

A photograph of a vast Antarctic landscape with numerous icebergs of various shapes and sizes floating in the water. The sky is a clear, pale blue, and the overall scene is serene and cold.

# Bulletin 1

## Update on the

# Antarctica research project

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Picture 1 - A researcher at the Polish Station



## Introduction

The European Commission is presently considering a proposal for the European Union to nominate cyclic siloxanes D4, D5, and D6 for listing in Annex B of the Stockholm Convention on Persistent Organic Pollutants (POPs). For a chemical substance to be classified as a POP, it needs to meet the Long-Range Environmental Transport (LRET) criterion. In other words, there must be evidence demonstrating that a substance can travel long distances from its point of origin, potentially spanning continents and oceans, and can accumulate in pristine environments far removed from any release points, such as production facilities and municipal wastewater treatment plants). Currently, there is no consensus within the scientific community regarding the classification of D4, D5, and D6 as Persistent Organic Pollutants (POPs) under the Stockholm Convention. Ongoing scientific discussions revolve around subjects such as the potential for long-range transport and the deposition of these substances in distant areas.

Silicones Europe (SiE) and the Global Silicones Council (GSC), both representing the silicone industry on the European and global levels, are of the firm opinion that there is currently not enough evidence to claim that D4, D5, D6 meet the LRET criterion. SiE and the GSC have jointly commissioned a monitoring study in the Antarctic to gather robust scientific data on Volatile Methylsiloxanes (cVMS) concentrations in Antarctica's air, surface media and aquatic biota. The program has been designed to provide a thorough understanding of local sources and other release points such as tourism, as well as potential bias from collection and analytical procedures.

A Scientific Supervisory Panel (SSP), consisting of respected scientists supporting the research stations (Poland, Ukraine, Bulgaria and Norway) with diverse perspectives from backgrounds of independent academic experts, authoritative bodies, and technical institutions has been established. The objective of the SSP is to ensure the highest levels of research integrity to remove scientific uncertainties on cyclic volatile methylsiloxanes (cVMS) substances concerning their potential to undergo long range environmental transport (LRET) and back deposition in remote environments. The SSP members have the opportunity to provide input through full access to all data throughout the process to build consensus on appropriate study design and the scientific results.

Recently, the first researchers and observers have arrived in Antarctica, set up their research stations and started monitoring and taking samples. The Polish researchers have completed the majority of their sampling and are planning the shipment of samples back to Poland and then to the Norwegian Institute for Air Research (NILU), where sample analyses will be done.

Preliminary results are expected end of 2024, and the final report for the project is awaited in Q1 2025.

## Tourist activity and impact on research

Measured levels to satisfy the LRET criterion in Annex D must also be "distant from the sources of its release". Conducting studies in a remote location such as Antarctica therefore would be assumed to meet this criterion. However, locating regions secluded from human activity poses a significant challenge. For example during sample collection, tourist activity was observed, as shown in Pictures 4 & 5. This complicates scientific studies since the potential presence of silicone in certain areas, such as aquatic systems, might originate from tourist activities or other local sources, among others from the use of silicone-based personal care products or fuel additives from ships, rather than from LRET or back deposition (i.e. deposition on the earth surface through weather conditions, such as rain or snow). This scientific challenge was reported in the study by A. Perfetti-Bolaño<sup>1</sup> et al. in 2022, which demonstrated chemical presence in Antarctica due to local waste water sources.

Picture 4

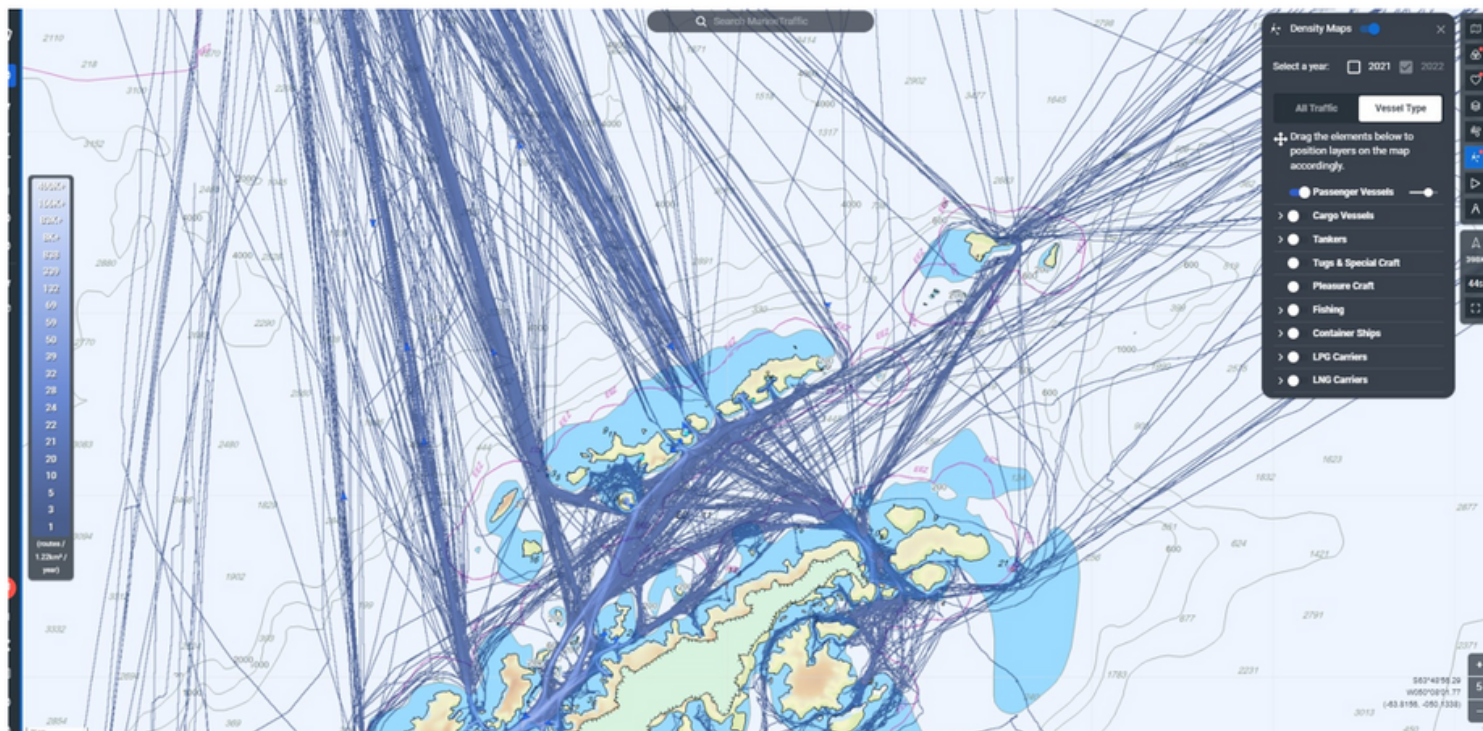


Picture 5

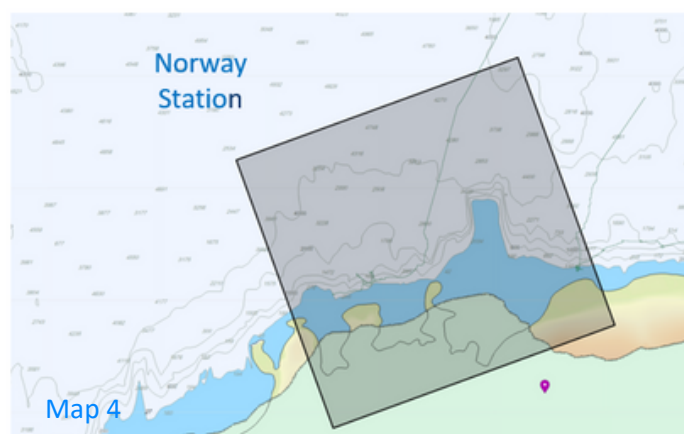
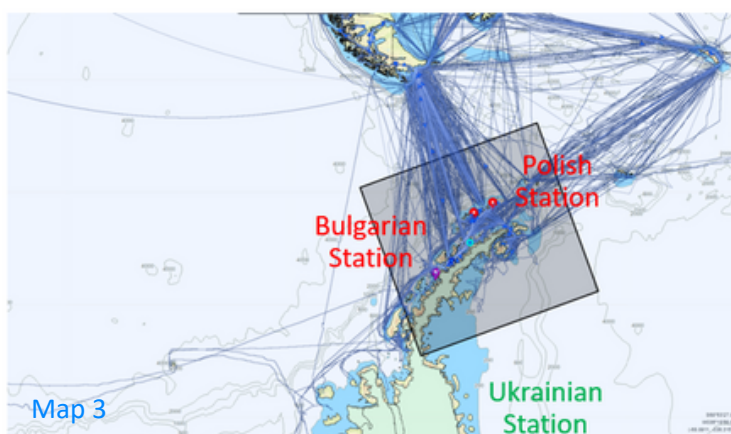




### Passenger vessel traffic maps 2022 - near the Stations where sampling is taking place



Map 2 Passenger Vessel Traffic 2022

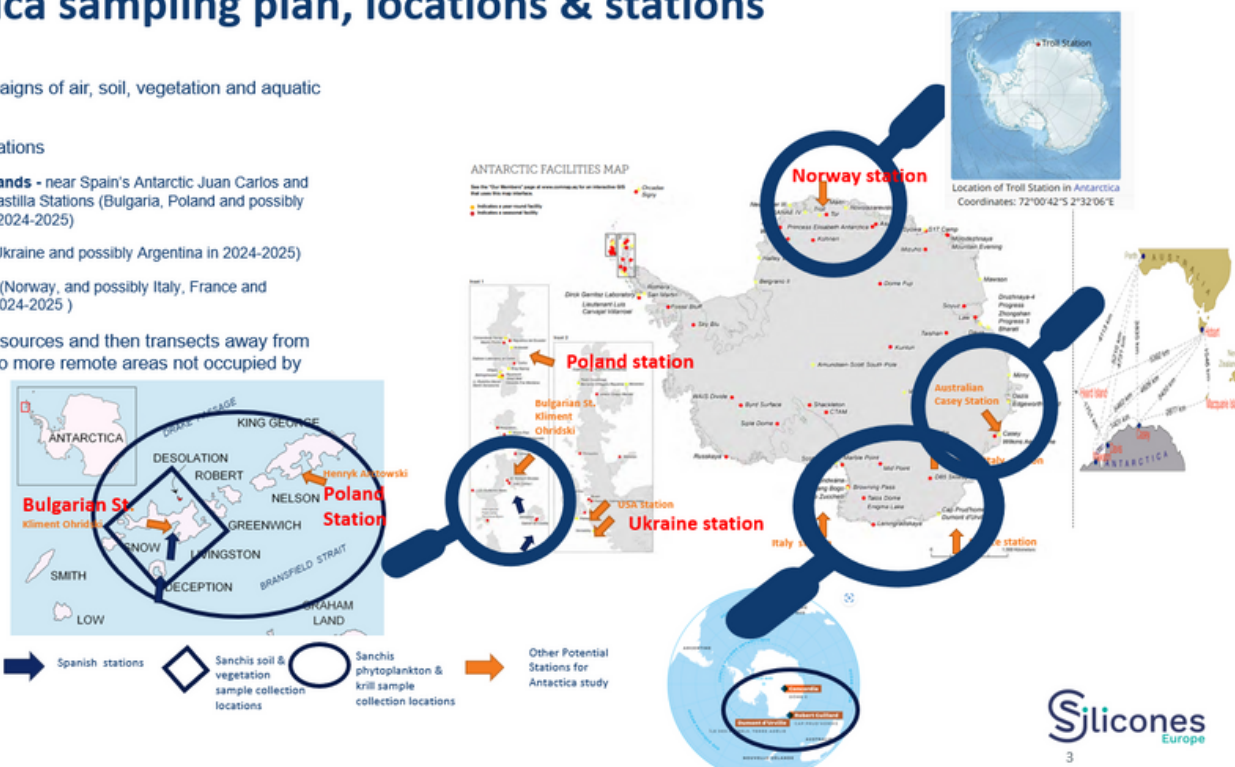


## Locations of Antarctic stations

Researchers are collecting samples from various stations to ensure that the sampling is representative.

## Antartica sampling plan, locations & stations

- Sampling campaigns of air, soil, vegetation and aquatic biota:
- At least 3 locations
- a) **Shetland Islands** - near Spain's Antarctic Juan Carlos and Gabriel de Castilla Stations (Bulgaria, Poland and possibly Argentina in 2024-2025)
- b) **Peninsula** (Ukraine and possibly Argentina in 2024-2025)
- c) **Continent** – (Norway, and possibly Italy, France and Australia in 2024-2025)
- Sample near sources and then transects away from source area to more remote areas not occupied by humans



Map 1 - Locations of sampling and stations

## Wildlife



Picture 2

Penguin



Picture 3

Seals

Pictures 2 & 3: Researchers took care of not disturbing animals during the sampling.



## News from the Henryk Arctowski Station (Poland)

One of our observers, Jeremy Durham, arrived safe and sound at the Polish Arctowski station in Antarctica.



Picture 6

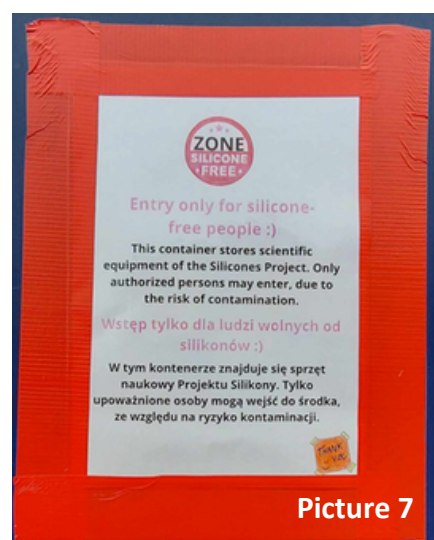
Picture 6: Researchers travelling to the Polish station via the Chilean station

## Precautions taken to prevent sample contamination

In the summer of 2023, Polish researchers participated in training to be able to identify possible sources of contamination from their equipment and clothing. To minimise the potential for contamination during sampling, they strictly followed an established protocol.

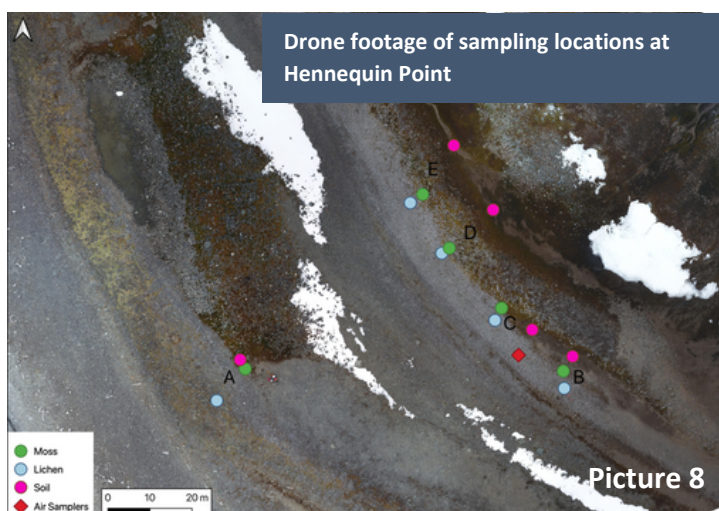
These measures include and are not limited to:

- a silicone-free zone and hut
- no cosmetics containing silicones
- separate washing machines for their clothing

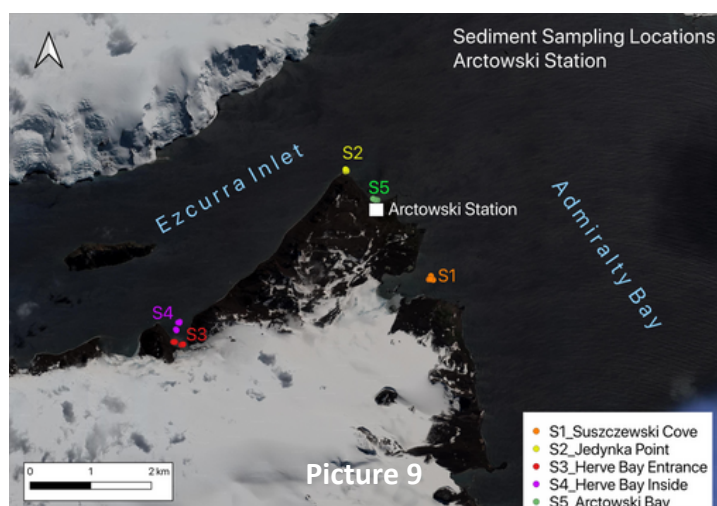


Picture 7

Silicone-free zone warning, January 2024



Picture 8



Picture 9



### Polish Station - Sampling

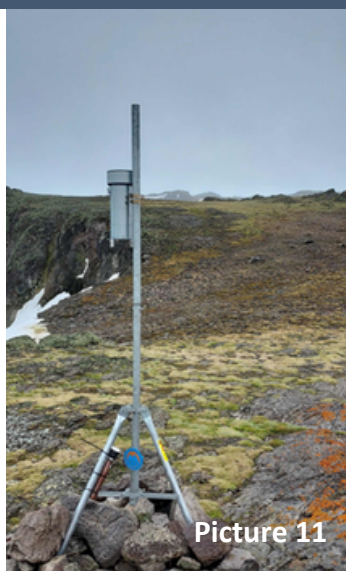
We expect the air samplers to be placed for a duration around 11 weeks. The Polish team will deploy additional air samplers in at least 3 locations for winter sampling for about 6 months.

#### Air samplers have been set up



Picture 10

Passive sampler at Arctowski station



Picture 11

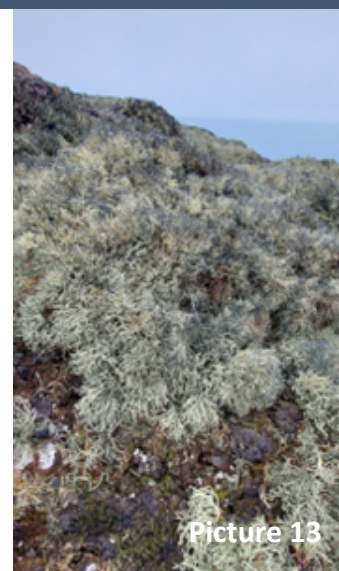
Passive sampler at King George Island

#### Specimen to be sampled at King George Island



Picture 12

Moss



Picture 13

Lichen



Picture 14

S3SLCSampling

Soil sampling



Picture 15

S2NVCSieve



Picture 16

S3SD NV.A

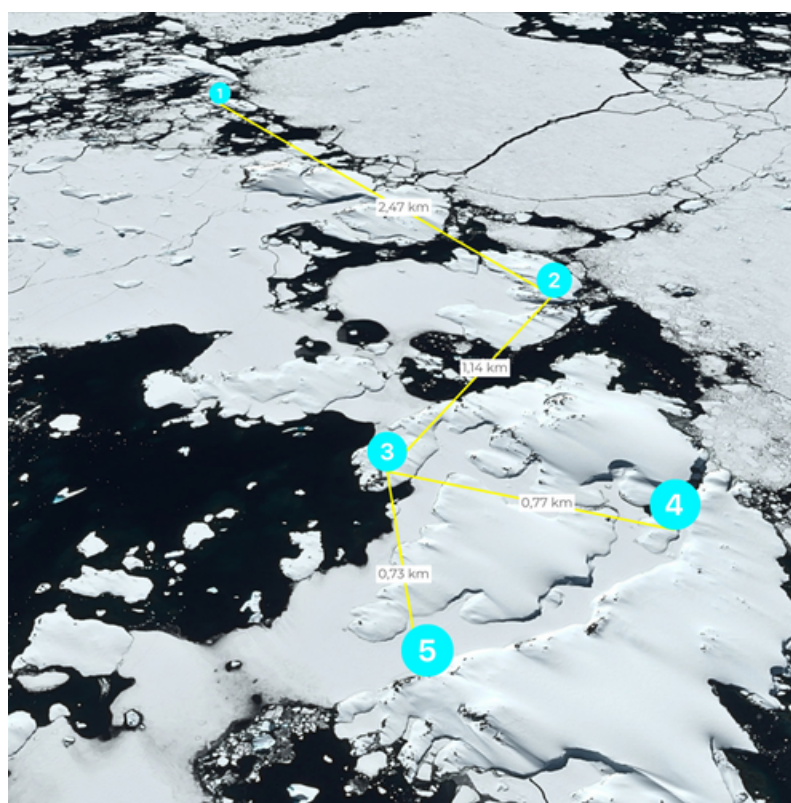
Sediment sampling

## News from the St. Kliment Ohridski Station (Bulgaria)

The research team arrived at the station in the second week of January. The air samplers have been deployed at the five planned locations. We expect a three-month exposure duration, with the collection of vegetation, soils, and marine biota schedule to commence on 5th March.

## News from the Vernadsky Station (Ukraine) (2/2)

The air samplers have been deployed at the five planned locations. Collection of vegetation, soils and marine biota will start on 5th March.



Map 5 - Locations of air samplers from the Vernadsky Station (Ukraine)





## News from the Vernadsky Station (Ukraine) (2/2)



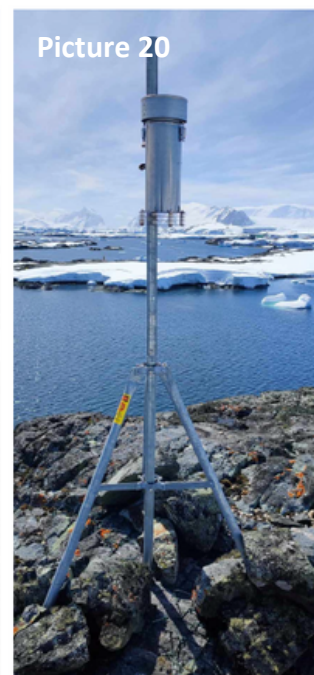
Location 1



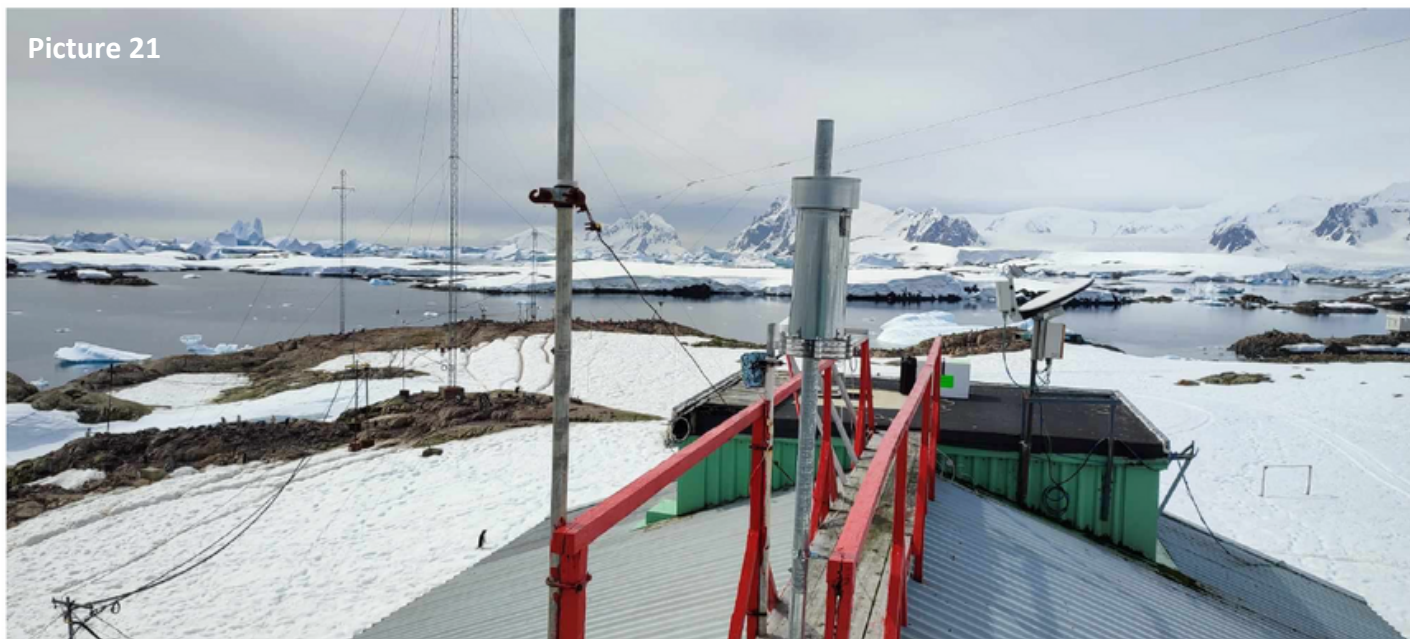
Location 2



Location 4



Location 5



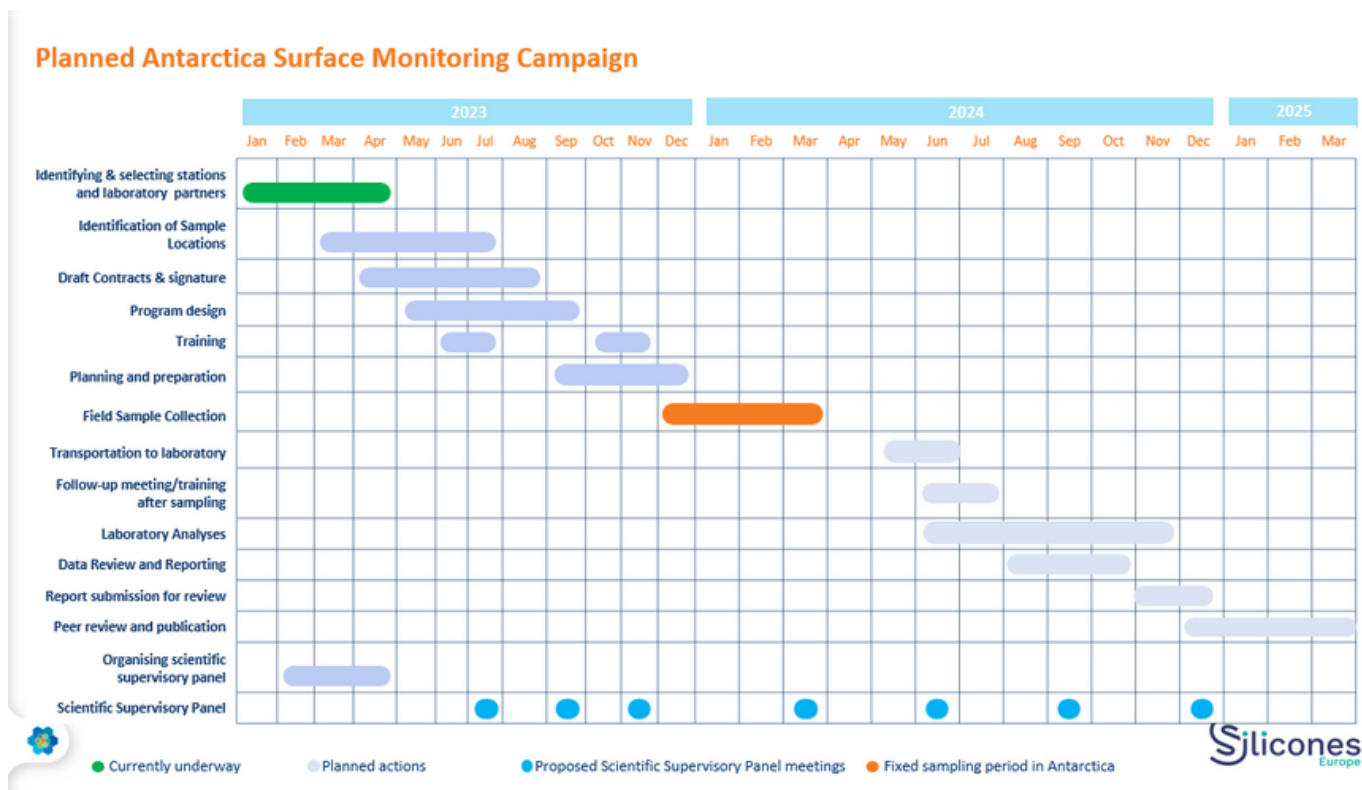
Location 3 At the roof of Vernadsky station



## Next steps and indicative timeline

Sample collection is taking place in the summer season in the Antarctic region.

As indicated in the timeline below, after collection, samples will be shipped back to Europe, around May-June. Upon receipt of the samples, expected by June, the Norwegian Institute for Air Research (NILU) will start performing the analyses. These are expected to take about six months. Silicones Europe is expecting preliminary raw data by end 2024. A final report is awaited by end Q1 2025.



## Contact us

### About Silicones Europe

Silicones Europe, a Sector Group of Cefic, is a non-profit trade organisation representing all major producers of silicones and silanes in Europe. We aim to help you understand the essential role that silicones perform in almost every aspect of our lives. Silicones have been shaping European industry for decades, playing a key part in sectors such as energy, digital, transport or healthcare. Silicones keep our solar panels and wind turbines running, electric vehicles moving, and mobile phones connected. Find out more: [www.silicones.eu](http://www.silicones.eu)

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## Annex

### Media coverage

Coverage by the Ukrainian Government (*server down on 18/01/24*)

<https://uac.gov.ua/en/nasc-joins-international-study-of-the-occurrence-of-silicones-in-the-antarctic/>

Scientists to study the distribution of silicones in the Antarctic

<https://hitechexpert.top/science/scientists-to-study-the-distribution-of-silicones-in-the-antarctic/>

Ukrainian scientists will study the distribution of silicones in the Antarctic

<https://en.socportal.info/en/news/ukrainian-scientists-to-study-antarctic-pollution-by-silicones/amp/>

Regular updates by the Bulgarian News Agency - example:

<https://www.bta.bg/en/bg-antarctica/604666-scientists-begin-work-at-liverpool-beach-antarctica>

### Coverage on the Silicones Europe website

Silicones Europe commissions study in Antarctica to deepen the understanding of silicone properties

<https://www.silicones.eu/do-silicones-travel-across-continents-and-oceans-the-silicones-industry-launches-a-study-to-find-out/>

### End note

- 1 Analysis of the contribution of locally derived wastewater to the occurrence of Pharmaceuticals and Personal Care Products in Antarctic coastal waters, by Alessandra Perfetti-Bolaño et al., Science of the Total Environment 851 (2022) 158116, Elsevier, 2022

## Annex - References to pictures and maps

### Pictures

[Picture 1](#) - A researcher at the Polish station, on a boat in Antarctica, January 2024

[Picture 2](#) - Researchers took care of not disturbing animals during the sampling - Penguin, January 2024

[Picture 3](#) - Researchers took care of not disturbing animals during the sampling - Seals, January 2024

[Picture 4](#) - Cruise ship at King George Island, January 2024

[Picture 5](#) - Cruise ship - shore of the Arctowski Polish research station on King George Island, January 2024

[Picture 6](#) - Researchers travelling to the Polish Station via the Chilean Station, January 2024

[Picture 7](#) - Silicone-free zone warning, January 2024

[Picture 8](#) - Sampling locations, Drone footage from Hennequin point, Antarctica, January 2024

[Picture 9](#) - Sediment sampling locations, Arctowski Station, Antarctica, January 2024

[Picture 10](#) - Passive air sampler at Arctowski Station, January 2024

[Picture 11](#) - Passive air sampler at King George Island, December 2023

[Picture 12](#) - Moss, Specimen to be sampled at King George Island, January 2024

[Picture 13](#) - Lichen, Specimen to be sampled at King George Island, January 2024

[Picture 14](#) - Soil sampling, 28th December 2023

[Picture 15](#) - Soil sample, collected January 12th 2024

[Picture 16](#) - Sediment sampling using the Ekman sediment sampler, December 2023

[Pictures 17 to 21](#) - Air samplers set by the Ukrainian Station team, locations correspond to those referenced on Map 5

### Maps

[Map 1](#) - Locations for sampling and stations

[Map 2](#) - Passenger Vessel Traffic 2022

[Map 3](#) - Passenger Vessel Traffic 2022, with indication of the Bulgarian and Polish Stations

[Map 4](#) - Passenger Vessel Traffic 2022, with indication of the Norway Station

[Map 5](#) - Locations of air samplers from the Vernadsky Station (Ukraine) and key