

NASA found traces of methane gas near a crater on Mars

The US Space Agency (NASA) has identified a gas produced by Earth-dwelling organisms on Mars. This could be evidence that life exists on the 'red planet'.



According to the Daily Mail (UK), NASA's Curiosity probe has detected a steady flow of methane gas from Gale crater, appearing at different times of the day and fluctuating seasonally, sometimes reaching double highs. 40 times more than normal.

Although life has not yet been found on the world of Mars, NASA scientists believe that this gas flow may originate from deep underground.

The team thinks the methane could be trapped under a layer of solidified salt and only escape when temperatures on Mars rise – or when the Curiosity rover rolls over the crust and cracks it.

On Earth, this simple molecule, made up of one carbon atom and four hydrogen atoms, is often a sign of life. Methane gas is often released by animals when digesting food.

NASA's Curiosity probe has been roaming the surface of Mars since 2012. During that time until now, the most puzzling thing Curiosity has found is a steady stream of methane gas from Gale crater.

Gale Crater is the only location on the red planet where Curiosity has detected this plume. But NASA's probe has yet to detect any life on Mars.

With experiments simulating soil conditions on Mars, scientists seem to have answers to possible hypotheses.

Over a long period of time, salt will emerge from deep beneath the dusty, rock-covered topsoil of Mars. This salt is called perchlorate, a toxic substance that is abundant in ice trapped under the surface of Mars.

When there is too little air, the ice will gradually evaporate. And when this salty vapor filters through the topsoil, it leaves something behind.

When enough salts accumulate in the topsoil, they form a crust - like sand on the beach when it dries to a brittle crust, or like coffee grounds left behind after drinking.

On Mars, this process occurs naturally over a long period of time in shallow permafrost regions and may have enough salt, say the scientists behind the study published in JGR Planets, accumulates in the top layer. When the salt vapor bubbles up, methane gas also escapes.

But the origin of this gas stream is still a mystery. Methane could be emitted by some types of living organisms, or it could come from geological processes beneath the Martian surface that scientists have yet to explore.

But no matter where it originates, methane gas ends up trapped under this salt crust.

By pumping different concentrations of perchlorate through simulated Martian topsoil, scientists found that this impermeable crust formed in about 3 to 13 days. Perchlorate concentrations of 5 – 10% can create a solid salt crust.

Scientists pumped neon gas under the crust to replace methane. They confirmed that the shell is strong enough to trap methane underneath.

But when the planet's temperature rises at certain times of the day or during certain seasons, this shell ruptures, allowing methane to escape. And maybe that's when the Curiosity probe discovered methane in the air on Mars.

However, it's not just temperature that can crack this shell.

The crust can be about 2 cm thick. Curiosity is heavy enough to punch through it as it moves through.

'To test this hypothesis, methane measurements need to be taken when the rover reaches a site with high salt content. Another test is to try to suck in Martian air while drilling into the salt-rich surface,' scientists said.

But NASA has not yet conducted this experiment.

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