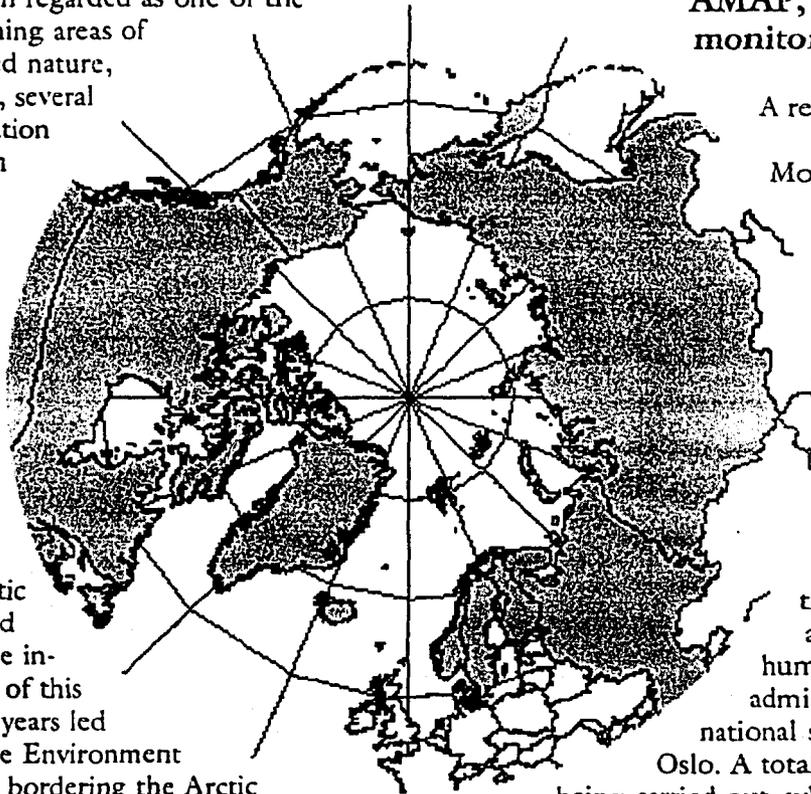


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The Norwegian Radiation Protection Authority leads international cooperation on radioactive contamination in the Arctic

In cooperation with Russia, Norway is responsible for the part of AMAP (Arctic Monitoring and Assessment Programme) concerning radioactivity. An assessment of the consequences of radioactive contamination for the environment in northern areas will be an important part of AMAP's report to the Ministers of the Environment in the eight participating countries in 1996. The report will contain an overview of the sources of the contamination and the level of radioactivity in the environment, in addition to an evaluation of the consequences for humans and the environment.

The Arctic has been regarded as one of the world's few remaining areas of relatively untouched nature, but in recent years, several types of contamination have been found in these areas too. Measurements indicate that contaminants like heavy metals, acid precipitation, persistent organic compounds and radioactivity from human activities in more southern latitudes are transported to the Arctic by winds, rivers and ocean currents. The increasing awareness of this situation in recent years led the Ministers of the Environment from the countries bordering the Arctic (Iceland, Sweden, Finland, Denmark, Norway, Canada, USA, Russia) to decide to establish cooperation to assess the environmental problems in the northern areas. This decision was taken at a meeting in Rovaniemi in Finland in June 1991. Since then, Great Britain, the Netherlands and Germany have joined the programme as observers.



AMAP, the Arctic monitoring programme

A result of this cooperation is the "Arctic Monitoring and Assessment Programme" - AMAP. The objective of AMAP is to measure the levels of contamination and assess the effects of this contamination and its consequences for the environment in the atmosphere, in the sea, in freshwater and on land, and for human health. AMAP is administered by an international secretariat located in Oslo. A total of 300 projects are being carried out, which will supply new data on the environment in the Arctic and northern areas.

The first programme period is to last until 1996. During this period AMAP has given priority to four types of contamination:

- persistent organic compounds,
- heavy metals,
- acidification,
- radioactive substances.

The consequences of radioactive contamination

At a meeting of AMAP's working group in Reykjavik in October 1993, Norway and Russia were given joint responsibility for leading the work of assessing the impacts of radioactive contamination in the Arctic.

The work involves scientific institutes in eleven countries, and the assessment work will be coordinated by:

Mikhail Balonov, Russia
 Per Strand, Norway
 Mike Bewers, Canada
 Anneli Salo, Finland
 William Templeton, USA
 Asker Aarkrog, Denmark
 Hartmut Nies, Germany

Norway's contribution to the assessment is funded by the Ministry of Environment.

The environmental impact assessment will include:

1. *An overview of sources and of levels of radioactivity in the Arctic*

This will include background information on the sources which may have contributed to earlier and existing levels of radioactivity in the Arctic. Among these sources are:

- fallout from nuclear weapon testing,
- emissions from the Chernobyl accident,
- dumping of wastes in the Atlantic Ocean and the Barents and Kara seas,
- accidents in northern areas (eg the Thule accident in 1968 and sunken submarines),
- discharges from nuclear power plants, waste management and reprocessing plants.

2. *Assessment of the consequences of emissions from various sources*

This is intended to answer questions such as: What are the consequences of emissions from these sources? What additional risk do these sources represent in relation to other emissions and natural radiation? An important part of this assessment will be to identify the most exposed groups of the population, plants and animals. Consequences of potential accidents will be assessed a.o. by modelling of accident scenarios. This evaluation of individual sources will provide important background information for decisionmakers in the different AMAP countries when they will decide whether to initiate measures to reduce the threat of contamination.

3. *Calculation of radiation doses to the population*

This applies both to specially exposed groups of the indigenous population and the "average" population. The calculations will include both the external doses received because people live in contaminated areas, and internal doses a.o. caused by eating contaminated food. As far as possible, the different sources that have led to the contamination will be identified.

The impact assessments will be based on the results of measurements of various samples, eg samples of soil and foods. The results published earlier in scientific journals will also constitute an important part of the basis for the assessment.

The report is expected in 1996

The conclusions from the first period of the AMAP will be presented in a report to the Ministers of the eight participating countries in 1996. Based on these conclusions, the Ministers will receive recommendations concerning the measures required to reduce the contamination, measures that will lead to an improvement in the state of the environment in the Arctic.