

NORTH AMERICAN REGIONAL ACTION PLAN FOR DIOXINS FURANS AND HEXACHLOROBENZENE

CEC/SMOC Workshop on Reductions in Environmental Releases of Dioxins, Furans, and Hexachlorobenzene

**January 31 - Feb 1, 2007
Monterrey, Mexico**

TERMS OF REFERENCE

- **Authorization:**

Council Resolution 95-05

Council Resolution 99-01

- **Purpose of the Task Force**

Develop a North American Regional Action Plan (NARAP) on Dioxins, Furans, and Hexachlorobenzene

TASK FORCE PARTICIPATION

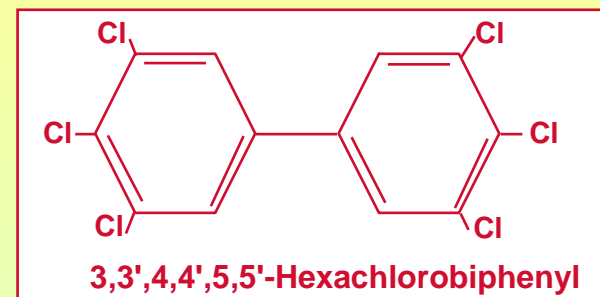
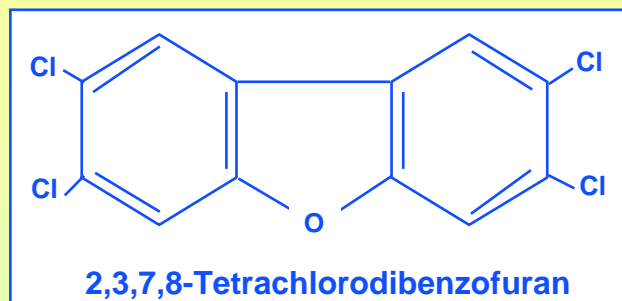
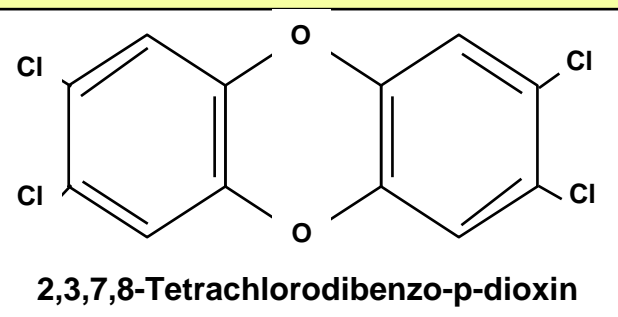
- **Two regular members appointed by each country, and one alternate.**
- **Four participating observer-members one each from the environmental community, indigenous organizations, industry, and academia**
- **Consult broadly with experts and stakeholders**

DIOXIN FURAN HEXACHLOROBENZENE NARAP

This NARAP is focus on pursuing information gathering and capacity building opportunities that will strengthen the Dioxins, Furans, and Hexachlorobenzene risk management programs of the three parties.

Particular emphasis is being placed on supporting Mexico as it works to develop its national program for managing Dioxins, Furans, and Hexachlorobenzene risk.

Dioxin -Like Compounds



Dioxins
75 congeners
7 toxic

2,3,7,8-TCDD
1,2,3,7,8-PeCDD
1,2,3,4,7,8-HxCDD
1,2,3,6,7,8-HxCDD
1,2,3,7,8,9-HxCDD
1,2,3,4,6,7,8-HpCDD
1,2,3,4,6,7,8,9-OCDD

Furans
135 congeners
10 toxic

2,3,7,8-TCDF
1,2,3,7,8-PeCDF
2,3,4,7,8-PeCDF
1,2,3,4,7,8-HxCDF
1,2,3,6,7,8-HxCDF
1,2,3,7,8,9-HxCDF
2,3,4,6,7,8-HxCDF
1,2,3,4,6,7,8-HpCDF
1,2,3,4,7,8,9-HpCDF
1,2,3,4,6,7,8,9-OCDF

PCBs
209 congeners
12 toxic

3,3',4,4'-TeCB
3,3',4,4',5-PeCB
3,3',4,4',5,5'-HxCB
Plus 8 others

SCIENTIFIC BASES FOR CONCERN

- **Highly Toxic Chemical**
- **Environmentally Persistent**
- **Bioaccumulating**
- **Environmentally Mobile**
- **Wide-spread Exposure**

Dioxin-like Compounds are Linked to a Number of Noncancer Toxicants in Animals and Humans

→ Developmental Toxicity

Targets:

- Developing Immune System
- Developing Nervous System
- Developing Reproductive System

→ Immunotoxicity

→ Endocrine Effects

→ Chloracne

→ Others

Dioxin-like Compounds are High Potency *animal* and *Likely* Human Carcinogens

TCDD → Characterized as a human carcinogen

- 1997- International Agency for Research on Cancer (IARC)
- 1999- US Dept of Health and Human Services

Based on:

- ◆ Unequivocal animal carcinogen
- ◆ Limited human information (epidemiologic/other)
- ◆ Mechanistic plausibility

**Other Dioxins → Characterized as
Likely human carcinogens**

Current Dioxin Exposure

➤ Environmental Exposure

- USA --- 1 pg/kg/day TEQ _(D/F/PCB)
- France --- 2.5 pg/kg/day TEQ _(D/F/PCB)
- Netherlands --- 1.8 pg/kg/day TEQ _(D/F/PCB)
- United Kingdom-- 2.3 pg/kg/day TEQ _(D/F/PCB)
- Japan --- 1.6 pg/kg/day TEQ _(D/F/PCB)

➤ Possible Higher Intake Populations

- Nursing infants
- Fatty Diet
- Some Subsistence Fishermen and Farmers in Proximity To Contamination

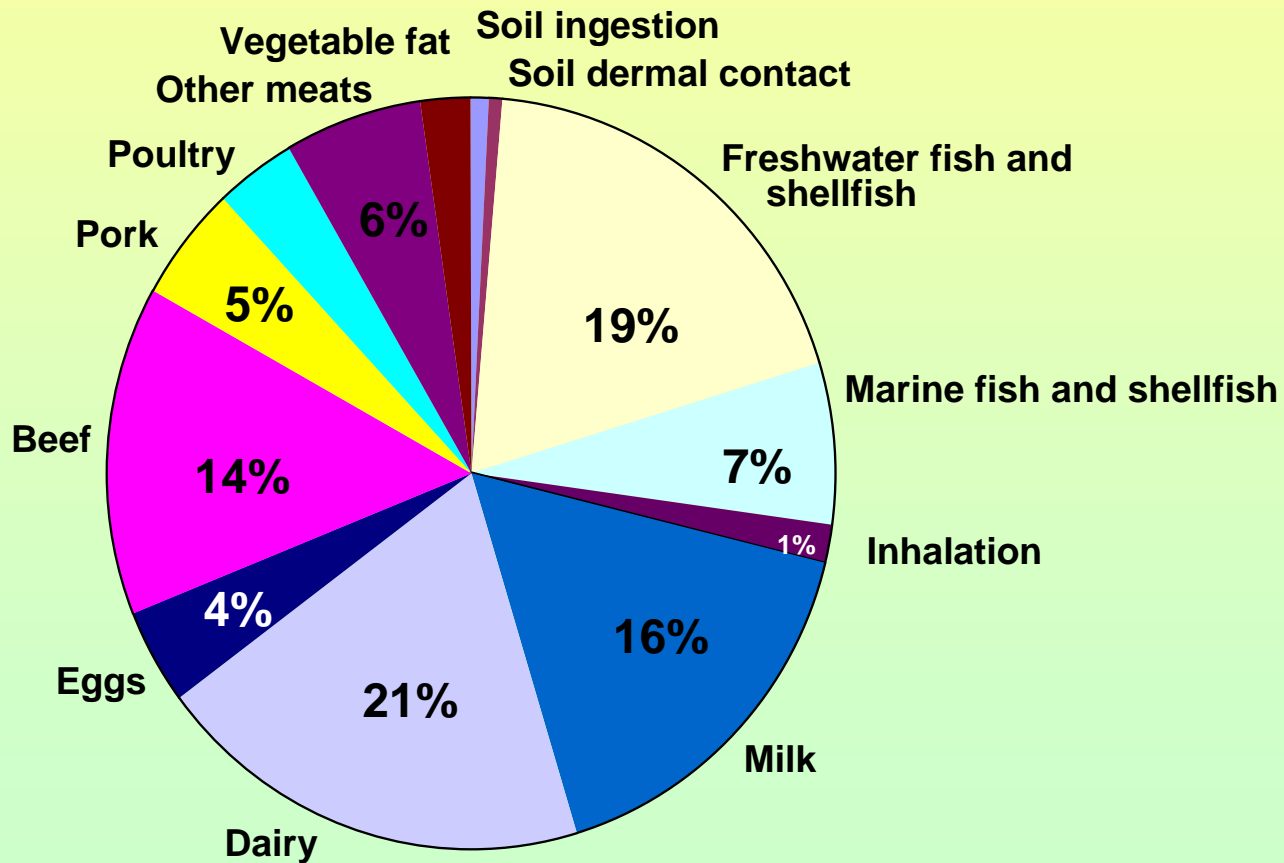
➤ Exposure Levels for Most Countries are Unmeasured

Quantitative Risk Assessments of Dioxin-Like Compounds

- The WHO, the European Commission, the United States and individual scientists have taken a number of different approaches to quantify risks from dioxins.
 - US EPA (2000) (*2004*)
 - COT (2001)
 - SCF (2001)
 - JECFA (2002)
- These different approaches have all lead to a similar conclusion: that exposures in the range of current general population levels found in Europe and North America are likely to result in adverse health effects for at least some of the population.

US Adult Average Daily Intake of CDDs/CDFs/dioxin-like PCBs

2000 Draft Estimate: ~ 65 pg TEQ_{DFP-WHO₉₈}/day



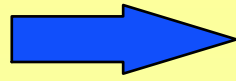
Sources and Pathways to Human

Exposures

SOURCES



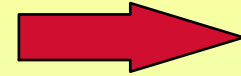
TRANSPORT



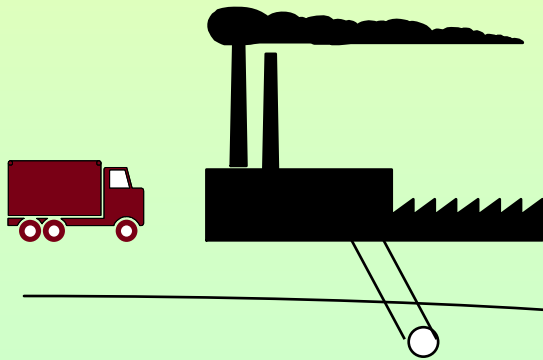
DEPOSITION



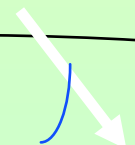
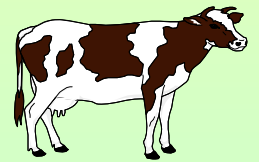
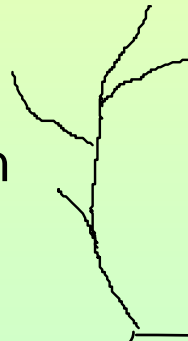
FOOD SUPPLY



Reentrainment

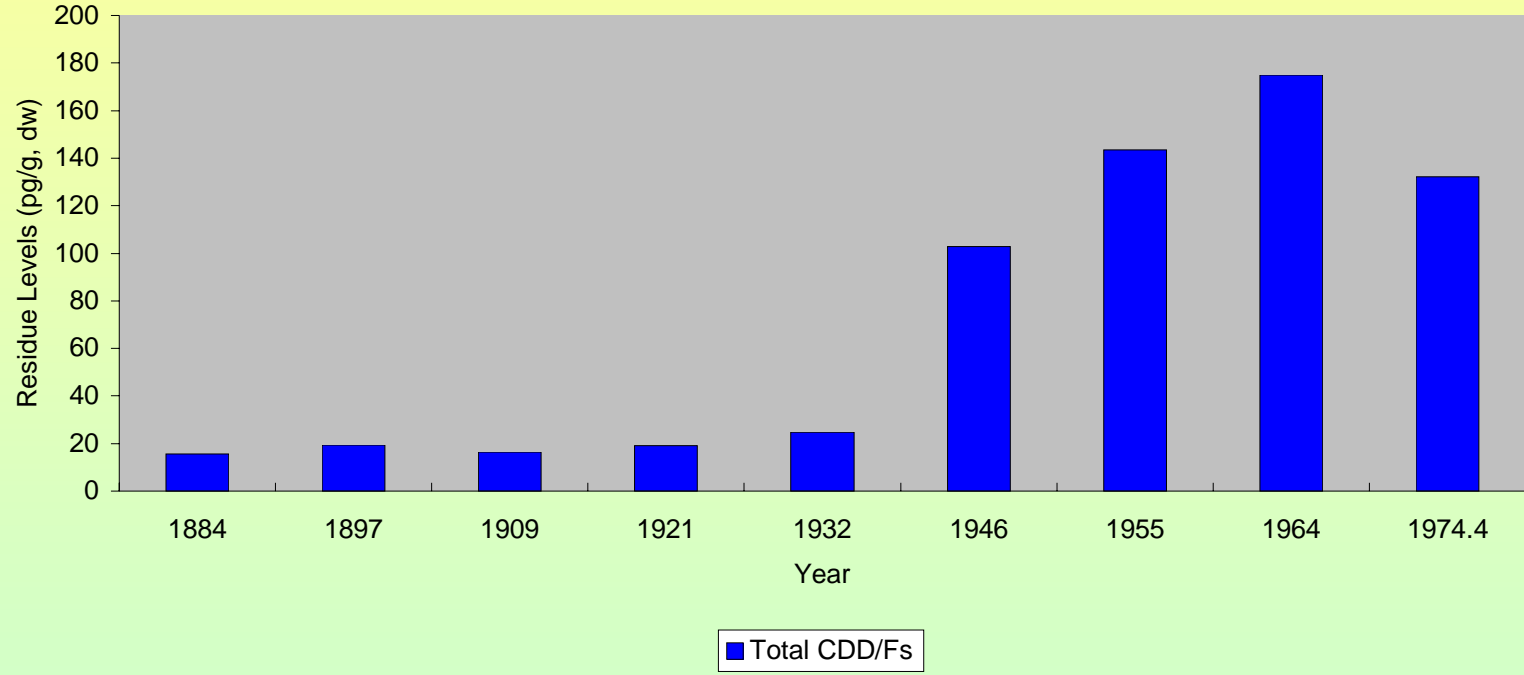


Runoff Erosion



Dioxin Trends in North American Lakes Sediments

Sediment Levels, Beaver Lake, Olympic Peninsula, WA
Non-detects = zero



TASKFORCE CAPACITY BUILDING EFFORTS

- **Government to Government Workshop**
- **Stakeholder Consultation Workshop
Mexico City**
- **Mexican Dioxin Inventory**
- **Training Of Mexican Scientists in HR
GC/MS Dioxin Measurement**
- **Mexican Dioxin Air Monitoring Network**
- **Mexican Sediment Core Project**
- **Today's Workshop**

TODAY'S WORKSHOP OBJECTIVES

- To **improve estimations of dioxin, furan, and hexachlorobenzene releases** in North America by refining emission factors and related data in Mexico
- To **exchange information on current national dioxin, furan, and hexachlorobenzene related programs** in Canada, Mexico and United States and global initiatives relating to the United Nations Environment Programme (UNEP)
- To **build capacity to manage industrial sources** of dioxin, furan, and hexachlorobenzene and other unintentionally produced persistent organic pollutants with an emphasis on Mexico