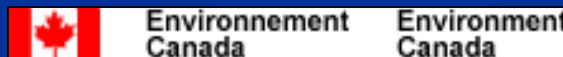


# The Great Lakes Binational Toxics Strategy

*New Challenges - New Chemicals*



**Alan Waffle**  
and  
**Tricia Mitchell**  
Great Lakes Binational Toxics Strategy



# Content

- Great Lakes Binational Toxics Strategy - Update
- Elements of a framework for the GLBTS to adopt new substances of Great Lakes concern

# The Great Lakes Basin



# The Great Lakes Basin

	Superior	Michigan	Huron	Erie	Ontario	Totals
Length (km)	563	494	332	388	311	
Breadth (km)	257	190	245	92	85	
Average Depth (m)	147	85	59	19	86	
Maximum Depth (m)	406	282	229	64	244	
Volume (km <sup>3</sup> )	12,100	4,920	3,540	484	1,640	22,684
Water Area (km <sup>2</sup> )	82,100	57,800	59,600	25,700	18,960	244,160
Land Drainage Area (km <sup>2</sup> )	127,700	118,000	134,100	78,000	64,030	521,830
Total Area (km <sup>2</sup> )	209,800	175,800	193,700	103,700	82,990	765,990
Shoreline Length (km)	4,385	2,633	6,157	1,402	1,146	17,017
Retention Time (years)	191	99	22	2.6	6	





# Great Lakes Binational Toxics Strategy (GLBTS)

## Recommended by:

IJC, Signed in 1997



## Components

- Common List of Persistent Bioaccumulative Toxics
- Quantitative Timelines and Targets to Track Virtual Elimination
- 4 Step Analytical Framework
- Open, Transparent, Accountable Process to Engage the Great Lakes Community

# GLBTS Level 1 Substances

## ➤ Metals

- Mercury and mercury compounds
- Alkyl Lead

## ➤ Organics

- PCBs
- PCDD (Dioxins) and PCDF (Furans)
- Benzo(a)Pyrene
- Hexachlorobenzene
- Octachlorostyrene

## ➤ Cancelled Pesticides

- Aldrin/dieldrin
- Chlordane
- DDT (+DDD+DDE)
- Mirex
- Toxaphene

# GLBTS Level 2 Substances

## ➤ Metals

- Cadmium and cadmium compounds
- Tributyl Tin

## ➤ PAHs

- Anthracene
- Benzo(a)anthracene
- Benzo(g,h,i)perylene
- Perylene
- Phenanthrene
- Others

## ➤ Other Organics

- 1,4-dichlorobenzene
- 3,3'-dichlorobenzidine
- Dinitropyrene
- Endrin
- Heptachlor
- Hexachlorobutadiene
- Hexachlorocyclohexane
- 4,4'-methylenebis (2-chloroaniline)
- Pentachlorobenzene
- Pentachlorophenol
- Tetrachlorobenzene

# GLBTS Challenges and Status

- Seventeen Interim Reduction Challenge goals for GLBTS Level 1 Substances
  - Ten challenge goals achieved to date!
  - Three additional expected by 2006
  - Four challenges well advanced by 2006

# Attributes of the GLBTS as a Governance Model

- A beyond compliance voluntary multi-partnership effort
- Improves the assessment and expanded use of information
- Helps develop networks
- Acts as a catalyst
- Headlines Great Lakes toxic issues
- Champions voluntary actions by GL Stakeholders
- Provides opportunities for sectoral leadership
- Highlights the value of Pollution Prevention

# Path Forward

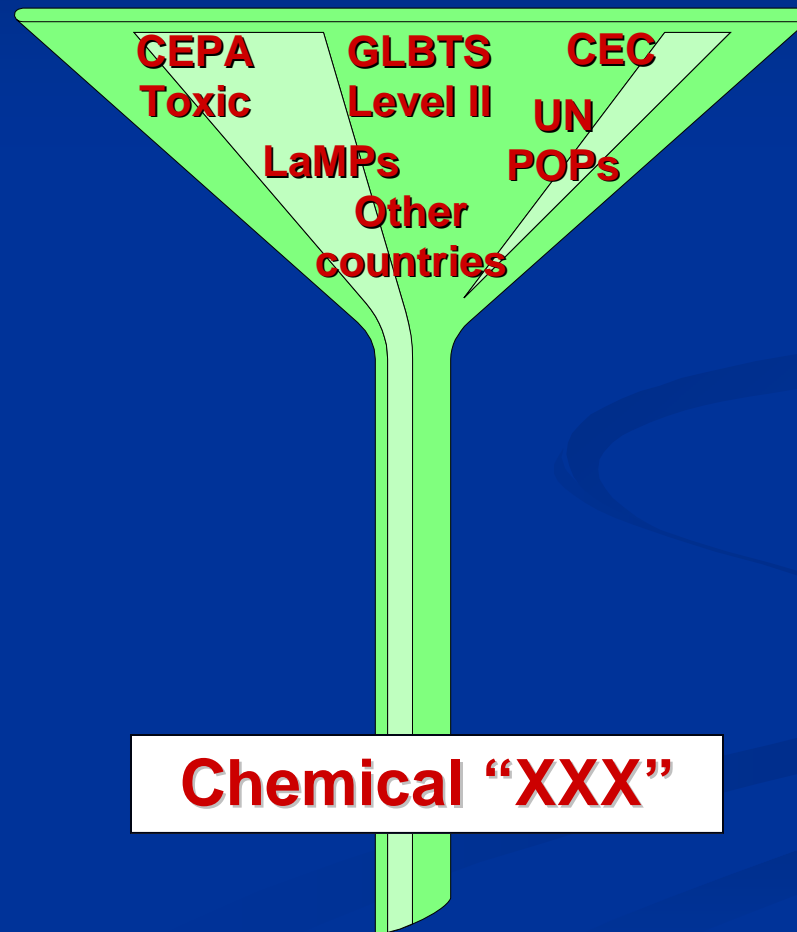
- Assess GLBTS Level 1 Substances regarding current challenge goals and timelines
- Recommending post 2006 reduction targets for current GLBTS Level 1 Substances
- Commence the development of a process framework for the GLBTS to adopt new substances of Great Lakes concern

# Framework Elements

- List of Chemicals of Concern
- Environmental or Health data
- Ambient monitoring data
- Risk based Criteria
- Use of precautionary approach
- Lake specific
- Ability of the GLBTS to effect reductions
- Can Challenge goals be established
- Virtual Elimination

# Framework Elements

## List of Chemicals of Concern



# Framework Elements

## Environmental or Health data

### Acceptable monitoring data

Water

Air

Sediments

soil

Biota

humans

# Framework Elements

## Risk based Criteria

Water Quality criteria

Fish tissue concentrations

Ambient or indoor air standards

Sediments or soil standards

Limits based on reference dose

Health-based standards for human or  
biota measurements

# Framework Elements

## Use of precautionary approach

No Criteria

No clear decreasing trend or

No Basin specific monitoring data

Documented effects elsewhere

# Framework Elements

## Lake specific

Substance Impact Restricted to a single  
Lake

LaMP lead – GLBTS support

# Framework Elements

## Ability of the GLBTS to effect reductions

Accelerated Actions under the Strategy's  
4-Step analytical framework

Establish new GLBTS Challenge goals

# Framework Elements

## Virtual Elimination

Is it necessary to answer this question ?

# Our Goal

*The Virtual Elimination of Persistent Toxic  
Substances from the Great Lakes  
Environment!*



[www.binational.net](http://www.binational.net)



# Mercury Status

- Canadian Release: 83% reduction in mercury releases between 1988 and 2001 in Ontario, from 14,000 kg/yr to 3,000 kg/yr.
- U.S Use: Reduce by just over 50% since 1995 from 455,000 kg/yr to 227,000 kg/yr.
- U.S Release: National air release reductions of air releases estimated to be just over 40%, from 182,000 kg/yr to 68,000 kg/yr.

# PCB Status

- Canada: Approximately 86% or 20,000 tonnes of high-level PCB wastes and 25% of low-level PCB wastes have been destroyed as of April 2002 in Ontario.
- U.S: According to annual reports from PCB disposers, about 71,000 PCB filled transformers and 141,000 PCB capacitors in use in 1994 have been disposed of in the US nationally.

# Dioxins & Furans Status

- Canadian Release: 87% reduction in dioxin and furans releases since 1988 in Ontario, from 268 g TEQ to about 34 g TEQ.
- U.S Release: The US expects to achieve a 92% reduction by 2004 based on the 1987 dioxin emission inventory – a reduction from 13,500 g TEQ to just under 1,100 g TEQ.

# HCB Status

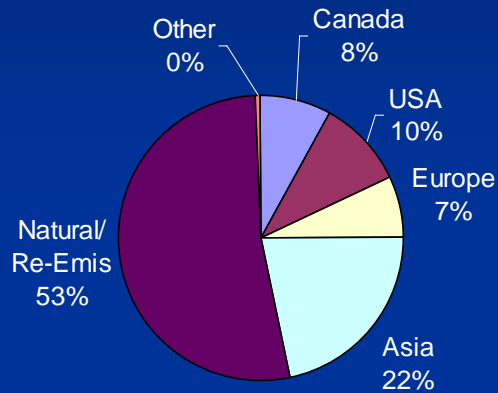
- Canadian Release: Approximately a 65% reduction in HCB releases since 1988 in Ontario from 50kg/yr to 17.5 kg/yr.
- U.S Release: US reductions of HCB releases estimated to be over 52% between 1990 and 1997, a reduction of 1,400 kg/yr.

# B(a)P Status

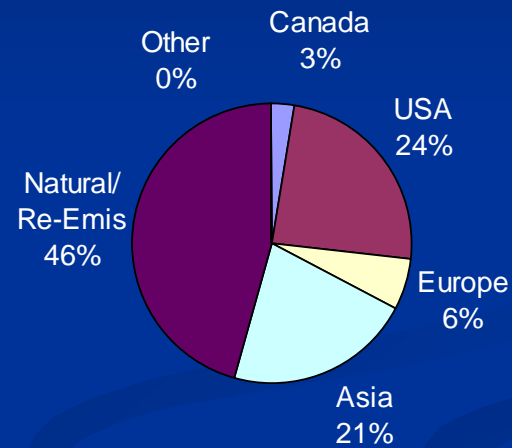
- Canadian Release: Approximately a 45% reduction in B(a)P releases since 1988 in Ontario. It is estimated that Ontario now releases 10,800kg/yr.
- U.S Release: US releases of B(a)P in 2001 to the Great Lakes Basin are estimated to be 26,000 kg/yr, a 74% reduction since 1990.

# Estimated Contribution of Mercury Deposition from Different Sources Using GRAHM

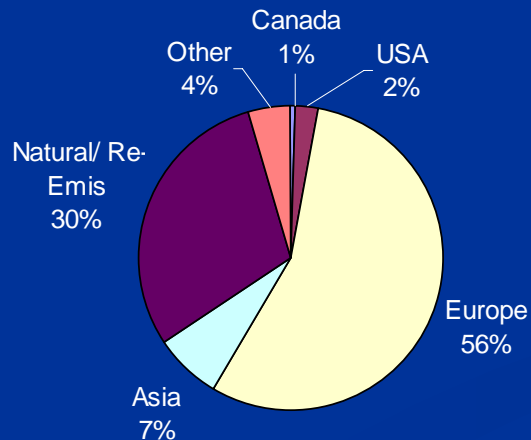
**CANADA (30E 138D t/y)**



**USA (124E 160D t/y)**



**EUROPE (335E 228D t/y)**



**ASIA (953E 542D t/y)**

