

# Smoking causes gene damage in minutes



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WASHINGTON (AFP) – Those first few puffs on a cigarette can within minutes cause genetic damage linked to cancer, US scientists said in a study released.

In fact, researchers said the "effect is so fast that it's equivalent to injecting the substance directly into the bloodstream," in findings described as a "stark warning" to those who smoke.

The study is the first on humans to track how substances in tobacco cause DNA damage, and appears in the peer-reviewed journal *Chemical Research in Toxicology*, issued by the American Chemical Society.

Using 12 volunteer smokers, scientists tracked pollutants called PAHs, or polycyclic aromatic hydrocarbons, that are carried in tobacco smoke and can also be found in coal-burning plants and in charred barbecue food.

They followed one particular type -- phenanthrene, which is found in cigarette smoke -- through the blood and saw it form a toxic substance that is known to "trash DNA, causing mutations that can cause cancer," the study said.

"The smokers developed maximum levels of the substance in a time frame that surprised even the researchers: just 15-30 minutes after the volunteers finished smoking," the study said.

"These results are significant because PAH diol epoxides react readily with DNA, induce mutations, and are considered to be ultimate carcinogens of multiple PAH in cigarette smoke," the study said.

Lead scientist Stephen Hecht said the study is unique because it examines the effects of inhaling cigarette smoke, without interference from other sources of harm such as pollution or a poor diet.

"The results reported here should serve as a stark warning to those who are considering starting to smoke cigarettes," Hecht said.

Lung cancer kills about 3,000 people around the world each day, and 90 percent of those deaths are attributable to cigarette smoking.

The research was funded by the National Cancer Institute.

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