

China scientists say cigarette butts protect steel

May 14 2010, By GILLIAN WONG , Associated Press Writer

(AP) -- Chinese scientists say they have found a way for the countless cigarette butts that are tossed every day on streets, beaches and other public places to be reused - in protecting steel pipes from rusting.

The remnants of used [cigarettes](#), among the world's most common form of trash, leak chemicals that have been shown to kill fish and damage the environment. The problem could be alleviated if new uses are found for the cigarette butts.

"When people walk on the streets, they usually see cigarette butts scattered everywhere, on the ground or the grass," said Jun Zhao, a Ph.D. student at the Xi'an Jiaotong University, by telephone. "I felt it was quite significant to do a project related to [environmental protection](#)."

The study is particularly relevant to China, where about 30 percent of the world's smokers live, a number roughly equal to the entire U.S. population. The country is home to both the world's largest tobacco grower and cigarette producer.

Zhao and other researchers in northwest China said Friday they have found that cigarette butts soaked in water can help guard against [corrosion](#) in a type of steel commonly used in the [oil industry](#).

The finding was recently published in the American [Chemical](#) Society journal Industrial & Engineering Chemistry Research.

Zhao said she started the research after noticing that cigarette butts turn the color of water brown when immersed in it, like the color of antiseptics. "That inspired me to wonder if the two are related," she said.

The researcher started collecting cigarette butts for the project around 18 months ago, picking them up from ashtrays atop roadside trash cans and collecting them from friends whom she had asked to save the butts.

"I have bags and bags of cigarette butts for the project. I have no idea how many of them I have," she said.

Researchers found that extracts of cigarette butt water could substantially protect N80 type steel from corroding when in hydrochloric acid at 90 degrees Celsius (194 degrees F). That type of steel is often used to make drill rods, which costs oil producers millions of dollars annually when they corrode.

A compound material produced from the burning of nicotine and tar is what protects against corrosion, Zhao said, adding she planned to study its effect on preventing rusting in other metals.

The findings are "very convincing," said Guy D. Davis, a materials consultant based in Baltimore, Maryland, with 30 years of experience researching the treatment of surfaces.

Together with another researcher, Davis has previously studied the use of tobacco extracts on steel and aluminum. "Tobacco seems to be one of the best plant-based inhibitors" of corrosion, Davis said.

But using tobacco to guard against metal corrosion has its limitations, Davis said, including that it acts as a nutrient for mold over time and "develops an obnoxious odor."

More information: Study: <http://bit.ly/cwOfMX>

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