

CEC Air Quality Program Update

Joint PRTR/SMOC Meeting

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CEC Air Quality Program

CEC Air Emissions Inventory Activities

- NAAEC Article 13 Electricity and Environment Report
- Mexico National Emissions Inventory Project

CEC Art. 13: Electricity and the Environment

Objectives:

- Examine **environmental challenges and opportunities of the evolving continental electricity market**
- Identify ways for **electricity market integration to promote sustainable development, maximizing economic and environmental benefits.**

Electricity and the Environment

- Electricity sector in Canada and US is single largest source of nationally reported toxics
- Major contributors of air pollutants and GHGs

E.g. in US:

- 25% of nitrogen oxides
- 70% sulfur dioxide
- 25% mercury
- 35% CO₂



Strong future growth

- North American electricity demand expected to rise from 2000 to 2009:
 - 14% in Canada
 - 21% in US
 - 66% in Mexico

Power Plant Air Pollution

	CO ₂ equiv (tonnes)	SO ₂ (tonnes)	NOx (tonnes)	Mercury (kg)
Canada (1998)	122,000,000	650,195	290,211	*1,975
Mexico (1999)	90,095,882	1,683,199	280,931	1,117
U.S. (1998)	2,331,958,813	12,291,107	5,825,982	39,241

*2000 NPRI data

Per Capita Power Plant Air Pollution

Per capita*				
	CO ₂ equiv	SO ₂	NOx	Mercury
Canada	4.03	0.021	0.010	6.6 x 10 ⁻⁵
Mexico	0.92	0.017	0.003	1.1 x 10 ⁻⁵
U.S.	8.64	0.046	0.022	14.5 x 10 ⁻⁵

*Tonnes or kg (mercury) per capita

Per GWh Power Plant Air Pollution

Per GWh*				
	CO ₂ equiv	SO ₂	NOx	Mercury
Canada	220	1.2	0.5	4 x 10 ⁻³
Mexico	500	9.3	1.5	6 x 10 ⁻³
U.S.	610	3.2	1.5	10 x 10 ⁻³

*Tonnes or kg (mercury) per GWh

Possible Future Outlook*

	Canada	Mexico	U.S.
Mercury	0 - 11%	19 - 24%	3 - 15%
NOx	4 - 14%	40 - 63%	3 - 8%
SO ₂	0 - (-1)%	2 - 2%	(-1) - 1%
CO ₂	3 - 15%	29 - 53%	14 - 38%

*(%) = new emissions relative to 1998-2000 electricity sector emissions (actual year varies by pollutant)

Future Uncertainties

- Uncertainty over which projects will go forward and location
- Uncertainty over fuel choice
 - Current conditions favor natural gas, but this could change
 - Upper-end estimates suggest what regions power developers find attractive - possibly because of fuel availability, transmission access, less stringent environmental standards, etc.

Art. 13 Final Report

- Final Secretariat report with:
 - findings from analytical report
 - recommendations from Advisory Board
 - public and government comments

<http://www.cec.org/electricity>

Council Communiqué

- Conduct a survey to obtain information on the comparability of North American environmental standards governing construction and operation of electricity generating facilities.

Council Communiqué

- Make further progress toward a shared North American emissions inventory by producing a shared emissions inventory for electricity generating stations, a summary report of emissions, and an analysis of the availability and comparability of additional useful data by the end of 2004.

Mexico National Emissions Inventory Project

Objectives:

1. Develop a national emissions inventory of criteria pollutants for Mexico, at the state level
2. Support air quality and visibility analyses in Mexico and the U.S.
3. Support tri-national inventory efforts
4. Continue capacity building (Mexico EI manuals, mobile/non-road mobile emission model development)

Project Sponsors

- SEMARNAT / INE
- US EPA
- Western Governors' Association
- CEC

Project Participants

- Technical Advisory Committee (Mexican States, WRAP, CenRAP, Distrito Federal, Environmental Defense, Academia)
- Contractors (ERG, TransEngineering, Acosta, Boadella, Snow)

Project Milestones and Progress

- Inventory Plan Completed
- Compile existing inventory data:
 - Point source data from SEMARNAT On-Going
 - Area source data On-Going
 - On-road vehicle activity Completed
- 6 northern States inventory 4 / 2003
- Mexico National Inventory 9 / 2004

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