

# Integrated Atmospheric Deposition Network (IADN)



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Environment Canada  
Environnement Canada

[www.msc.ec.gc.ca/iadn/](http://www.msc.ec.gc.ca/iadn/)

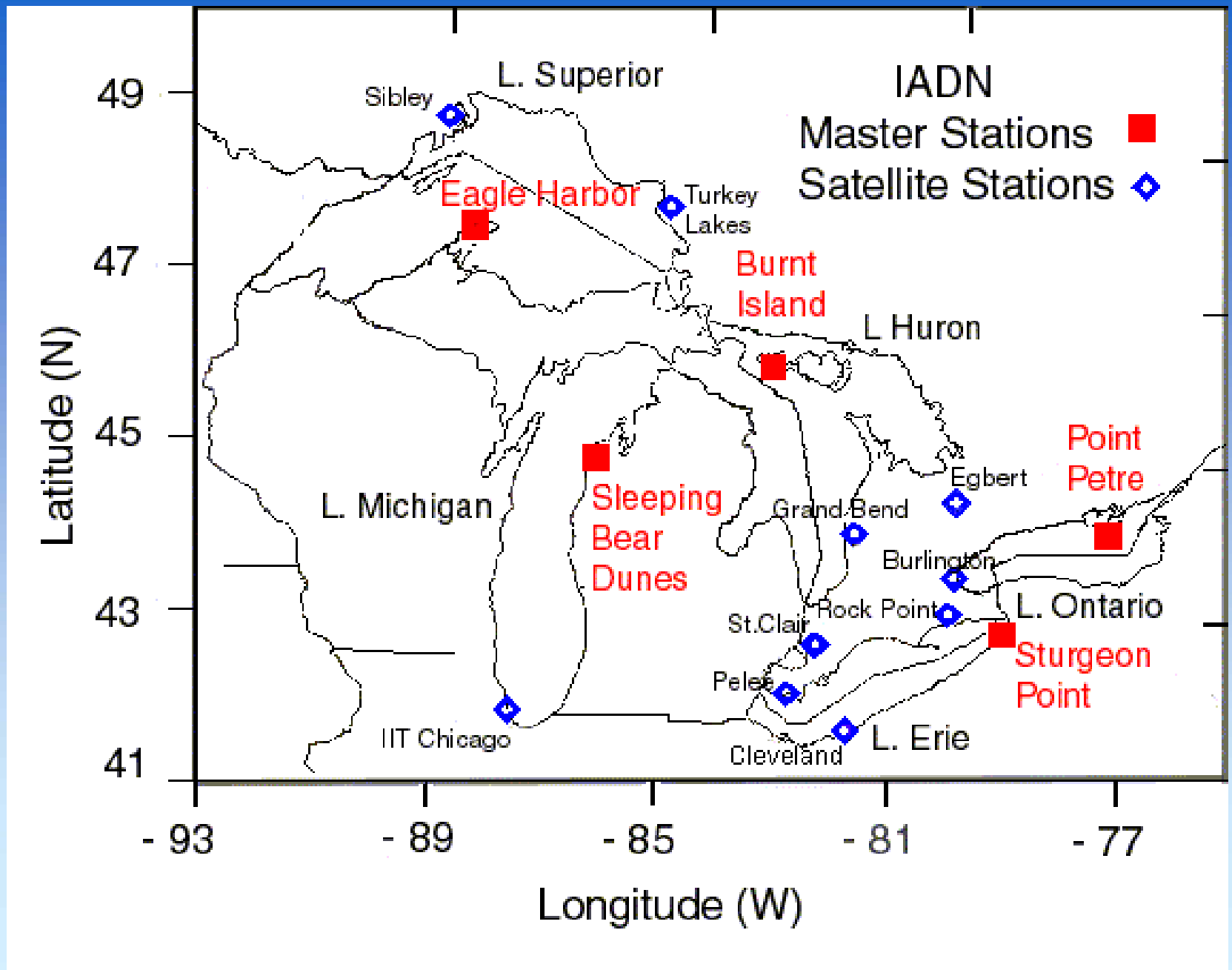


[www.epa.gov/glnpo/monitoring/air/iadn](http://www.epa.gov/glnpo/monitoring/air/iadn)

# The IADN

- In operation since 1990
- Partnership: U.S. EPA, U.S. grantee (IU), Environment Canada (MSC, EHD)
- Primary Products:  
Atmospheric loadings to lakes,  
concentration trends





# What data is collected?

- Polychlorinated Biphenyls (PCBs), Polycyclic Aromatic Hydrocarbons (PAHs), organochlorine pesticides, metals in air and precipitation
- Meteorological measurements
- Gas/particulate samples taken every 12 days
- Precipitation samples are monthly composites
- Mercury at Point Petre & Burnt Island

# What are the data used for?

- Atmosphere is a major pathway by which toxics enter the Lakes
- Other programs use IADN data to measure progress towards reduction goals: Binational Toxics Strategy, Lakewide Management Plans
- Indicate current status in reports: LaMPs, State of the Lakes Ecosystem Conference
- Data requests from other researchers and contractors

# How IADN Operates

- IADN has been continuously funded via cost-sharing between two countries
- Binational Steering Committee (program managers, laboratory personnel, data manager, QA officer) meets regularly and shares the operational and reporting workload
- Central database and data manager
- QA program

# Current and Potential Future Activities Related to IADN

- Continued monitoring of Polybrominated Diphenyl Ethers (PBDEs) and possible addition of other emerging contaminants
- Additional urban monitoring on land
- Over-lake monitoring from research vessels
- Toxics water monitoring programs in U.S. and Canada

# Current and Potential Future Activities (Cont'd)

- Passive sampling campaigns
- Continue mercury monitoring at IADN stations
- Use of IADN and other data in modeling exercises
- Monitoring buoy

# ECO-1 Buoy 45139

- 12-metre diameter platform
- 10-metre high tower
- Three rooms below deck
  - Instruments
  - Communications
  - Generators



# Measurements 2004

- Meteorology - MSC  
Ontario AMOD
- IADN POPs
- Mercury (TGM)  
CAMNet
- Ozone – MSC  
Ontario ASD



# Air Monitoring Operations

- Sequential PUF sampler with remote capabilities
- TGM/Ozone
- Real-time communications
- Power source



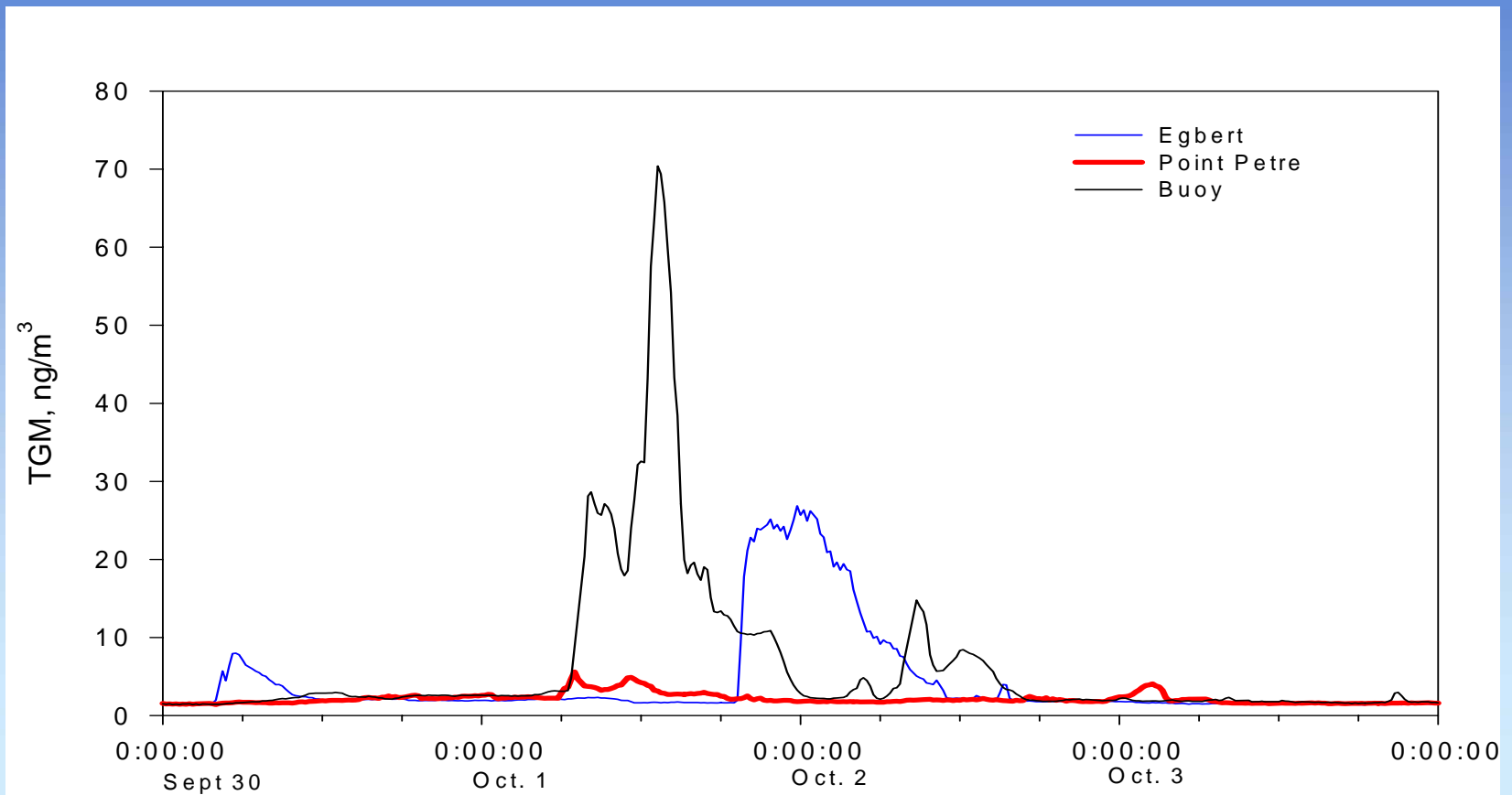
# Challenges

- Flooding Winter 1999 and 2003
- Hostile environment
  - Access
  - Use of Diesel generators
- Development of Sequential POPs Sampler
- Real-Time Communications
- Costs

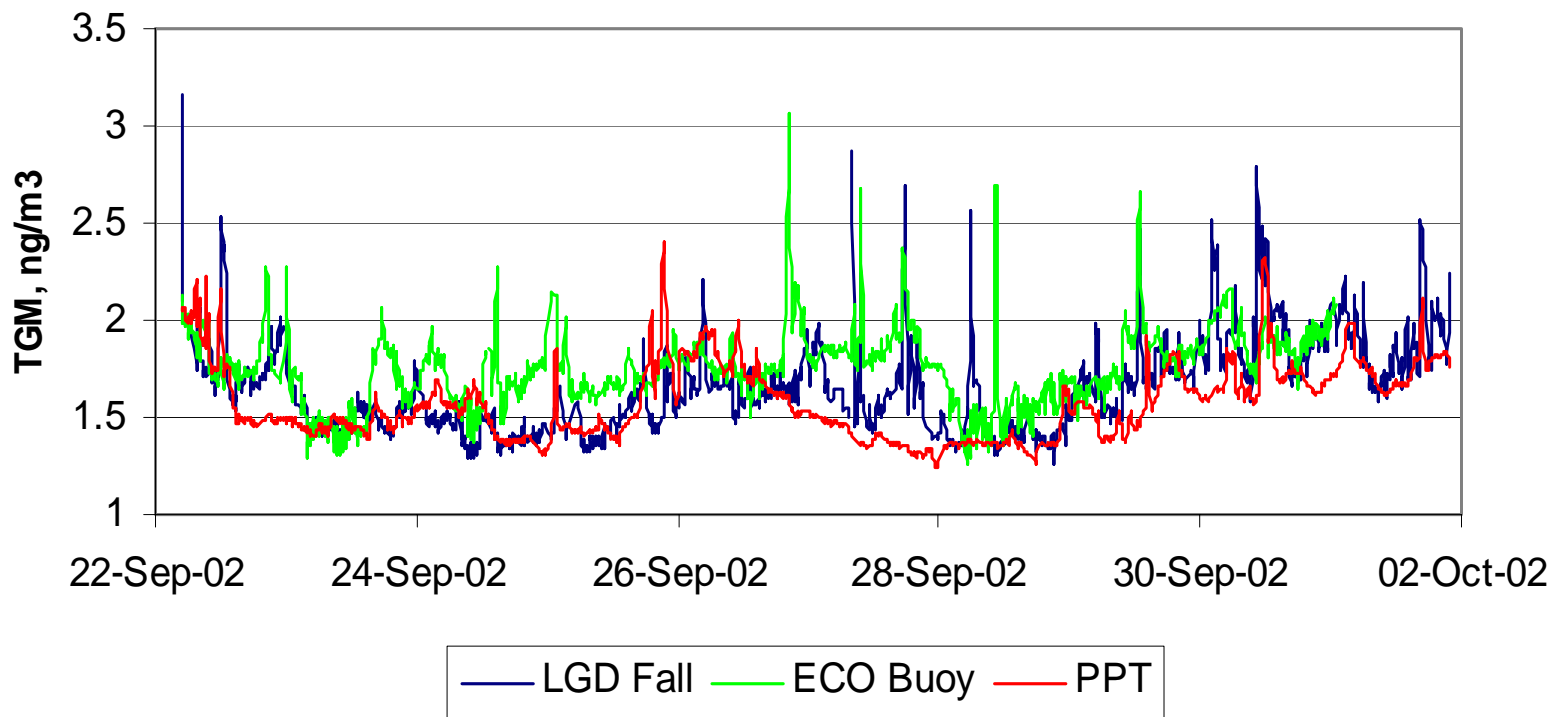
# Successes

- 2004 Season
  - PUF samples
  - Real-time measurements (Hg & O<sub>3</sub>)
- 2002
  - PUF samples (IADN & LOADS)
  - Real-time measurements (Hg & O<sub>3</sub>)
- 2000/01
  - Real-time measurements (Hg & O<sub>3</sub>)

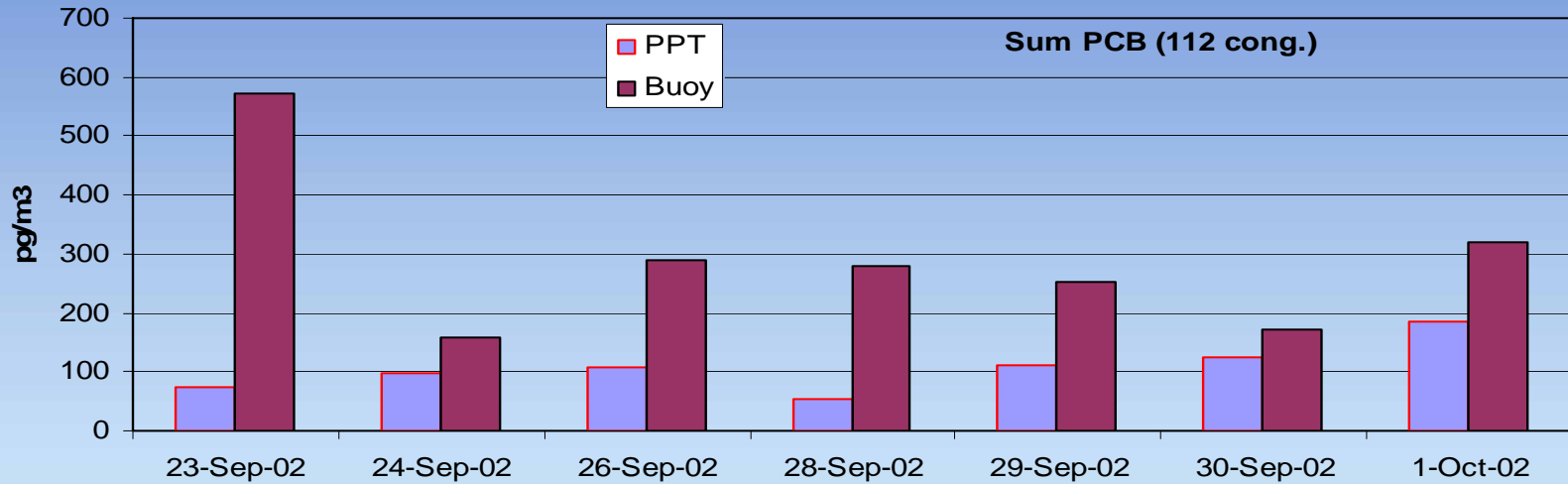
# Large TGM Concentrations near Urban Centers (ECO buoy) 2000



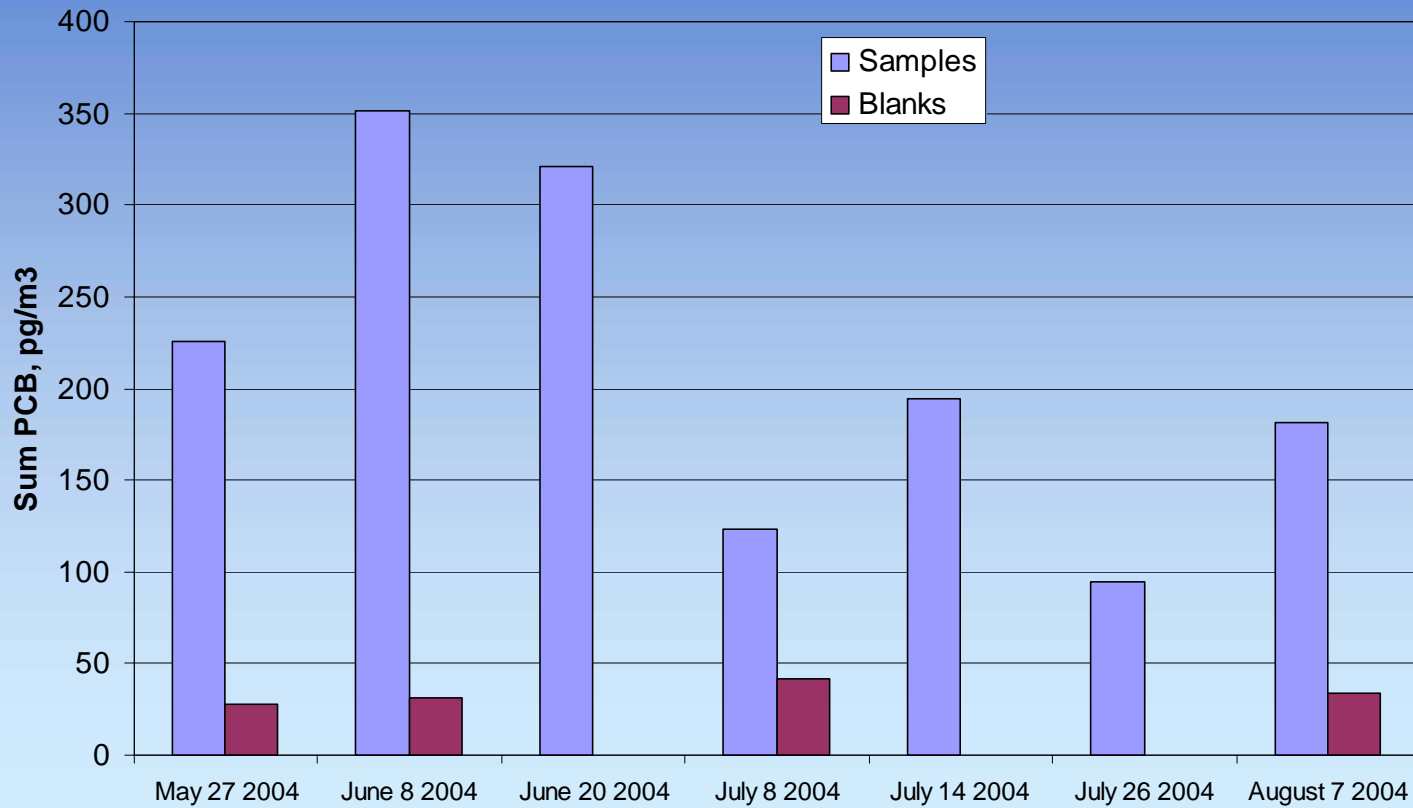
## Lake Guardian, ECO Buoy and Point Petre Fall 2002



# Sum PCB Concentrations at Buoy and Point Petre during LOADS



# Summer 2004, Preliminary Results



# Future

- 2005 Continue using platform for AQ and MET with expanded suite of measurements
- 2006 Replace with three-metre for MET  
Continue use of twelve-metre for air quality
- Hosting other measurements
- Capability for multi-channel PUF sampling
- Second buoy!

## Acknowledgements

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# Chemicals Measured

PCBs

Endosulfan

Chlordanes

Heptachlor

$\alpha$ -HCH

Octachlorostyrene

$\gamma$ -HCH (lindane)

PAHs

Aldrin

Dieldrin

Trace metals (Canada)

DDT, DDD, DDE

Mercury (Canada)

HCB

PBDEs (US)

Trans-nonachlor

Dioxins(Canada, US new)