

Personal care product chemicals found in Antarctica

27 February 2015, by Bob Yirka



Image: National Science Foundation

A team of researchers with the Spanish Council for Scientific Research has found small amounts of cyclic volatile methylsiloxanes in soil and plant samples and also in krill and phytoplankton specimens, all taken from various sites in Antarctica. In their paper published in *Environmental Science and Technology*, the team describes their research and offers a possible explanation for how the chemicals found their way to such a remote part of the planet.

Cyclic volatile methylsiloxanes are a group of chemicals that are often used in [personal care products](#) to give them a creamy smooth texture. Prior research had indicated that they "probably" degraded after evaporating into the atmosphere, thus this new finding is a surprise. The team conducted their research back in 2009 after discovering the chemical was present in samples taken from sites in the Pyrenees Mountains—that caused them to wonder about other more remote sites. To find out, they set off for Antarctica and collected soil and plant samples from 10 different locations on the South Shetland Islands. They also captured krill and phytoplankton from 11 different locations around the islands.

In collecting and analyzing the samples they collected, the team used techniques that they claim prevented any contamination on their part. Using gas chromatography (and tandem mass spectrometry) revealed the presence of at least three types of the chemical, abbreviated as D4, D5 and D6. D4, they note has been largely phased out from modern products. They report that the samples with the highest levels of the chemicals were comparable to levels in samples taken in Europe and North America.

As for how the [chemical](#) managed to make its way from lotions and creams being applied to human skin, the researchers suggest it is possible that after evaporation, they were carried in the atmosphere where they eventually became part of falling snow. As the snow on the ground melted, the chemicals made their way into the soil, and then were pulled into plants or washed into the sea where they were taken in by krill or [phytoplankton](#). They can offer no explanation as to why the chemicals were not broken down in the atmosphere by highly reactive hydroxyl radicals—which is what most in the scientific community believed happened to them.

The researchers, along with others in the scientific community do not believe that the chemicals pose any harm to the environment, but thus far that has not been proven—there has not been much research done on the impact of the chemicals in the environment because scientists did not know it might be a problem.

More information: *Environ. Sci. Technol.* 2015, DOI: [10.1021/es503697t](https://doi.org/10.1021/es503697t)

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