

Good Morning my name is Rishi Gupta, today I will be speaking about the possibility of life on Venus and how it may have been overlooked.

On 14 September, scientists revealed that they had found phosphine in Venus' atmosphere, about 55 kilometres above the surface, using the Atacama Large Millimetre/submillimetre Array in Chile and the James Clerk Maxwell Telescope in Hawaii. Phosphine, which is a toxic compound of hydrogen and phosphorus, is produced by some organisms on earth, hinting that there may be anaerobic life on Venus. The finding will encourage us to ask whether we have overlooked a planet that may have once been more Earth like than any other world in our solar system.

However, NASA may have found a hint of phosphine picked up by Pioneer 13 in 1978. Pioneer 13 used the Large Probe Neutral Mass Spectrometer to sample the atmosphere to identify unknown chemicals. When scientists first described the LNMS results in the 1970s, they didn't discuss phosphorus-based compounds like phosphine, focusing instead on other chemicals. But when the data were re-examined 40 years later the data showed large signals of phosphine and evidence for atoms of phosphorus in the atmosphere which likely came from phosphine.

Even before this Carl Sagan, one of the most well-known scientists of the 1970s and 1980s wrote in Nature in 1967 "While the surface of Venus makes the hypothesis of life there implausible, the clouds of Venus are a different story altogether." As Carl Sagan stated, a high carbon-dioxide atmosphere was no obstacle. Up at the 50km (31-mile) layer, at the top of Venus' clouds, conditions are actually hospitable and almost Earth-like.

So, if all of the evidence has pointed to a possible life in the atmosphere of Venus and even though Venus is closer and more Earth-like, why have we not more explorations to Venus? Well, the answer could lie to the fact that Mars has a surface we could stand on, which was an easier sell to our 20th century "space colonization" mindset.

However, after the most recent discovery of phosphine in the atmosphere of Venus, space agencies such as NASA and the European, Indian, and Russian space agencies have plans for Venus probes. This could help scientists rule out other plausible production methods before considering that it is being made by living organisms. And from these proposed explorations we may be one step closer to finding life on another planet.