The US Mercury Emission Inventory for the Arctic Council Action Plan

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Outline

- Background of ACAP project
- Objective
- Creation of the inventory
- Results
- Conclusions

Background

- The Arctic Council has been focusing on reducing the exposure of several priority pollutants.

- High levels of mercury found in species such as polar bears and fish spurred the need to reduce mercury.

Background

- The ACAP mercury project was led by the Danish Environmental Protection Agency.
- All eight Arctic countries participated by compiling national emission inventories for mercury.

Region


North Pacific Ocean
Japan
United States (Alaska)
Russia
Canada
Greenland (Denmark)
Nuuk (Godthab)
Reykjavik
Iceland
North Atlantic Ocean
Helsinki
Ire.
U. K.
France
Germany
Pol.
Ukraine
Romania
Turkey
Den.
Nor.
Fin.
Bel.
Lat.
Lith.

Objective

- Contribute to a decrease in mercury releases from Arctic countries by:
  - Developing a regional action plan
  - Evaluating specific sources for control measures.

Regional Mercury Inventory

- An inventory of mercury releases, usage and disposal provided the basis for an action plan for mercury reduction.
- A detailed questionnaire was developed in cooperation with US EPA.

Regional Mercury Inventory

- US EPA completed the USA portion of the questionnaire and provided it to Denmark in August 2003.
- All data used are publicly available from US EPA inventories, e.g., National Emissions Inventory (NEI) and Toxics Release Inventory (TRI).

Types of Information on Questionnaire

- Release data
  - Air
  - Water
  - Land
- Trade Statistics
- Trends Data
- Transfer data
  - Waste transfer to public/municipal waste water systems
  - Waste transfer to general/municipal waste treatment
  - Waste transfer treated as hazardous/medical waste

2001 TRI

- Used for water and land emissions in ACAP Questionnaire.

- TRI data available at:

www.epa.gov/tri/tridata/tri01/data/index.htm

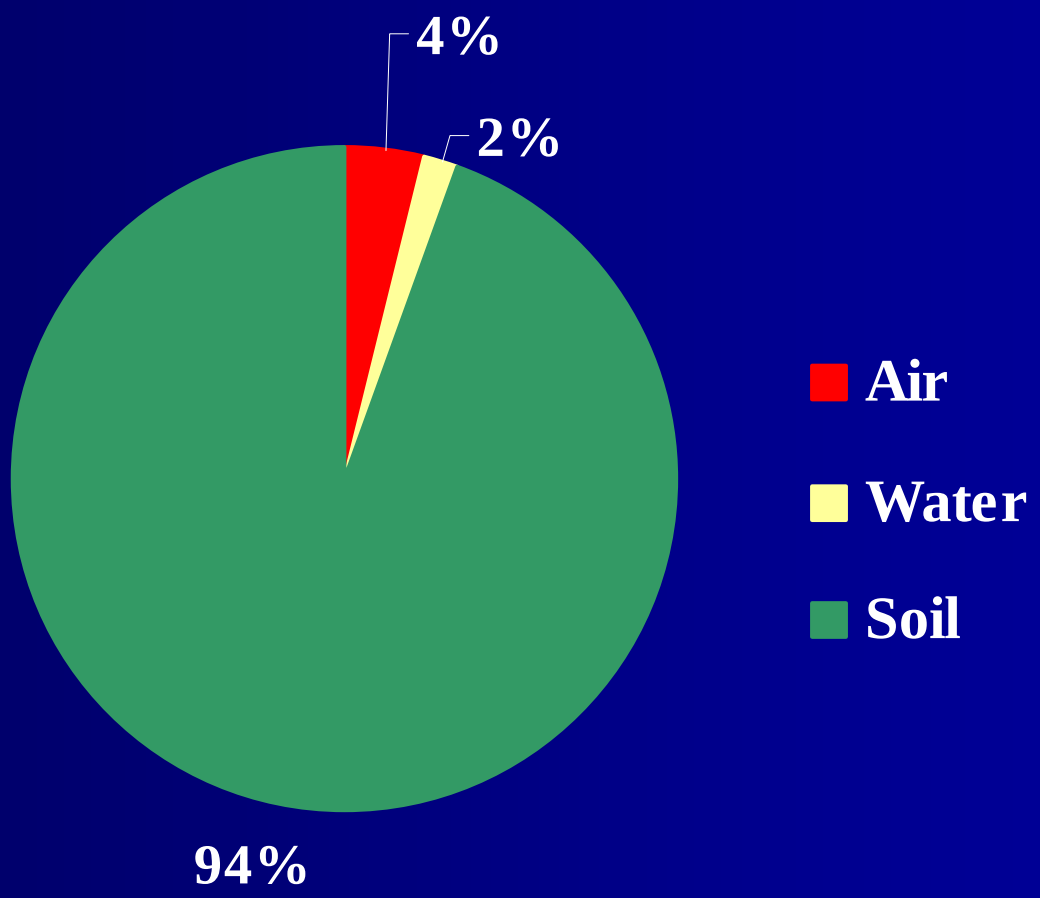
1999 NEI

- Used for air emissions in ACAP Questionnaire.

- NEI data available at:

www.epa.gov/ttn/chief/net/index.html

Results: Releases



Total Soil Emissions by SIC (2232.8 tpy)

SIC	Description	tpy
1041	Gold Ores	2082.4
3274	Lime	41.6
1021	Copper Ores	35.5
1044	Silver Ores	26.9
4911	Electric Services	18.1
1031	Lead and Zinc Ores	8.5
2816	Inorganic Pigments	3.5
3339	Primary Smelting and Refining of Nonferrous Metals, Except Copper and Aluminum	3.3
3331	Primary Smelting and Refining of Copper	3.3
XXXX	All other SIC codes	9.6

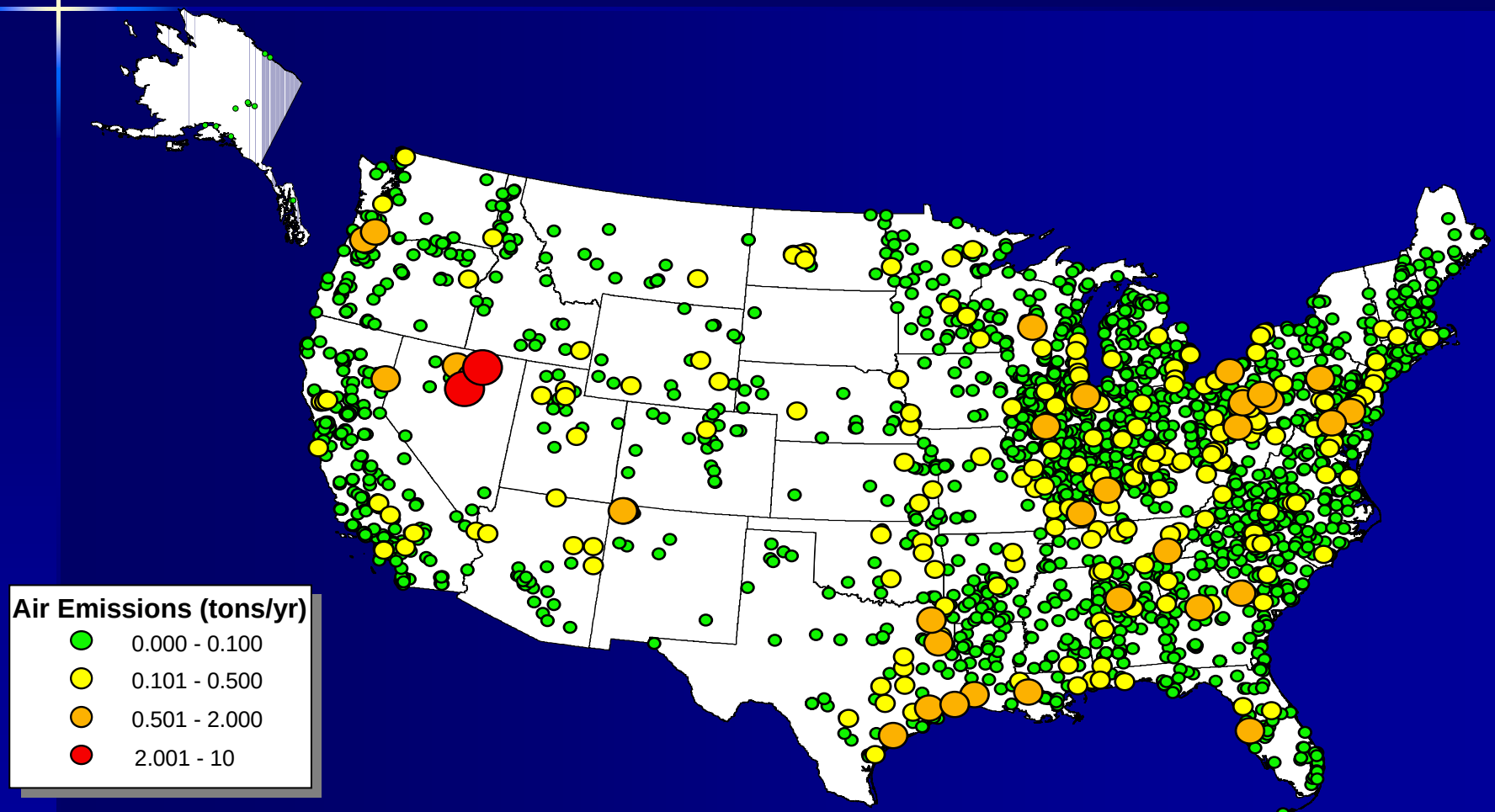
Total Air Emissions by Source Category (117.7 tpy)

Description	tpy
Utility Boilers: Coal	47.9
Industrial/Commercial/Institutional Boilers & Process Heaters	12.0
Gold Ores	11.5
Chlorine Production	6.5
Municipal Waste Combustors	5.1
Medical Waste Incinerators	2.8
Stationary Reciprocal Internal Combustion Engines	2.5
Commercial Hazardous Waste Incinerators	2.5
On-Site Hazardous Waste Incinerators	2.4
Other Source Categories	24.5

Total Water Emissions by SIC (0.85 tpy)

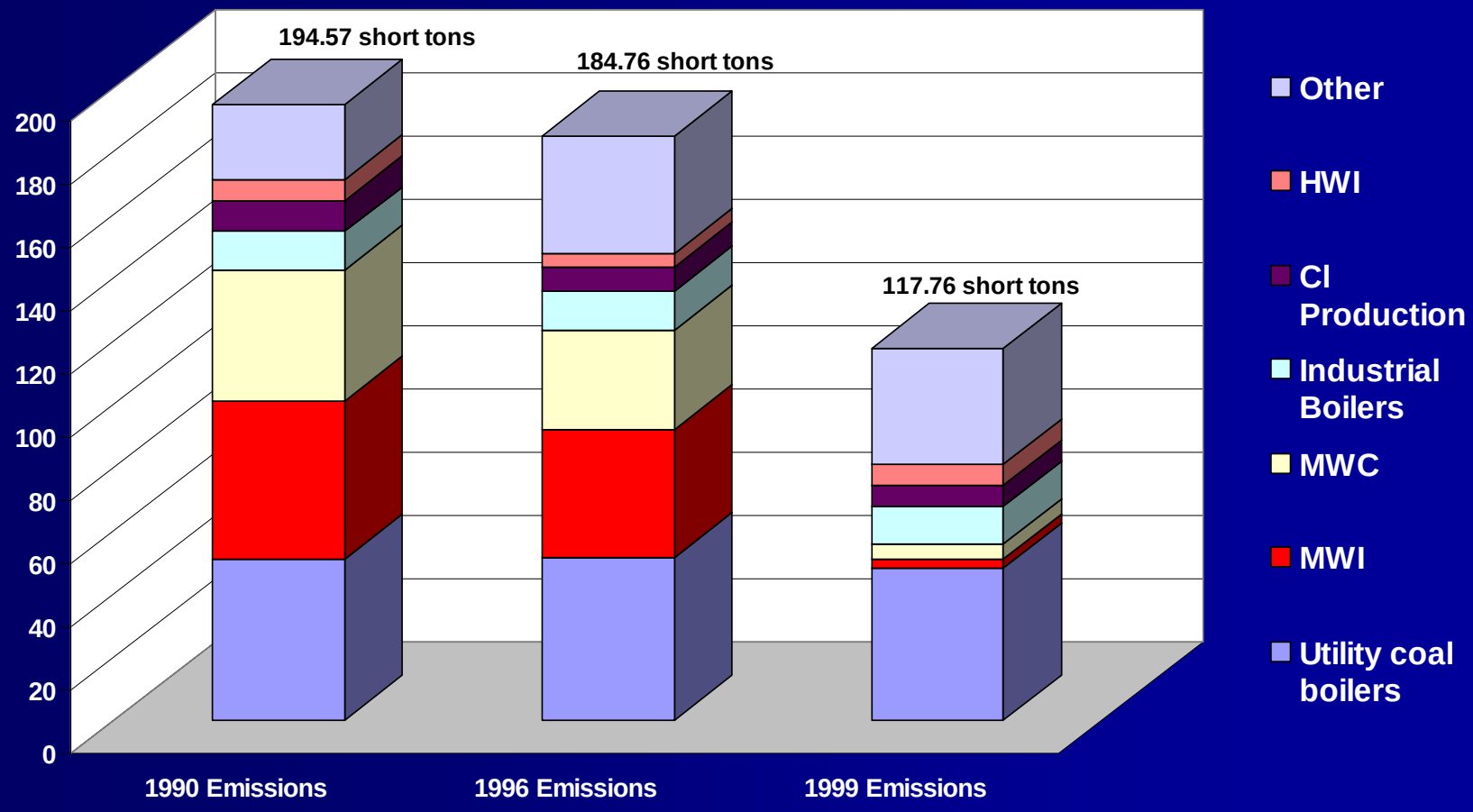
SIC	Description	tpy
2631	Paperboard Mills	0.26
4911	Electric Services	0.19
1221	Bituminous Coal and Lignite Surface Mining	0.09
2816	Inorganic Pigments	0.07
3312	Steel Works, Blast Furnaces (Including Coke Ovens), and Rolling Mills	0.06
2812	Alkalies and Chlorine	0.05
2911	Petroleum Refining	0.05
2869	Industrial Organic Chemicals, NEC	0.02
2819	Industrial Inorganic Chemicals, NEC	0.01
XXXX	All other SIC codes	0.05

Point Sources



Note: There are 21,365 facilities in the 1999 National Emission Inventory (NEI) that emit mercury. This shows the 3,600 facilities that emit > 0.0001 tons/year.

Trends in Mercury Air Emissions



Benefits of Participation

- Helped target major facilities affecting Arctic Region.
- Gives access to international data for modeling that would otherwise not be available.
- Uses international inventories for mercury trends in the future.

Conclusion

- Complete multimedia modeling mercury inventory.
  - Can be used to develop modeling inventories for other pollutants.
- Mercury air emissions have decreased due to implementation of new standards.
- Identified gold mining for further analysis to determine if controls are needed.
- Process can serve as a model for other countries and regions.

Questions?

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