

US EPA ARCHIVE DOCUMENT

Progress on Dioxin Modeling Project

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Purpose of Study

- EC initiative to address a knowledge gap in dioxins/furans
- To help guide policy decision on Canada's domestic activities and Canada's participation in international initiatives related to dioxins/furans
- The study will:
 - ◆ extend our knowledge on the dioxins/furans global budget
 - ◆ examine pathways to the various compartments in the Canadian environment
 - ◆ enhance our understanding on the transboundary impact of dioxins/furans in Canada

Scope of Study

Two parts:

- Emissions Inventory
 - ◆ Develop a comprehensive dioxin atmospheric emission inventory on a global scale
- Regional and Global Modeling
 - ◆ Upgrade Environment Canada's atmospheric transport model for persistent organic pollutants: Canadian Model for Environmental Transport of Organochlorine Pesticides (CanMETOP) to predict the atmospheric level and global transport of dioxins/furans
 - ◆ Collect data for input into model eg. met. data
 - ◆ Perform scenario runs

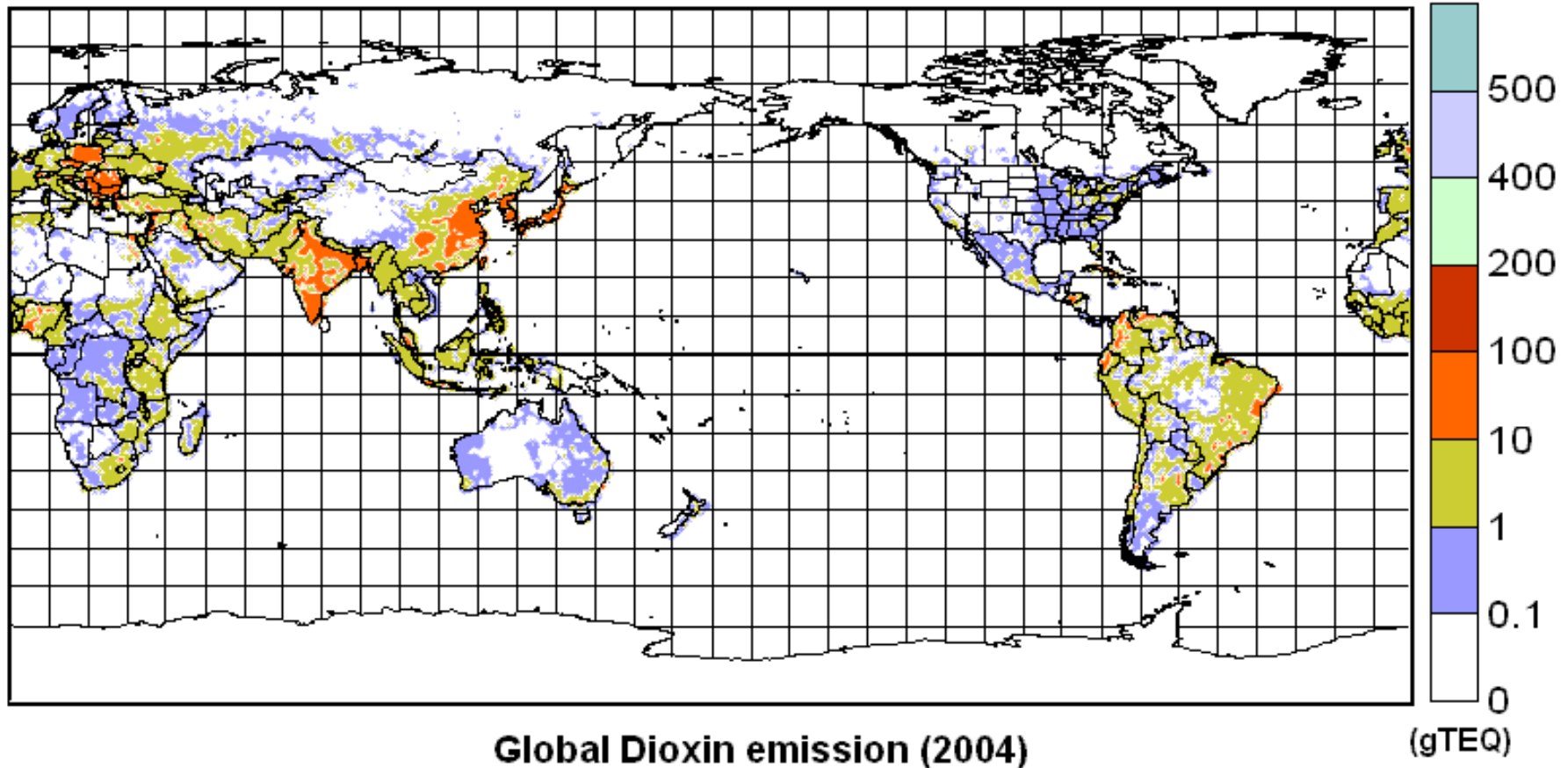
Emissions Inventory

Preliminary results:

- In 2009-10 fiscal year, a comprehensive dioxin atmospheric emission inventories on a global scale has been completed
- Given that most data was collected from 2000 through 2006, the year of 2004 was set as the reference year
- Estimated world total release of dioxins/furans in the reference year of 2004 is 77,400 g TEQ in which 38,200 has been emitted into air.
- The global emissions data show that East Asia, India, and Central Europe are major source regions.
- The gridded emission inventory has been interpolated into regional-scale (horizontal resolution 24 km × 24 km) and global-scale (resolution 1° × 1° latitude/longitude) atmospheric transport model grids.

THE GREAT LAKES BINATIONAL TOXICS STRATEGY

Global air emissions of dioxin in 2004



Scenario Modeling

Preliminary results:

- Multiple model scenario runs are set up to assess impact of dioxins/furans emissions from:
 - ◆ the United States, East Asia, India, Mexico, Europe and Russia on Canadian environment
- East Asian emissions contribute mostly to atmospheric level of dioxins/furans in Western Canada through trans-Pacific atmospheric transport
- India emissions appear to exert stronger influence on the west coast of the US than to Canada

Next Steps

- Multiple modeling scenario studies are still underway. Extensive modeling results are expected to be reported in early autumn of 2010
- Modeling results will be used to evaluate and improve the emission inventory, and subsequently modeling results
- Given considerable increase expected in dioxins/furans emission from China and India, another modeling scenario investigation will be undertaken to assess the impact of the increasing emission trend of dioxins/furans on Canada's environment
- Modeling impact of Canadian emissions on global environment
- Assessment of effect of global dioxin/furan emissions on the Great Lakes will depend on extra funding. A proposal for climate change and global emission in local contamination over the Great Lakes has been submitted to the Great Lakes Restoration program but not endorsed