

# Dioxins and Furans

## Work Group Co-Chairs:

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# Dioxin/Furan Challenges and Progress

## Canada

- 90% reduction \*
- by 2000
- \* All media within Great Lakes Basin
  
- Progress: 87% reduction in total releases within GL Basin

## United States

- 75% reduction \*
- by 2006
- \* Aggregate of air releases nationwide and water releases within the Great Lakes Basin
  
- Progress: Goal most likely has been met
- Awaiting finalization of U.S. EPA's 2000 Draft Dioxin Inventory for confirmation

## THE GREAT LAKES BINATIONAL TOXICS STRATEGY

<b>Top U.S Sources (2000 Draft Estimate)</b>	<b>Top Ontario Sources (2004 Estimate)</b>
<b>Backyard Burning</b>	<b>Backyard Burning</b>
<b>Medical Waste Incineration</b>	<b>Motor Vehicles</b>
<b>Municipal Waste Combustion</b>	<b>Nonferrous Foundries</b>
<b>Sewage Sludge</b>	<b>Federal Waste Incineration</b>
<b>Coal Fired Utility Boilers</b>	<b>Sewage Sludge</b>
<b>Cement Kilns</b>	<b>Iron Manufacturing</b>
<b>Diesel Heavy Duty Trucks</b>	<b>Mining &amp; Smelting</b>

## **Accomplishment Highlights**

- **Completed Management Assessment**
- **Identified New Sources of Interest**
  - ◆ **Finalized four issue papers on uncontrolled combustion sources which are available on [www.openburning.org](http://www.openburning.org)**
  - ◆ **Investigating new sources including:  
agricultural plastic burning**
- **Compared Ambient Air Monitoring Protocols**
- **Continued Efforts of the Burn Barrel Subgroup**

# **Management Assessment Update**

- **Environmental Analysis**
  - ◆ **Despite declining trend in some media, dioxins and furans continue to have an impact on human exposure and the Great Lakes Basin**
- **Opportunity Assessment**
  - ◆ **Continue activities identified in workplan**
  - ◆ **Burn Barrel Subgroup is greatest opportunity**
- **Management Outcomes**
  - ◆ **Continue active Level 1 status**
  - ◆ **Consider new qualitative challenge goals**
  - ◆ **Exploring pathway intervention**
  - ◆ **Potential changes to structure and membership of workgroup**

## Household Garbage Burning

[www.openburning.org](http://www.openburning.org)



- WLSSD developed a guide “Cleaning the Air: Tools for Reducing Residential Garbage Burning”
- Chlorine Chemistry Council conducting a survey of local officials on backyard burning
- Wisconsin developed and printed Air Defender Kits for the other GL States and Ontario
- Set of U.S. case studies on backyard burning are now available
- Considering developing a Great Lakes Resolution
- Backyard burning listed as an action item under the GL Regional Collaboration

# Dioxin 2005 Toronto, Canada

## The Dioxin Furan Workgroup of the Great Lakes Binational Toxics Strategy: A Collaborative Forum for Reducing Dioxin Releases and Impacts

**THE DIOXIN/FURAN WORKGROUP OF THE GREAT LAKES BINATIONAL TOXICS STRATEGY: A COLLABORATIVE FORUM FOR REDUCING DIOXIN RELEASES AND IMPACTS**

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**Introduction**

In 2001, Canada and the United States signed an environmental agreement under the Great Lakes Binational Toxics Strategy (Canada: Great Lakes Strategy for the United States and the United States: Great Lakes Strategy for the United States). The Strategy identified better practices, hazard reduction, and/or advanced technology for removal, elimination from the environment and for which specifications or interim challenge goals were established for each country. Moreover, the Strategy established a framework for voluntary collaborative action by a cross sector of stakeholders including: local, departmental and federal government, academic, non-governmental organizations, groups, industries, and the public. The Strategy consists of a framework to deliver progress: 1) identify progress, 2) assessing the effectiveness of existing programs, 3) identifying cost-effective reduction options, and 4) implementing actions to work toward the goal of total elimination. Industries specific waste abatement strategies were developed with the goal of reducing the dioxin/furan release and meeting interim achievement of the challenge goal.

One of the toxics subgroups agreed to the challenge for Dioxin was dioxin. The challenge goal for this category was developed as follows:

Canada: Until by 2005, a 50 percent reduction in releases of dioxin from: manufacturing, and fossil (except SO<sub>2</sub>), from activities involving State license activity in the Great Lakes Basin, consistent with the Great Lakes Action Agreement. Industry will ensure that the 1,1,2,3 substituted congeners of dioxin and furan as a means consistent with the Toxics Subgroup Management Policy.

United States: Until by 2005, a 75 percent reduction in total releases of dioxin and furan (1,1,2,3,7,8-substituted congeners) from activities involving State license activity. This challenge will require the aggregate of releases to be an aggregate total reduction to the same extent as the Great Lakes Basin by 2005, consistent in intent, that an industry, where the potential to meet the Great Lakes Basin, of dioxin/furan releases (DFR) and DF from activities involving State license activity.

Formation of a Dioxin/Furan Workgroup was initiated in 2003 and the Workgroup began identifying opportunities to reduce dioxin releases to the environment. Consisting of participants from government, industry, and environmental organizations, the Workgroup was co-chaired by staff from Environment Canada (EC) and the US Environmental Protection Agency (EPA).

**Method**

The first objective of the Workgroup was to identify sources that: 1) significantly contributed dioxin releases to the Great Lakes Basin; 2) could be addressed by other existing programs or regulations; and 3) demonstrated the necessary technical effort. In 2003, the Workgroup agreed to develop a dioxin flow diagram to guide its decision-making process. The goal was to identify a structured approach to assess a priority need to meet the challenge goal. The first step in the process was to identify sources and release information, regulatory and programmatic information, and the ability of the Dioxin/Furan Workgroup to address the release information. The second step was to identify sources. The final decision diagram used by the Workgroup is presented in Figure 1.

Using the decision diagram, a number of decision-making permits is provided as opportunities for quality regulatory and permitting actions, as well as removing activities that dioxin/furan releases from the process or the agreement by the Workgroup to address the more performance sensitive, where there is a need for additional regulatory, government, or regulatory action by classifying them into a high priority for reduction. Following information from regulatory agencies, more information is being gathered for decision-making by the Workgroup. Figure 2 presents the release information to the dioxin/furan.

**Figure 1. Dioxin/Furan Workgroup Decision Diagram**

**Figure 2. Dioxin/Furan Workgroup Decision Diagram**

Combustion Sources		
• power/generation	• diesel fuel	• steel plant
• metal/metal processing	• forest fires	• industrial
• hydroelectric power	• wood waste	
• residential wood combustion	• municipal waste	
• residential wood combustion	• utility and coal	
• cement kiln		

  

Metal Smelting and Refining		
• zinc smelting	• steel and iron	• secondary copper smelting

  

Noncombustion Sources
• noncombustion metal smelt

**Adult Average Daily Intake of CDDs/CDFs, Dioxin-like PCBs**

Drift Estimate: ~ 61 pg TEQ-WHO<sub>12</sub>/day

**Dioxin Sources by Environmental Media**

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**References**

1. The Great Lakes Binational Toxics Strategy (Canada: Great Lakes Strategy for the United States and the United States: Great Lakes Strategy for the United States). 2001. www.greatlakes.toxics.org

## **Outlook for Future Actions**

- **Continue burn barrel activities**
- **Identify sources that warrant further investigation and engage these sectors**
- **Joint efforts with other workgroups**
- **Explore pathway intervention**
- **Examine impact of sources outside the Basin via long range transport**