Atmospheric Mercury Depletion Events (AMDEs) in Polar Regions During Arctic Spring

Katrine Aspmo
Torunn Berg
Norwegian Institute for Air Research

Grethe Wibetoe
University of Oslo, Dept. of Chemistry

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This talk compares theory with measurements and gives the environmental implications of AMDEs.
A theory exists for the cycling of mercury during depletion events in the Arctic springtime.

[Sunlight, Halogens, O$_3$…] → Hg° ↔ HgII 
| RGM | PM |

[Snowpack] → HgII ↔ Me-Hg

[Bacteria, …]

[Lindberg et al., 2002; Steffen et al., 2003]
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Particulate Mercury (PM)

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Global warming may increase the extent of AMDEs

Arctic biota show highly elevated Hg levels and are still increasing

Hg in polar bears

[Lindberg et al., 2002]
In summary, AMDEs lead to increased Hg input to Arctic ecosystems

A significant fraction of the deposited Hg is bio-available

Deposited Hg can be re-emitted

AMDEs can increase as polar climate warms

Questions?