

# Canada's National Action Plan (NAP) for Unintentionally produced Persistent Organic Pollutants (UPOPs) for the Stockholm Convention and Consideration of Best Available Techniques (BAT) and Best Environmental Practices (BEP)

*Presented by*

Patrick Finlay, Environment Canada

*at*

Workshop on Emissions Reduction

North American Commission for Environmental

Cooperation (NACEC)

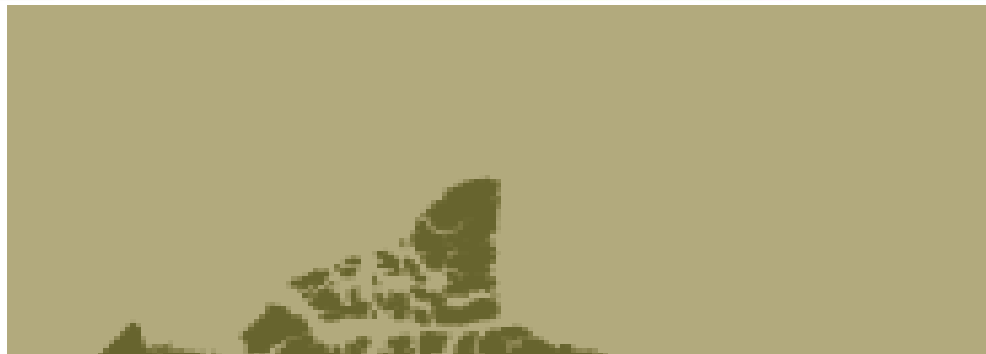
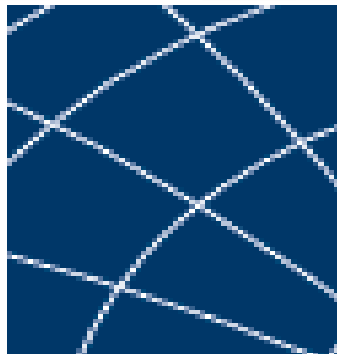
*Monterrey, Mexico*

*January 31<sup>st</sup> and February 1<sup>st</sup>, 2007*



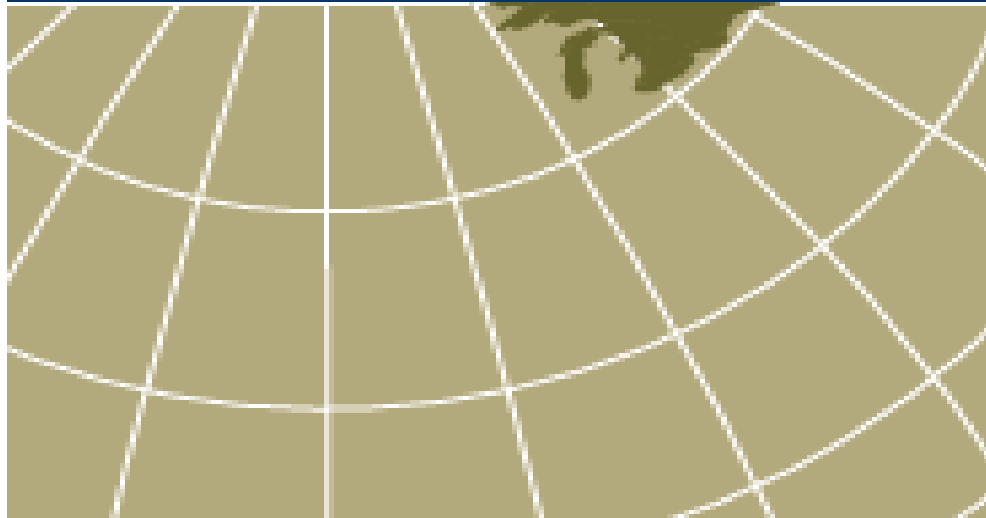
## PART A

# Canada's National Action Plan (NAP) for Unintentionally produced Persistent Organic Pollutants (UPOPs)



## **PART - II**

**CANADA'S NATIONAL  
ACTION PLAN ON  
UNINTENTIONALLY  
PRODUCED PERSISTENT  
ORGANIC POLLUTANTS  
(NAP)**



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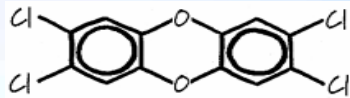
# Introduction

- The UNEP *Stockholm Convention* on POPs came into force for Canada on May 17, 2004
- As required, Canada prepared a National Implementation Plan, which includes a National Action Plan on UPOPs, by May 17, 2006
- Under Article 5 of the Stockholm Convention, Parties are required to take measures to reduce total releases of UPOPs from anthropogenic sources “with the goal of their continuing minimization and, where feasible, ultimate elimination.”

# Unintentionally Produced Persistent Organic Pollutants (UPOPs)

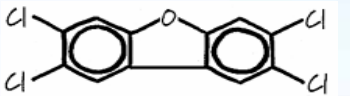
The 4 UPOPs identified by the Stockholm Convention are:

- polychlorinated dibenzo-*p*-dioxins (dioxins)



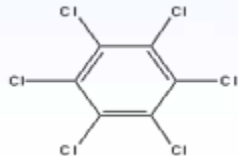
(chlorine substituted in the 2,3,7,8 positions)

- polychlorinated dibenzofurans (furans)

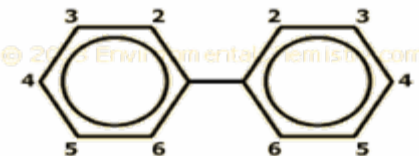


(chlorine substituted in the 2,3,7,8 positions)

- hexachlorobenzene (HCB)



- polychlorinated biphenyls (PCBs)



- These chemicals are persistent, bio-accumulative, cause adverse effects on human health or the environment, are subject to long-range transport in the environment and are unintentionally produced

# Sources of UPOPs (1)

- UPOPs are formed and released from thermal processes involving organic matter and chlorine as a result of incomplete combustion or chemical reactions
- The following industrial source categories have the potential for comparatively high formation and release of these chemicals to the environment:

## **Annex C of the Stockholm Convention Part II source categories**

- Waste Incinerators, including co-incinerators of municipal, hazardous or medical waste or of sewage sludge
- Cement kilns firing hazardous waste
- Production of pulp (chlorine for bleaching)
- Secondary copper production
- Sinter plants in the iron and steel industry
- Secondary aluminium production
- Secondary zinc production

## Sources of UPOPs (2)

### Annex C of the Stockholm Convention Part III source categories

- Open burning of waste, including burning of landfill sites
- Thermal processes in the metallurgical industry not mentioned above
- Residential combustion sources
- Fossil fuel-fired utility and industrial boilers
- Firing installations for wood and other biomass fuels
- Specific chemical production processes releasing UPOPs, especially production of chlorophenols and chloranil
- Crematoria
- Motor vehicles, particularly those burning leaded gasoline
- Destruction of animal carcasses
- Textile and leather dyeing (with chloranil) and finishing (with alkaline extraction)
- Shredder plants for the treatment of end of life vehicles
- Smoldering of copper cables
- Waste oil refineries



# National Action Plan (1)

- Part II of the National Implementation Plan (NIP) is the National Action Plan (NAP)
- The National Action Plan identifies Canada's plans for meeting its obligations under Article 5 of the Convention on POPs
- Canada's strategy to reduce total releases of UPOPs from anthropogenic sources focuses on:
  - Improving release inventories
  - Characterizing other UPOPs sources
  - Considering Best Available Techniques (BAT) / Best Environmental Practices (BEP)
  - Implementing the Canada-wide Standards for Dioxins and Furans for key sectors
  - Reviewing and updating strategy in 5 years

# National Action Plan (2)

- Achieved “virtual elimination” of dioxins and furans in pulp mill effluent in 1990s with Environment Canada’s regulations under the *Canadian Environmental Protection Act*
- Developed Canadian Council of Ministers of the Environment (CCME) Canada-wide Standards (CWS) for Dioxins and Furans which set emission limits for key source sectors
  - Coastal pulp and paper boilers
  - Iron sintering plants
  - Steel manufacturing electric arc furnaces
  - Conical waste combustion of municipal waste
  - Waste incineration

# National Action Plan (3)

- Continuing research on other sources
- Canada participates on the *Stockholm Convention* Experts Group developing guidelines on BAT and guidance on BEP (Patrick Finlay)
  - contributed draft guidelines for ten source categories (mainly metallurgical)
  - preparing a compilation of world standards for releases of UPOPs

# SUMMARY\* OF MEASURES for Unintentionally produced Persistent Organic Pollutants (UPOPs: PCDD/F, HCB, PCBs)

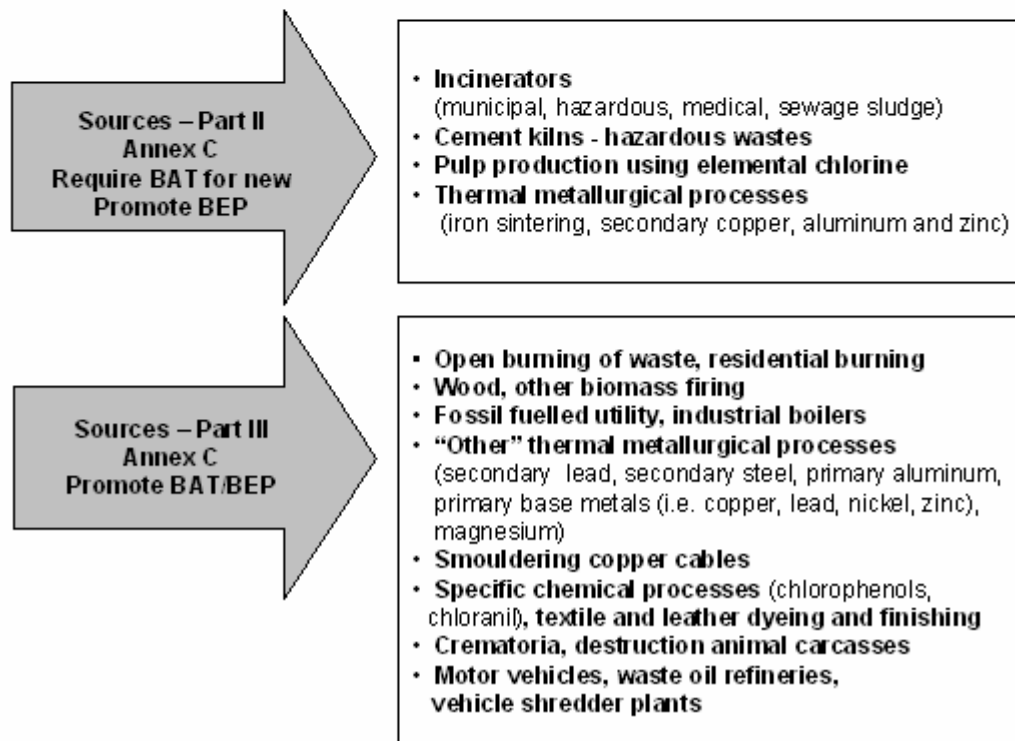
Revision 2007/01/22

\*See Convention legal text for definitive details

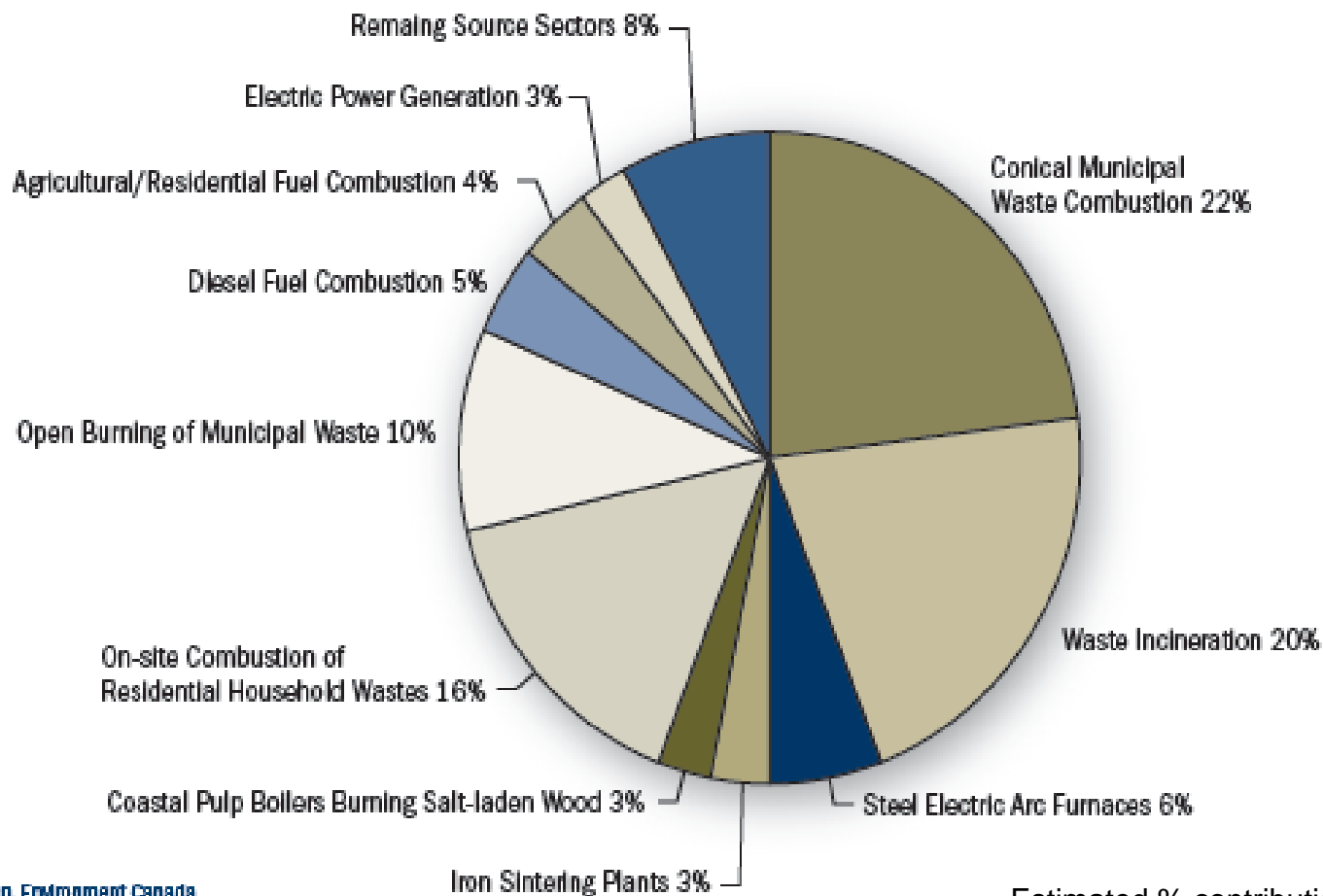
- Develop **Action Plan** with implementation schedule, 2 years after entry into force for Party.
- **Inventory** current and projected releases.
- **Evaluate** laws and policies.
- **Develop and promote** strategies and **review** every 5 years. Consider UNEP BAT/BEP guidance documents for NAP priority sources of each Party.
- **Require BAT\*\*** for new sources identified in Plan and **Part II Annex C** sources 4 years after entry into force for Party.
- **Promote BAT** for existing sources **Part II and Part III, Annex C**, and for new sources **Part III, Annex C**.
- **Promote BEP\*\*\*** for new and existing sources **Part II and Part III, Annex C**.

\*\* **Best Available Techniques (BAT):** most effective and advanced activities to limit, prevent or reduce releases (process description, available techniques, and achievable release levels).

\*\*\* **Best Environmental Practices (BEP):** environmental control measures and strategies



# Current Releases and Trends



Source: Sarah Teman, Environment Canada

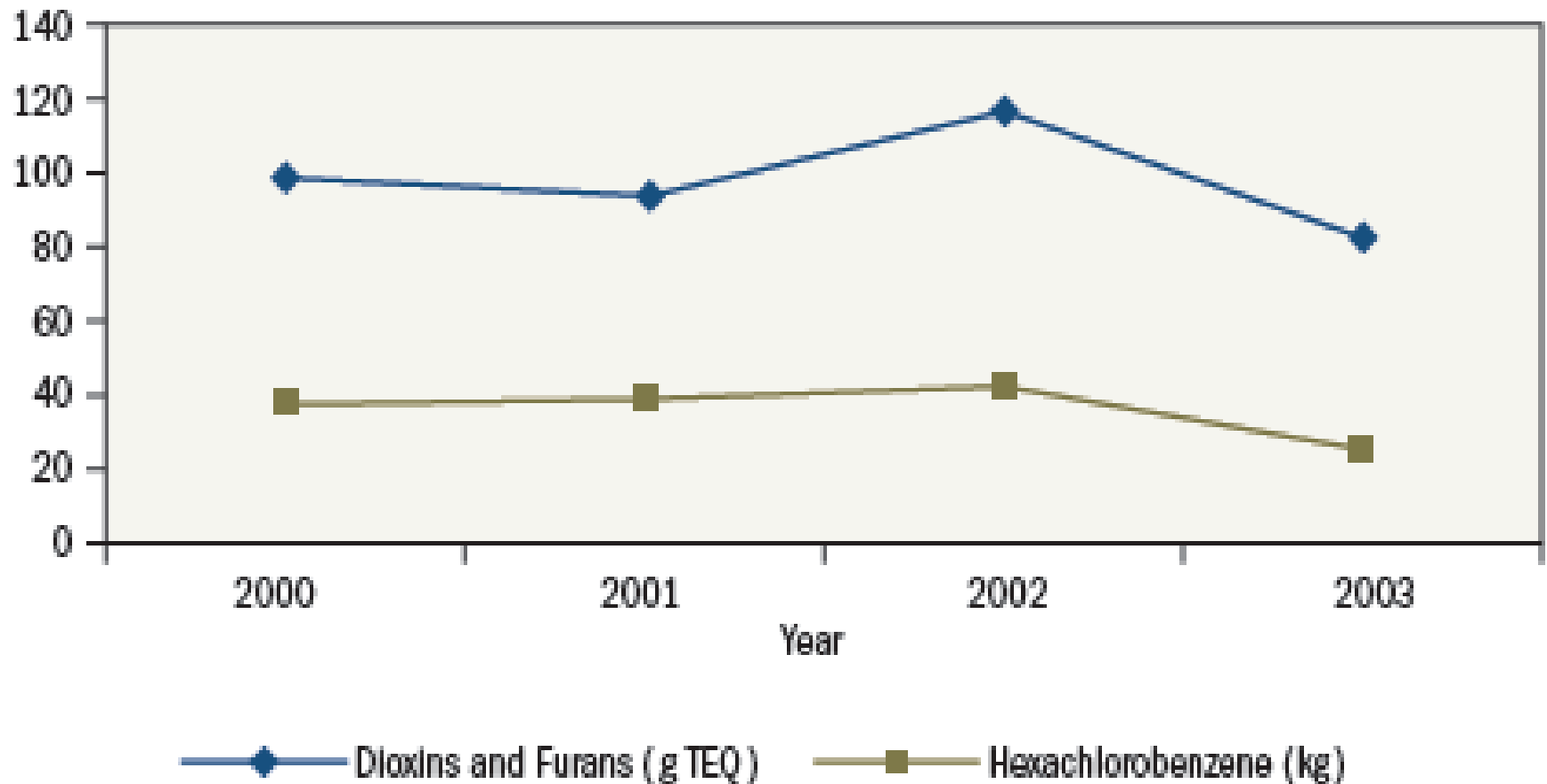
Estimated % contribution of sector dioxin and furan releases to the atmosphere (1999)

# Dioxins/Furans Release Trends (from 1990 to 1999)

Media	Release (g ITEQ)			Percent change, 1990-1999
	1990	1997	1999	
Air	427	274	164	62% decrease
Water	454	3	3	99% decrease
Soil	19	19	19	No change

Source: Environment Canada, *Inventory of Releases: PCDD/PCDF, 2001*

# National Pollutant Release Inventory (NPRI) Data for Dioxins/Furans and Hexachlorobenzene (HCB) Emissions to Air



# Strategies to Reduce Total Releases (1)

Stockholm Convention Annex C, Part II, source categories	Associated Canadian sector(s)	Description of measures
(b) Cement kilns firing hazardous waste;	Cement production (currently no knowledge of firing of hazardous waste in Canada)	<p>CCME National Guidelines for the Use of Hazardous and Non-Hazardous Wastes as Supplementary Fuels in Cement Kilns (1996)</p> <ul style="list-style-type: none"> <li>▪ Dioxin/furan emission limit for new kilns built after January 1, 1995, and existing kilns undergoing major modifications</li> <li>▪ Dioxin/furan emission limit for existing kilns built prior to 1995</li> </ul> <p>Note: Planned development of Environmental Code of Practice with dioxin/furan emission limits for new and existing kilns, and publication of Code under CEPA 1999.</p>
(c) Production of pulp using elemental chlorine or chemicals generating elemental chlorine for bleaching;	Pulp and paper production	<p>1992 CEPA Pulp and Paper Mill Effluent Chlorinated Dioxins and Furans Regulations: prohibit the release of dioxins/furans in measurable amounts (i.e., must be below the level of quantification)</p> <p>1992 CEPA Pulp and Paper Mill Defoamer and Wood Chip Regulations</p>



# Strategies to Reduce Total Releases (2)

Stockholm Convention Annex C, Part II, source categories	Associated Canadian sector(s)	Description of measures
(d) The following thermal processes in the metallurgical industry:		
(i) Secondary copper production;		Facilities are subject to provincial/territorial guidelines or requirements in a permit or order.
(ii) Sinter plants in the iron and steel industry;	Steel manufacturing sector	Iron Sintering Plant Canada-wide Standards for Dioxins and Furans <ul style="list-style-type: none"> <li>▪ Dioxin/furan emission limits for new or expanding iron sintering plants (effective March 2003)</li> <li>▪ Dioxin/furan emission limits for existing iron sintering plants (step-down dates of 2002, 2005 and 2010)</li> <li>▪ CWS Pollution Prevention Strategy for Iron Sintering Plants</li> </ul>
(iii) Secondary aluminium production;		Facilities are subject to provincial/territorial guidelines or requirements in a permit or order.
(iv) Secondary zinc production.		Facilities are subject to provincial/territorial guidelines or requirements in a permit or order.

# Strategies to Reduce Total Releases (3)

Stockholm Convention Annex C, Part II, source categories	Associated Canadian sector(s)	Description of measures
(b) Thermal processes in the metallurgical industry not mentioned in Part II;	Steel manufacturing electric arc furnaces (EAFs)	Steel Manufacturing EAF Canada-wide Standards for Dioxins and Furans <ul style="list-style-type: none"> <li>• Dioxin/furan emission limits for new or modified EAFs (effective March 2003)</li> <li>• Dioxin/furan emission limits for existing EAFs (step-down dates of 2006 and 2010)</li> <li>• CWS Pollution Prevention Strategy for Steel Manufacturing EAFs</li> </ul>
	Base metals smelting	Publication of Environmental Code of Practice for Base Metals Smelters and Refineries, with dioxin/furan emission limits for new and existing facilities, under CEPA 1999 by March 2006

# Best Available Techniques (BAT) and Best Environmental Practices (BEP)

- Canadian environmental legislation embodies overarching BEP such as pollution prevention and the precautionary principle
- BAT are, in general, taken into consideration during the development of instruments to address pollutant releases, in addition to other factors, such as socioeconomics, environmental co-benefits and impacts
- Canadian strategies outlined in the NAP take into account BAT and BEP

# Actions to Date - Air

Source	g ITEQ/year <sup>a</sup>	Approach
Releases to atmosphere		
Steel manufacturing EAFs	11	CWS signed in March 2003 New or modified: 100 µg ITEQ/m <sup>3</sup> Existing: 150 µg ITEQ/m <sup>3</sup> by 2006; 100 µg/m <sup>3</sup> by 2010, plus limits for new or modified
Iron sintering plants	6	CWS signed in March 2003 New or expanding: 200 µg ITEQ/m <sup>3</sup> Existing: 1350 µg ITEQ/m <sup>3</sup> by 2002; 500 µg ITEQ/m <sup>3</sup> by 2005; 200 µg ITEQ/m <sup>3</sup> by 2010
Coastal pulp boilers burning salt-laden wood	5	CWS signed in June 2001 New: 100 µg ITEQ/m <sup>3</sup> Existing: 500 µg ITEQ/m <sup>3</sup> by 2006
Magnesium production	3.8 <sup>d</sup>	Facility releasing majority of emissions ceased operations in 2003
Base metals smelting	3	CEPA 1999 Environmental Code of Practice – planned for publication by March 2006
Cement kilns	2	CCME Guideline Planned CEPA 1999 Environmental Code of Practice
Copper wire recycling	No estimate	Source characterization needed to determine significance of emissions

# Actions to Date - Water

Source	g ITEQ/year <sup>a</sup>	Approach
Releases to water		
Pulp and paper	3.3	1992 CEPA regulations prohibiting the release of dioxins/furans in measurable quantities Releases have decreased significantly from an estimated 450 g ITEQ in 1988

## Notes:

- <sup>a</sup> All release estimates are for 1999, obtained from the Inventory of Releases: PCDD/PCDF - Updated Edition (February 2001), except where otherwise noted.
- <sup>b</sup> Release estimate from Gartner Lee Limited report, February 2004.
- <sup>c</sup> Release estimate from Earth Tech Canada Inc. report, March 2004.
- <sup>d</sup> Releases obtained from the National Pollutant Release Inventory (2002) for primary magnesium production.



# References

- Canada's National Implementation Plan under the Stockholm Convention on Persistent Organic Pollutants, Part II, Canada's National Action Plan, May 17, 2006  
[http://www.pops.int/documents/implementation/nips/submissions/canada/20060523\\_nip\\_with\\_cover\\_en.pdf](http://www.pops.int/documents/implementation/nips/submissions/canada/20060523_nip_with_cover_en.pdf)
- Canadian Council of Ministers of the Environment, Canada-wide Standards  
[http://www.ccme.ca/ourwork/air.html?category\\_id=91](http://www.ccme.ca/ourwork/air.html?category_id=91)

# Conclusions

- Canadian programs regarding UPOPs have focused mainly on dioxins and furans (D/F)
- Current actions focus on:
  - reducing releases from priority sources towards achieving virtual elimination of UPOPs
  - Continuing to gather information on other less well defined sources
- Significant reductions in D/F have been achieved by Canada to date
- Canada is positioned to further contribute towards the reduction and elimination of UPOPs

## PART B

# Consideration of Best Available Techniques (BAT) and Best Environmental Practices (BEP) in Canada's National Action Plan (NAP) for Unintentionally produced Persistent Organic Pollutants (UPOPs)



# Contents

- Canada's National Action Plan on Unintentionally produced Persistent Organic Pollutants (UPOPs) (see PART A for details)
- Canada-wide Standards (CWS) for Dioxins and Furans
- *Canadian Environmental Protection Act* (CEPA) standards
- Additional information

# Canada-wide Standards (CWS) for Dioxins and Furans

- Emission limit values (ELVs) as stack concentrations, with timeframe for achievement by existing sources
  - Developed based on consideration of Best Available Techniques (BAT) One exception -- Conical Waste Combustion of Municipal Waste – consideration of BAT for this source type led to a phase-out strategy
- Pollution prevention strategies
  - Developed taking into account Best Environmental Practices (BEP)
- Review of standards
  - In progress
- Jurisdictional initial actions
  - Federal and provincial/territorial commitments to implement CWS within their respective regulatory frameworks
- Monitoring and reporting requirements

# Priority Sectors for Canada-wide Standards for Dioxins and Furans (D/F)

Source Type	1999 Inventory (grams I-TEQ/year)	2001 Inventory (grams I-TEQ/year)
Incineration	11.9	41.5
Municipal Solid Waste (MSWI)	8.3	8.4
Medical Waste (MWI)	2.5	25.1
Hazardous Waste (HWI)	0.8	7.9
Sewage Sludge (SSI)	0.3	0.1
Coastal pulp and paper mill boilers (CPPMB)	10.5	5.1
Iron sintering (IS)	23	6.0
Steelmaking electric arc furnaces (EAF)	10	12
<b>Subtotal – Sectors With ELVs</b>	<b>55.4</b>	<b>64.6</b>
Conical waste combustors (CWC)	74.5	44.1
Residential wood combustion (RWC)	36	3.3
<b>Subtotal – All Priority Sectors</b>	<b>166</b>	<b>112</b>
Total – D/F Inventory (air)	199	164
<b>Contribution to air Total</b>	<b>~83%</b>	<b>~68%</b>

Note: Inventory and emission limit values are based on the NATO/CCMS I-TEQ scheme; coplanar PCBs not included at this time.

\* I-TEQ: International Toxic Equivalent

# Considerations for Inventories

- Emissions data can be continually improved - from use of "default" emission factors to facility emissions testing
- Difference in shown 1999 and 2001 due to:
  - Error in calculation of biomedical waste incinerators and some new facility test data
  - Identification and data for an additional hazardous waste incinerator
  - New data for coastal pulp and paper boilers and an iron sintering plant

# Emission Limit Values (ELVs) for New Sources

- New source emission limits (apply to new sources of any size):
  - Incinerators (all 4 types): 80 pg I-TEQ\* /Rm<sup>3</sup>
  - Coastal Pulp & Paper Mill Boilers: 100 pg I-TEQ/Rm<sup>3</sup>
  - Iron Sintering Plants: 200 pg I-TEQ/Rm<sup>3</sup>
  - Steel Manufacturing Electric Arc Furnaces: 100 pg I-TEQ/Rm<sup>3</sup>

R = reference conditions: For incinerators and coastal pulp and paper mill boilers, 25 °C, 1 atm, dry; corrected to 11% O<sub>2</sub>. For iron sintering plants and steel manufacturing electric arc furnaces, 25 °C, 1 atm, dry, at operating oxygen levels in the exhaust stream.

\* I-TEQ: International Toxic Equivalent

# Emission Limit Values (ELVs) for Existing Sources

Source Type	Emission Limit (pg I-TEQ/Rm <sup>3</sup> )	Effective Date	Expected Reduction (grams I-TEQ/year)
Existing Incinerators			
Municipal Solid Waste	80	2006	20.1
Medical Waste	80	2006	4.5
Hazardous Waste	80	2006	7.9
Sewage Sludge	100	2005	0.01
Existing Coastal Pulp & Paper Mill Boilers	500	2006	3.9
Existing Iron Sintering Plants	1350	2002	3.0
	500	2006	4.8
	200	2010	5.4
Existing Steel Manufacturing Electric Arc Furnaces	150	2006	
	100	2010	7.0
Total Reduction Expected by 2010 (from 2001 inventory level)			48.8 (~75%)

Note: No size limits apply for hazardous waste, sewage sludge incinerators. For medical and municipal solid waste incinerators units burning less than 26 tonnes/year need not perform annual testing and must make "determined efforts" to meet the specified ELV

\* I-TEQ: International Toxic Equivalent



# BAT Implementation Progress to Date

- Example – Steel Manufacturing Electric Arc Furnaces (EAFs)
  - Currently 10 EAFs operating in Canada
  - Test results available for 6 as shown below

Facility	2003 D/F Emissions (pg/Rm <sup>3</sup> )	2004 D/F Emissions (pg/Rm <sup>3</sup> )	2005 D/F Emissions (pg/Rm <sup>3</sup> )	2006 D/F Emissions (pg/Rm <sup>3</sup> )	Meets 2006 CWS standard (150 pg/Rm <sup>3</sup> )	Meets 2010 CWS standard (100 pg/Rm <sup>3</sup> )
Mill A	189.0	49.4	15.0	N/A	Yes	Yes
Mill B	N/A	19.0	4.0	N/A	Yes	Yes
Mill C	1284.0	N/A	131.6	N/A	Yes	No
Mill D	13.6	11.5	4.19	N/A	Yes	Yes
Mill E	N/A	23.0	14.3	N/A	Yes	Yes
Mill F	N/A	60.8	23.0	14.3	Yes	Yes

*New and Modified Furnaces:*

Dioxin and furans emissions shall be less than 100 pg ITEQ/Rm<sup>3</sup> from any new or modified steel manufacturing EAF.

*Existing Furnaces:*

Phase 1: Dioxin and furans emissions shall be less than 150 pg ITEQ/ Rm<sup>3</sup> at all existing steel manufacturing EAFs by 2006.

Phase 2: Dioxins and furans emissions shall be less than 100 pg ITEQ/Rm<sup>3</sup> at all existing steel manufacturing EAFs by 2010.

# Pollution Prevention Strategies

- An important provision of these CWSs was a commitment to develop pollution prevention strategies, consistent with the principles outlined in the CCME *Canada-wide Environmental Standards Sub-agreement*, that is:
  - *Pollution prevention is the preferred approach to environmental protection. Governments will place emphasis on a pollution prevention approach when implementing standards under this sub-agreement.*
- Intent:
  - Identify opportunities to minimize emissions of air pollutants from priority source sectors
  - Provide framework for continuous improvement toward the goal of virtual elimination of dioxins and furans
  - Provide options for consideration by jurisdictions in developing/amending implementation plans
  - Consider in any future CCME activity relating to the priority sectors addressed by the CWSs, e.g., consider for incorporation in guidelines or other guidance documents which may be revised or developed regarding these sectors



# Scope of Pollution Prevention Strategies

## *Example -- Steel Manufacturing Electric Arc Furnaces (EAFs)*

- Best Environmental Practices considered include:
  - Opportunities for improved control and release reductions of particulate matter;
  - Combustion chemistry of the EAF process;
  - Feasibility of applying existing/emerging pollution prevention/control techniques (e.g., catalytic oxidation, containment of fugitive emissions, best management practices for operations and maintenance, etc.);
  - Reduction of mercury sources and emissions through the Mercury CWS development process;
  - Cross-media transfers and management of pollutants;
  - Emissions of greenhouse gases;
  - Resource utilization; and
  - Energy efficiency

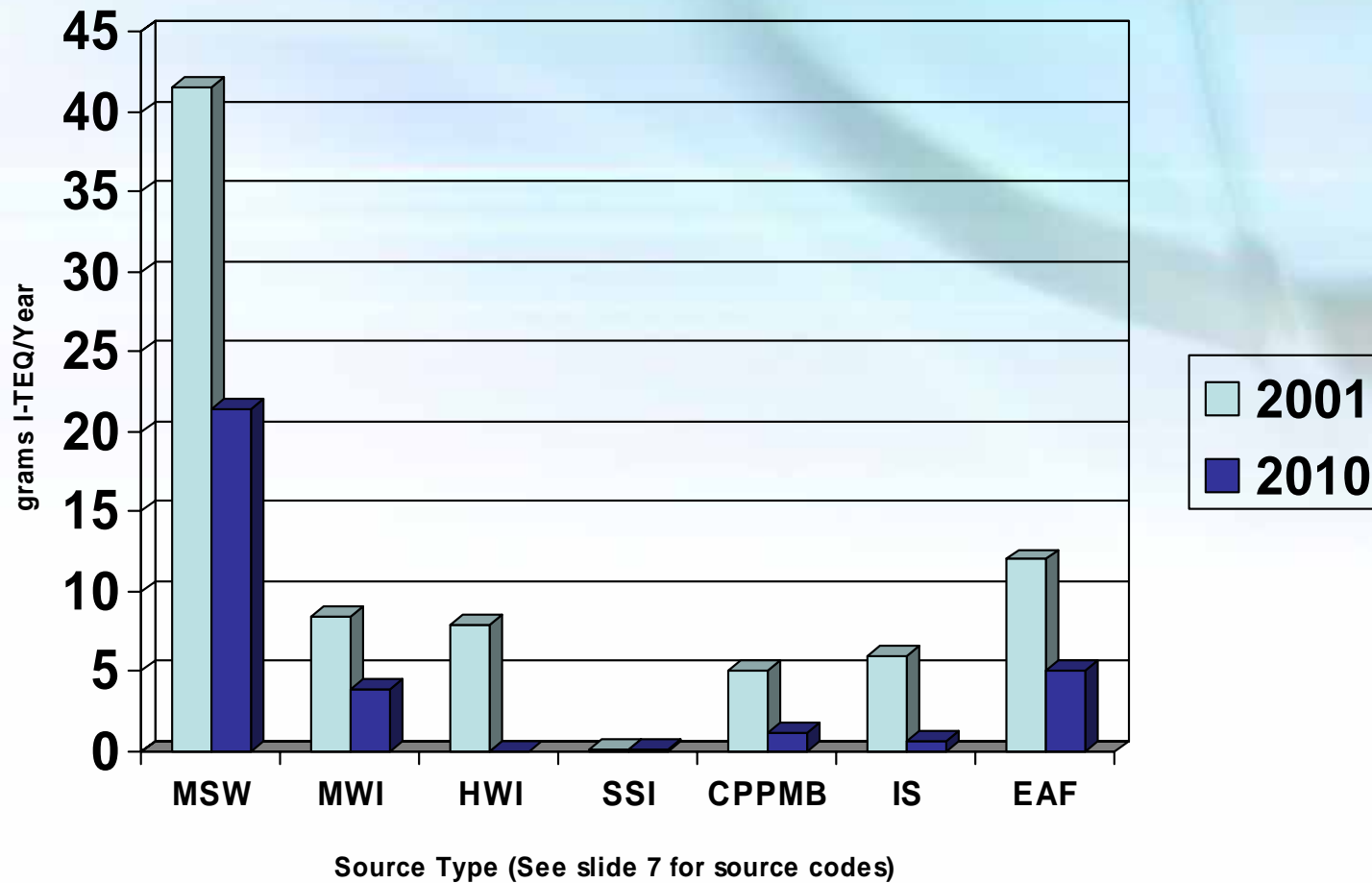
# Canadian Environmental Protection Act (CEPA 1999) Standards

- Pulp and Paper Mill Effluent Chlorinated Dioxins and Furans Regulations (May 1992)
  - No measurable concentration of dioxins and furans to be released
  - Level of Quantification (LoQ): 20 pg I-TEQ\* /litre (water)
- Environmental Code of Practice for Base Metals Smelters and Refineries (March 2006)
  - New: 32 pg I-TEQ/Rm<sup>3</sup>
  - Existing: 100 pg I-TEQ/Rm<sup>3</sup>
- Cement Manufacturing Plants
  - Planned Performance Standards

\* I-TEQ: International Toxic Equivalent



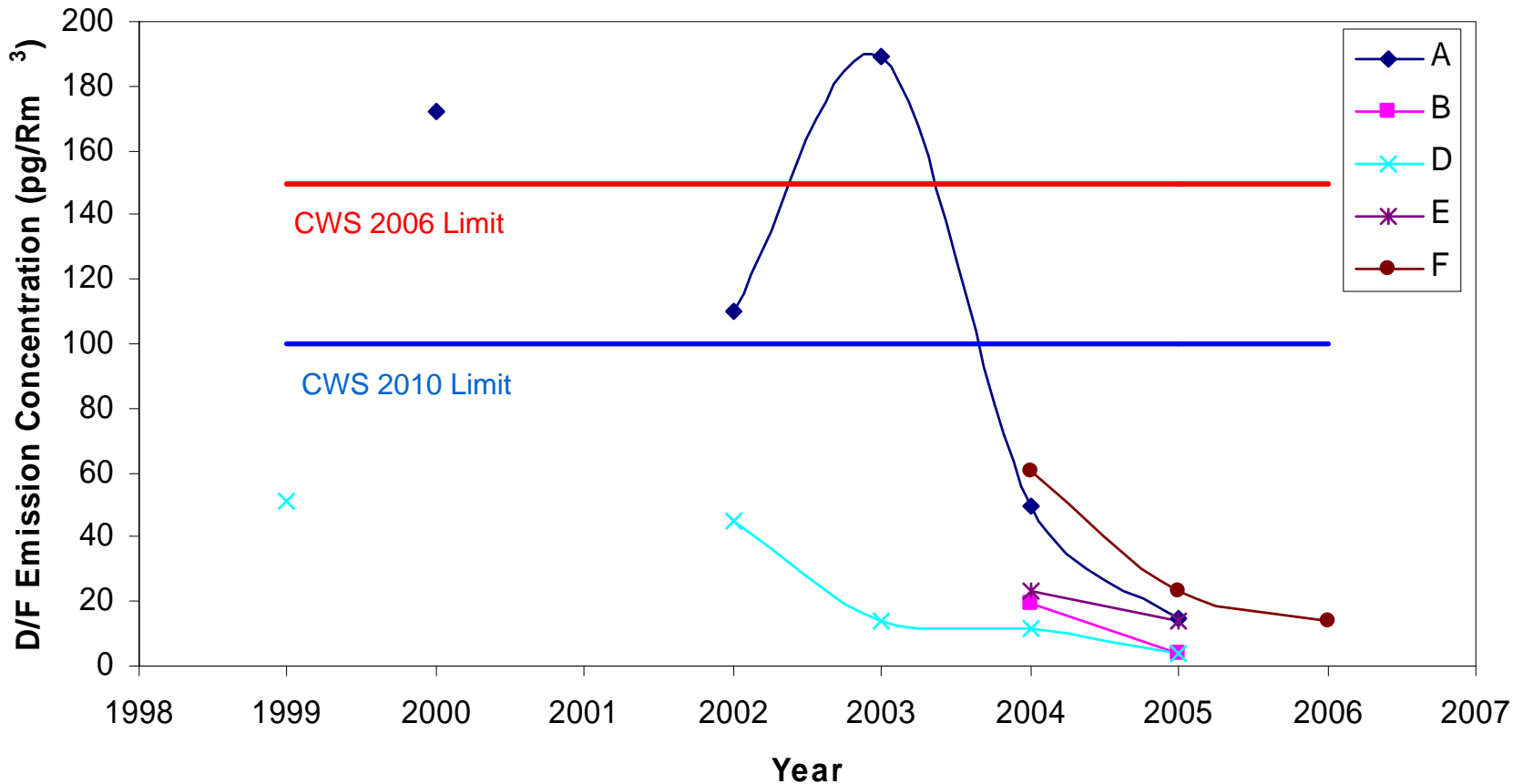
# Figure 1: Expected Source Reductions on Implementation of Canada-wide Standards for Dioxins and Furans



Note: See page 27 for source codes



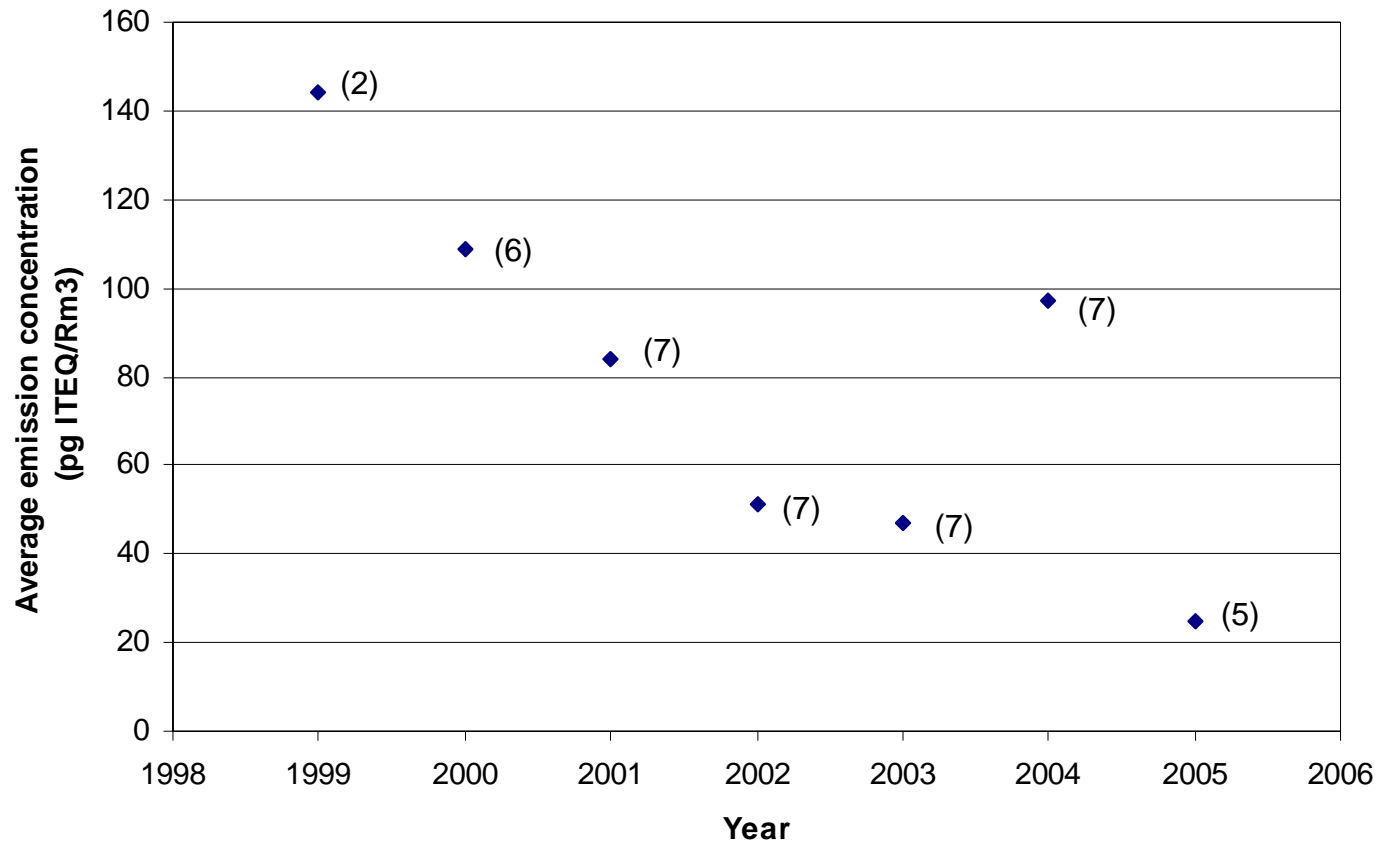
## Figure 2: Canadian Steel Manufacturing Electric Arc Furnace Dioxin and Furan Emissions (1999-2006)



CWS: Canada-wide Standards



## Figure 3: Canadian Steel Producers Association (CSPA) Dioxins and Furans Stack Test Results (1999-2005)



Note: (Number of annual tests)

Data source: Bob Downie, Gerdau Ameristeel, Cambridge, Ontario, Canada

# Reference Condition Conversions (1)

Unit	Country/Region	Gas Conditions	Temp (°C)	Pressure (atm)	Relevant to
Nm <sup>3</sup>	European Union (EU)	Dry, 11% oxygen	0	1	Waste Incinerators
		Dry, 10% oxygen	0	1	Cement Kilns
		Dry, 6% oxygen	0	1	Co-incineration
Rm <sup>3</sup>	Canada	Dry, 11% oxygen	25	1	Incinerators, coastal pulp and paper mill boilers
		Dry, operating % oxygen	25	1	Base metal smelters, sintering plants and steel manufacturing electric arc furnaces
Sm <sup>3</sup>	United States (U.S.)	Dry, 7% oxygen	20	1	Incinerators and most combustion sources
Nm <sup>3</sup>	Japan	Dry, 12% oxygen	0	1	Incinerators and sintering processes

0.1 ng I-TEQ/Nm<sup>3</sup>  
 (0°C and 11% O<sub>2</sub>) (EU)  
*is equivalent to:*

0.899 ng I-TEQ/Nm<sup>3</sup> (0°C and 12% O<sub>2</sub>) (Japan)  
 0.110 ng I-TEQ/Nm<sup>3</sup> (0°C and 10% O<sub>2</sub>) (EU)  
 0.151 ng I-TEQ/Nm<sup>3</sup> (0°C and 6% O<sub>2</sub>) (EU)  
 0.092 ng I-TEQ/Rm<sup>3</sup> (25°C and 11% O<sub>2</sub>) (Canada)  
 0.131 ng I-TEQ/Nm<sup>3</sup> (20°C and 7% O<sub>2</sub>) (U.S.)

Source: Dominic Cianciarelli, Environmental Technology Centre, Environment Canada

## Reference Condition Conversions (2)

### Concentration Correction Factors for Different Jurisdictions Based on Oxygen and Reference Temperature

		Correction for % Oxygen Basis				
		Condition A				
		6	7	10	11	12
Condition B	6	1.000	1.072	1.367	1.505	1.674
	7	0.933	1.000	1.275	1.404	1.562
	10	0.732	0.784	1.000	1.101	1.225
	11	0.664	0.712	0.908	1.000	1.112
	12	0.597	0.640	0.817	0.899	1.000

		Correction for Reference Temperature (°C)		
		Condition A		
		0	20	25
Condition B	0	1.000	1.073	1.092
	20	0.932	1.000	1.017
	25	0.916	0.983	1.000

#### Procedure:

- 1 Locate original (**Condition A**) oxygen basis or reference temperature on top row.
- 2 Locate desired (**Condition B**) oxygen basis or reference temperature on side column.
- 3 The intersect in each table is the factor to convert from original to desired basis.
- 4 Multiply the original concentration by the factor(s).

Source: Dominic Cianciarelli, Environmental Technology Centre, Environment Canada

# Summary and Conclusions (1)

- *Emissions inventories of Unintentionally produced Persistent Organic Pollutants (UPOPs) should be continually improved with updated emission factors and facility tests*
- *Emissions tests sampling, analyses and reporting should be standardized to extent practicable*
- *Jurisdictions, consistent with their national priorities, may consider UNEP and other guidance documents on Best Available Techniques, Best Environmental Practices (BAT/BEP) in establishing their requirements for new sources of UPOPs, and in promoting reductions for existing sources*



## Summary and Conclusions (2)

- *Measures to reduce emissions of UPOPs may also reduce emissions of other pollutants, and associated exposure of workers, the public and the natural environment*
- *Experience is being gained through continual improvements in the environmental performance of industrial sectors and other sources of pollution*
- *Information, experience and guidance on Emissions Inventories and associated BAT/BEP should be periodically updated and shared, internationally and nationally.*

# Additional Information Resources

- Canada's National Implementation Plan under the Stockholm Convention (including the National Action Plan on Unintentional POPs)
  - [http://www.ec.gc.ca/CEPARRegistry/documents/part/nip\\_pop/nip\\_pop\\_fin.cfm](http://www.ec.gc.ca/CEPARRegistry/documents/part/nip_pop/nip_pop_fin.cfm)
  - <http://www.ec.gc.ca/cleanair-airpur/default.asp?lang=En&n=8DDE4B39-1>
  - <http://www.pops.int/documents/implementation/nips/submissions/default.htm>
- Canada-wide Standards for Dioxins and Furans
  - [http://www.ccme.ca/ourwork/air.html?category\\_id=91](http://www.ccme.ca/ourwork/air.html?category_id=91)
- Environmental Code of Practice for Base Metals Smelters and Refineries
  - <http://www.ec.gc.ca/CEPARRegistry/documents/code/smelters/toc.cfm>
- Pulp and Paper Mill Effluent Chlorinated Dioxins and Furans Regulations
  - <http://lois.justice.gc.ca/en/C-15.31/SOR-92-267/69050.html>

# Further Information

- Hui Peng, Program Engineer, Metals, Cement and By-product Organics Section, Pollution Prevention Directorate, Environment Canada  
- [hui.peng@ec.gc.ca](mailto:hui.peng@ec.gc.ca)
- Patrick G. Finlay, P.Eng., Senior Advisor, Industrial Sectors Environmental Performance, Environment Canada  
- [patrick.finlay@ec.gc.ca](mailto:patrick.finlay@ec.gc.ca)



**Thank you!**