

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 1997, Canada and the United States signed an international agreement called *The Great Lakes Binational Toxics Strategy: Canada-United States Strategy for the Virtual Elimination of Persistent Toxic Substances in the Great Lakes*¹. This Strategy identified twelve persistent, bioaccumulative, and toxic substances targeted for virtual elimination from the environment and for which quantitative use or release challenge goals were established for each country. Moreover, the Strategy established a framework for voluntary collaborative action by a wide range of stakeholders including local, state/provincial and federal government, industry, non-government environmental groups, academia, and the public. The Strategy consists of a four-step analytical process: 1) identifying sources; 2) assessing the effectiveness of existing programs; 3) identifying cost-effective reduction options; and 4) implementing actions to work toward the goal of virtual elimination. Substance-specific multi-stakeholder workgroups were charged with the task of following the four-step process and working towards achievement of the challenge goals.

One of the twelve substances agreed to for action under the Strategy was dioxin. The challenge goals for the countries were developed as follows:

Canada: Seek by 2000, a 90 percent reduction in releases of dioxins, furans, hexachlorobenzene, and benzo(a)pyrene (B(a)P), from sources resulting from human activity in the Great Lakes Basin, consistent with the 1994 Canada-Ontario Agreement. Actions will focus on the 2,3,7,8 substituted congeners of dioxins and furans in a manner consistent with the Toxic Substances Management Policy.

United States: Seek by 2006, a 75 percent reduction in total releases of dioxins and furans (2,3,7,8-TCDD toxicity equivalents) from sources resulting from human activity. This challenge will apply to the aggregate of releases to the air nationwide and of releases to the water within the Great Lakes Basin. Seek by 2006, reductions in releases, that are within, or have the potential to enter the Great Lakes Basin, of hexachlorobenzene (HCB), and benzo(a)pyrene (BaP) from sources resulting from human activity.

Formation of a Dioxin/Furan Workgroup was initiated in 1998 and the Workgroup began identifying opportunities to reduce dioxin releases in 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 (USEPA).

Methods

The first objective of the Workgroup was to identify sectors which 1) significantly contributed dioxin releases to the Great Lakes Basin 2) would not be addressed by other existing programs or regulations and 3) showed potential for voluntary reduction efforts. In 1999, the Workgroup agreed to develop a decision flow diagram to guide its decision making process. The goal was to develop a structured approach that would assign a priority level to each of the different dioxin sources using readily available data. Priority level designation was based on consideration of available source and release information, regulatory and programmatic frameworks, and the ability of the Binational Toxics Strategy workgroup to add value to reduction processes already in place for a given sector. The final decision diagram used by the work group is presented in Figure 1.

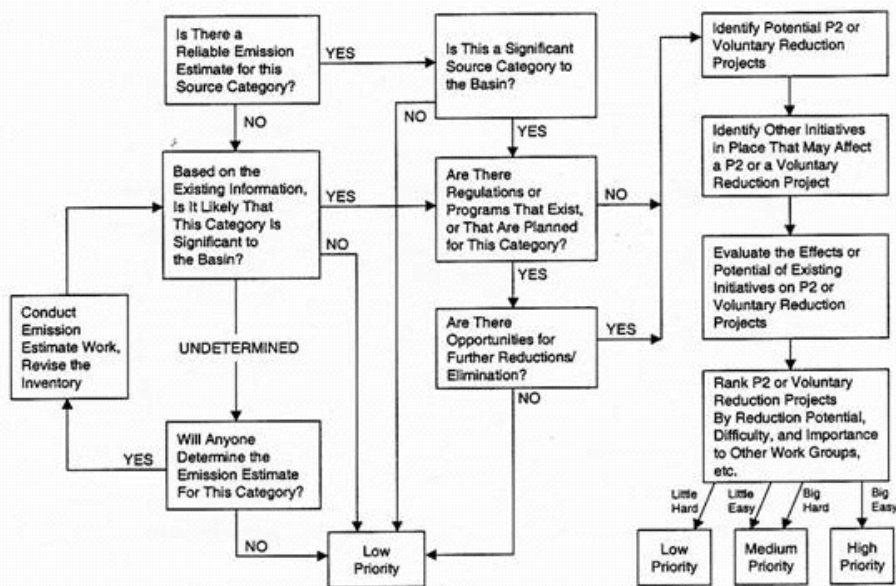


Figure 1. Binational Toxics Strategy Dioxin Workgroup Decision Diagram

Using the decision diagram allowed for a structured decision making process. It provided an opportunity for quickly targeting and prioritizing sources, as well as removing individual bias. Another positive result of the process was the agreement by the workgroup to address the more problematic sources, where current data was not sufficient to easily characterize the source or sector, by classifying these into a high priority for information gathering. Industries from targeted source categories were active participants in going through the decision tree with the workgroup. Figure 2 presents the sectors considered in the decision framework.

Combustion Sources		
<ul style="list-style-type: none"> • municipal waste combustion • medical waste incineration • backyard trash/open burning • residential wood combustion • hazardous waste incinerator • cement kilns-hazardous waste 	<ul style="list-style-type: none"> • landfill fires • forest fires • wood waste combustion • utility coal combustion 	<ul style="list-style-type: none"> • diesel fuel combustion
Metals Smelting and Refining		
<ul style="list-style-type: none"> • iron sintering 	<ul style="list-style-type: none"> • steel manufacturing electric arc furnaces (EAF) 	<ul style="list-style-type: none"> • secondary copper smelting
Reservoir Sources		
<ul style="list-style-type: none"> • pentachlorophenol treated wood 		

Figure 2. Binational Toxics Strategy Dioxin Workgroup Sectors of Interest

Out of the decision framework, the highest two priority sector categories were backyard trash burning and residential wood combustion. Although other sources were also identified as contributors of dioxin release, they were being managed through existing programs such as Canada-wide Standards, Ontario regulations, and the U.S. Maximum Achievable Control Technology (MACT) standards. Residential wood combustion is also a major source of benzo(a) pyrene and was being addressed by the Benzo(a)Pyrene Strategy Workgroup. With the decline in dioxin release from

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major point sources, backyard trash burning emerged as a top source of dioxin release in both countries. Therefore, the greatest opportunity for the Dioxin/Furan Workgroup was to reduce backyard trash burning. This led to the formation of a separate Burn Barrel Subgroup to strictly focus attention on this issue. Since then, studies and an extensive Great Lakes Basin outreach effort have been undertaken. These activities also served as a pilot project to support national efforts of backyard trash burning for EC and USEPA.

In addition to backyard trash burning, the Dioxin/Furan Workgroup has been tracking release reductions by monitoring existing programs that address dioxin release from other major sources and has gathered information to fill inventory gaps. The Workgroup has studied less regulated sectors and area sources such as uncontrolled combustion, pentachlorophenol treated wood, combustion ash disposal, and landfill fires. The workgroup was also instrumental in raising awareness of the need for proper management of pentachlorophenol treated wood, which helped lead to negotiations between USEPA and the Utility Solid Waste Activities Group on practices for the sound management of treated wood.

The workgroup will continue to conduct source characterization and to track levels of dioxin in the environment. Although point sources dioxin releases are declining, releases from area and mobile sources categories continue to be of concern. Opportunities to seek reductions for these sectors are challenging to address. Also, since the majority of human exposure to dioxin is attributed to food, the workgroup has identified a need to examine pathway intervention opportunities.

Results and Discussion

The most successful result of this effort has been a Great Lakes Basin-wide effort to reduce trash burning. Partners from industry, government agencies (federal, state, province, tribal, and local), and environmental organizations are all part of this on going effort. The Burn Barrel Subgroup created a three pronged strategy to reduce trash burning through supporting public education, building infrastructure for trash collection, and supporting enforcement of burning regulations. The Subgroup and its members have collected survey data of rural residents, developed outreach materials, started innovative incentive programs, and held educational conferences. The Subgroups information and materials are available to the public on the website www.openburning.org.

Standards in Canada and the United States have required large reductions in dioxin releases nationally and regionally, and have significantly contributed to both countries ability to work towards meeting the Strategy Challenge Goals. The Strategy has been found to be an effective forum to reduce sources of dioxin releases that would not otherwise be addressed through regulations. Quantification of these reduction efforts is a continual challenge to this effort. However, the widespread work of the members ensures that these outreach efforts are being recognized by residents in various parts of the Great Lakes Basin and will lead to real reductions in dioxin emissions over the long term.

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Reference

1. The Great Lakes Binational Toxics Strategy: Canada-U.S. Strategy for the Virtual Elimination of Persistent Toxic Substances in the Great Lakes. 1997. www.epa.gov/grtlakes/bns/strategy