



AMAP Assessment 2011
Mercury in the Arctic

Arctic Monitoring and Assessment Programme (AMAP)

AMAP Assessment 2011:

Mercury in the Arctic

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Frost flowers, frozen extrusions of salt formed on new sea ice as salt water freezes – are enriched in bromine, and are a possible source of the bromine that is believed to be an important component in reactions that cause atmospheric mercury depletion events. Photo: © Bryan & Cherry Alexander (arcticphoto.co.uk).

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Preface

This assessment report details the results of the 2011 AMAP Assessment of Mercury in the Arctic. It builds upon the previous AMAP heavy metals assessments that were presented in 1998 and 2005*.*

The Arctic Monitoring and Assessment Programme (AMAP) is a group working under the Arctic Council. The Arctic Council Ministers have requested AMAP to:

- produce integrated assessment reports on the status and trends of the conditions of the Arctic ecosystems;*
- identify possible causes for the changing conditions;*
- detect emerging problems, their possible causes, and the potential risk to Arctic ecosystems including indigenous peoples and other Arctic residents; and to*
- recommend actions required to reduce risks to Arctic ecosystems.*

*This report provides the accessible scientific basis and validation for the statements and recommendations made in the AMAP State of the Arctic Environment report, 'Arctic Pollution 2011' that was delivered to Arctic Council Ministers at their meeting in Nuuk, Greenland in May 2011. It includes extensive background data and references to the scientific literature, and details the sources for figures reproduced in the 'Arctic Pollution 2011'*** report. Whereas the 'Arctic Pollution 2011' report contains recommendations that specifically focus on actions aimed at improving the Arctic environment, the conclusions and recommendations presented in this report also cover issues of a more scientific nature, such as proposals for filling gaps in knowledge, and recommendations relevant to future monitoring and research work, etc.*

To allow readers of this report to see how AMAP interprets and develops its scientifically-based assessment product in terms of more action-orientated conclusions and recommendations, the 'Executive Summary of the Arctic Pollution 2011 Ministerial Report' is reproduced in this report on pages xi to xiv.

The AMAP assessment is not a formal environmental risk assessment. Rather, it constitutes a compilation of current knowledge about the Arctic region, an evaluation of this information in relation to agreed criteria of environmental quality, and a statement of the prevailing conditions in the area. The assessment presented in this report was prepared in a systematic and uniform manner to provide a comparable knowledge base that builds on earlier work and can be extended through continuing work in the future.

The AMAP scientific assessments are prepared under the direction of the AMAP Assessment Steering Group and are subject to a formal and comprehensive peer review process. The product is the responsibility of the scientific experts involved in the preparation of the assessment. Lead countries for this AMAP Mercury Assessment were Canada and Denmark. The assessment

is based on work conducted by a large number of scientists and experts from the Arctic countries (Canada, Denmark/Greenland/Faroe Islands, Finland, Iceland, Norway, Russia, Sweden, and the United States), together with contributions from indigenous peoples organizations, from other organizations, and from experts in other countries.

AMAP would like to express its appreciation to all of these experts, who have contributed their time, effort, and data; and especially to the lead experts who coordinated the production of this report, and to referees who provided valuable comments and helped ensure the quality of the report. A list of the main contributors is included in the acknowledgements on page vii of this report. The list is not comprehensive. Specifically, it does not include the many national institutes, laboratories and organizations, and their staff, which have been involved in the various countries. Apologies, and no lesser thanks, are given to any individuals unintentionally omitted from the list. Special thanks are due to the lead authors responsible for the preparation of the various chapters of this report.

The support of the Arctic countries is vital to the success of AMAP. AMAP work is essentially based on ongoing activities within the Arctic countries, and the countries also provide the necessary support for most of the experts involved in the preparation of the assessments. In particular, AMAP would like to express its appreciation to Canada and Denmark for undertaking a lead role in supporting the Mercury assessment. Special thanks are also offered to the Nordic Council of Ministers for their financial support to the work of AMAP, and to sponsors of projects that have delivered data for use in this assessment.

The AMAP Working Group that was established to oversee this work, and the AMAP mercury expert group are pleased to present its assessment.

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*** AMAP, 2011. Arctic Pollution 2011. Arctic Monitoring and Assessment Programme (AMAP), Oslo, Norway. vi+38 pp.

