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# Where's Mars' Methane? Curiosity Draws a Blank

**Curiosity comes up empty-handed in its first attempt to find the gas, which on Earth is tied to biological processes.**



By [Irene Klotz](#)

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Curiosity landed on Mars on Aug. 5 and has since been answered many questions about the Red Planet. The Martian methane mystery, however, will have to wait a little longer to be solved. [Click to enlarge this image.](#)

*NASA/JPL-Caltech*

After more than a month of searching, scientists using NASA's rover Curiosity to study Mars' atmosphere have found no evidence that the planet most like Earth in the solar system has methane, a gas tied to biological processes.

The finding adds a new twist into a puzzling story about methane on Mars, which previously was detected by ground-

based telescopes and orbiting spacecraft.

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"Maybe its understandable because it's a very early measurement and they're just really still learning the idiosyncrasies of the instrumentation," planetary scientist Michael Mumma, with NASA's Goddard Space Flight Center in Greenbelt, Md., told Discovery News.

Mumma led a team that found methane in Mars' atmosphere in 2003.

On Earth, living systems produce more than 90 percent of the methane in the atmosphere, with the rest tied to geochemical processes. The gas is easily broken down by sunlight, so its presence in the Martian atmosphere would imply a continuous source on the planet's surface.

But on Mars, solar radiation is likely not the only methane-killer, nor the most lethal.

For example, the planet's atmosphere and soil is believed to contain chemicals that are highly destructive to molecular bonds, including those in methane.

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"The oxidation process could start in the atmosphere and diffuse into the surface of Mars. There possibly are oxidants in the surface of Mars, including hydrogen peroxide ... that could potentially result in the rapid destruction of methane," Curiosity scientist Sushil Atreya with the University of Michigan in Ann Arbor, told Discovery News.

Mars' dust storms could play a role as well, blasting methane-busting chemicals into the atmosphere, as well as generating massive electrical fields that could directly destroy the gas, Atreya added.

Curiosity landed on Mars in August to determine if the planet has or ever had the ingredients needed to develop and preserve life. The rover includes a suite of science instruments to chemically analyze soil, rock and atmospheric samples.

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Rover scientists found methane in the first two atmospheric samples analyzed by the rover's Sample Analysis at Mars (SAM) instrument, but believe the gas was a remnant from Earth. Two more experiment runs did not find methane in concentrations of at least five parts per billion.

Mumma said that's not surprising.

"A year-and-a-half after we published our results, we noted that the global mean average had decreased to about three parts per billion. That was only half of what we expected it to be if there was no rapid destruction of the methane we saw," Mumma said.

Curiosity scientists said they plan to increase their experiments' sensitivity and keep looking.

"The search goes on," said Curiosity scientist Paul Mahaffy, with NASA's Goddard Space Flight Center.

The results of Curiosity's first atmospheric studies on Mars were released during a conference call with reporters on Friday.



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