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Martian Surface Probably Cannot Support Life

by Staff Writers
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The question of whether the planet Mars can support life has tantalized scientists for years, but research now suggests that Martian dust devils and storms produce oxidants that would render the planet's surface uninhabitable for life as it exists on Earth.

"As a consequence, any nascent life (microorganisms, for example) or even prebiotic molecules would find it hard to get a foothold on the surface of Mars, as the organic material would be scavenged efficiently by the surface oxidants," said lead researcher Sushil Atreya of the University of Michigan.

Atreya said the research explains inconsistencies in earlier space experiments that sought to determine if Mars had or did support life. Mars is thought to have formed with the same ingredients that on Earth led to the formation of molecules associated with life. Yet, organic molecules have never been detected on the Martian surface.

The researchers calculated the excess carbon monoxide, hydroxyl and eventually hydrogen atoms produced when electric fields generated by dust devils and storms cause carbon dioxide and water molecules to split. Hydrogen and hydroxyl have been known to play a key role in the production of hydrogen peroxide in the Martian atmosphere.

The amounts of hydrogen peroxide produced during these reactions would be large enough to result in its condensation - essentially hydrogen peroxide would snow from the sky and contaminate the planet when it fell.

Atreya's research suggests that the hydrogen peroxide would scavenge organic material from Mars, and it could also accelerate the loss of methane on Mars, requiring a larger source to explain the recent detection of this gas on Mars.

"Methane is a metabolic byproduct of life as we know it, but presence of methane does not by itself imply existence of life on a planet," Atreya said.

Scientists regard Mars as Earth's closest relative. "Of all the planets in the solar system, Mars resembles the Earth most. And outside of the Earth, it has the



Magnificent (and lifeless?) desolation. Image credit: NASA/JPL/Cornell



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best chance of being habitable now or in the past when the planet may have been warmer and wetter," Atreya said.

Presence of life below the surface of Mars now or in the past is not ruled out by this research.

The results also help explain contradictory results in a series of experiments in 1970s that suggested microscopic life might have been present in Martian soil.

Called the Viking Project, the primary objective was to determine if there was life - dead or alive - on Mars.

Biological experiments conducted by the two landers, Viking 1 and 2, yielded conflicting results.

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