be created in landfills and hazardous waste sites when substances decompose and their chemical components interact.

The newly discovered bacteria (named TCA1) remove chlorines from TCA to make chloroethane, a less toxic substance that can be more easily degraded by aerobic microbes in the soil, according to the researchers, who are based at Michigan State University's Center for Microbial Ecology.

Baolin Sun was the main author of a paper on the findings published in last week's issue of the journal *Science*.

The bacterium uses TCA in the same manner that people use oxygen. This is the first known bacterium that breathes the chlorinated solvent TCA. It breathes TCA, and the only way we know how to grow the bacteria is to feed them TCA.

TCA is among the pollutants found at more than half of the so-called Superfund sites designated as priority areas for chemical cleanup by the U.S. Environmental Protection Agency (EPA).

TCA often leeches into groundwater and soil, contaminating supplies of drinking water. As TCA evaporates, it breaks down into chemicals that are released into the atmosphere, destroying Earth's protective ozone layer.

The researchers initially discovered the bacterium in sediment dredged from the bottom of the upper Hudson River in New York, a Superfund site. Later they also found it growing naturally in Michigan's Kalamazoo River.

In the lab, the bacterium thrived as long as the researchers kept feeding it TCA. "We have not recreated the bacterium in the lab but enriched its activity and isolated a pure culture from the sediment source," said Sun.

TCA1 is "a naturally occurring bug—it's like we captured a wild animal and brought it into a zoo," he added.

The researchers are now conducting physiological studies of the bacterium.

They hope it will prove useful in the growing field of bioremediation, the process of using microbes to clean up harmful chemicals from the environment.

It is not yet clear whether TCA1 is a microbe that has adapted locally as a result of the pollutants in the Hudson and Kalamazoo Rivers or occurs independently of pollutants.

**2 Read the text quickly and try to find the following information as quickly as possible.
How can the newly discovered bacterium help the environment?**

**3. Read the text again and try to find a definition for the following expression:
BIOREMEDIATION**

4. Transferring Information

Supply the missing information.

Then form a question about it:

Name of Bacterium		
Name of Pollutant		
Researchers Based at		
Author of the paper		
Study Published in		

Then ask and answer questions in pairs.

5. Look at these sentences. They should be Answers to your Questions.

Example: Q: When did Alfred Nobel invent dynamite?

A: In 1866.

a) Q:

.....

A: The Hudson River

b) Q:

.....

A: TCA.

c) Q:

.....

A: Glue, paint, industrial degreasers, and aerosol sprays.

d) Q:

.....

A: It breathes it and transforms it into a cleaner substance.

6. Translate the underlined sections of the text.