Current initiatives for a structured sample and data collection of envi-ronmental contamination in the Ant-arctic

Current initiatives for a structured sample and data collection of environmental contamination in the Antarctic

Summary

The purpose of this paper is to outline the progress that has been made in establishing an international network – following ATCM XLIV – aimed at promoting and coordinating a more structured sample and data collection of environmental contamination in the Antarctic. This paper follows up on the results of the international Expert Workshop ‘Act now – Legacy and Emerging Contaminants in Polar Regions’, co-hosted in January 2022 by the *German Environment Agency* (UBA) and the *Institute of Coastal Environmental Chemistry, Helmholtz-Zentrum Hereon* (Geesthacht, Germany). In order to support information exchange on environmental contamination we have summarised priority actions and a conceptual framework across stakeholders in the so-called Berlin Statement (Ebinghaus et al. 2023), that is now open for supporting signatures.

***Background***

Antarctica is considered as one of the last pristine regions of the planet with limited anthropogenic activity and emissions. But there is growing evidence that the Antarctic environment is increasingly exposed to chemical stressors. Antarctica is impacted by global issues such as climate change and long-range transport of chemicals. Furthermore, expanding tourism and research activities (including logistical activities serving their conduct or preparation) can affect the pristine environment. Serious threats to the conservation of the Antarctic environment do exist, including chemical contamination related to various sources, such as research stations, scientific activities, tourism and fishing operations, vessels incidents, and long-range transport of legacy pollutants and contaminants of emerging concern (CEC) from mid-latitudes. As a result, the presence of persistent organic pollutants (POPs), trace elements and emerging contaminants have been reported in Antarctica for several years (ATCM XXXI/IP097, ATCM XXXII/IP069, ATCM XXXVII/IP008, ATCM XL/IP022, ATCM XLIII IP021, Xie et al. 2022). To address this threat of environmental contamination, SCAR as well as Member States introduced potential approaches for a more coordinated research and a more structured data sampling and collection (ATCM XLIII/ IP137, ATCM XLIV/IP007 rev1, ATCM XLIV/WP011rev1). During last year’s ATCM, CEP acknowledged the value of enhancing collective efforts towards the development of a structured sample database of environmental contamination and encouraged Member States to intensify cooperation between all stakeholders to initiate a more structured sample and data collection of environmental contamination in the Antarctic (ATCM XLIV Final Report).

***Berlin Statement*** ***on Legacy and Emerging Contaminants in Polar Regions***

The Berlin Statement (Ebinghaus et al. 2023) is the outcome of the international expert Workshop ”Act now – Legacy and Emerging Contaminants in Polar Regions” convened in Geesthacht, Germany, on 25-26 January 2022[[1]](#footnote-1) with international experts in contaminant research, regulatory chemical assessment and monitoring in polar regions, Environmental Specimen Banks, and information and data platforms. The statement addresses urgent chemical pollution issues in the polar regions and provides recommendations for improving screening, monitoring, risk assessment, research cooperation, and open data sharing to provide environmental policy makers and chemicals management decision-makers with relevant and reliable contaminant data to better protect the polar environments. To achieve this, the authors have identified a number of priority actions, primarily in management and research, and recommend their facilitation through a multi-stakeholder co-development framework for both polar regions. The Berlin Statement addresses the following priority topics: contaminant screening; source elucidation, monitoring and assessment of contaminants; cooperation between scientists with a focus on the science–policy interface; concepts, opportunities and technical solutions for data-sharing; and the provision of tailored scientific information for policy makers (Fig.1).

Diagrama

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Fig 1: Conceptual framework across stakeholders with priority actions (Ebinghaus et al. 2023)

***Conclusions and next steps***

A harmonized and multidisciplinary science-based approach across stakeholders is urgently needed for a comprehensive understanding, prevention, and the reduction of environmental contamination in the Antarctic. A conceptual framework across stakeholders has now been published in the Berlin Statement on Legacy and Emerging Contaminants in Polar Regions. It is our hope, that the Berlin Statement will serve as a nucleus for the development of a network that will be fostered and expanded to create a regular platform for polar collaborations on environmental contamination. To facilitate support for the Berlin Statement by scientists, regulators, decision-makers and interested laymen, we established an internet webpage that provides more insight and allows signing the Berlin Statement. Interested and supporting Treaty Parties are encouraged to read and sign the Berlin Statement via the following link: <https://www.coastalpollutiontoolbox.org/>.

Germany underlines the intention to cooperate in order to enable a more structured sample and data collection of environmental contamination in the Antarctic. As next steps, we will report on a follow-up project with international partners such as environmental specimen banks and National Antarctic Programmes to compile and make available further data.

***References***

*ATCM XXXI IP097, Antarctic Persistent Organic Pollutants Notes on a Request from the Stockholm Convention.*

*ATCM XXXII IP069, SCAR* *report on Persistent Organic Pollutants in the Antarctic: An Update*

*ATCM XXXVII IP008, Persistent organic pollutants (POPs) in Admiralty Bay - Antarctic Specially Managed Area (ASMA 1): Bioaccumulation and temporal trend.*

*ATCM XL IP022, Trace element contamination and availability within the Antarctic Treaty Area.*

*ATCM XLIII IP021, A step towards a structured sample and data collection of environmental contamination in the Antarctic.*

*ATCM XLIII IP137, SCAR report on Persistent Organic Chemicals in Antarctica: A horizon scan of priority challenges.*

*ATCM XLIV IP007, Update on current initiatives for a more structured sample and data collection of environmental contamination in the Antarctic.*

*ATCM XLIV WP011, Further steps towards a structured sample and data collection of environmental contamination.*

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1. <https://www.umweltbundesamt.de/dokument/act-now-legacy-emerging-contaminants-in-polar> [↑](#footnote-ref-1)