

# International Chemical Safety Forums The Regulatory Challenge Viewed from Cadmium

*ILZG Economic and Environment Committee  
25 April 2006*

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**ICdA**

International Cadmium Association

# ICdA STRUCTURE



**General Manager: Lidia Regoli**

**Budget : US\$ 220,000 / Year**

# ICdA MISSION

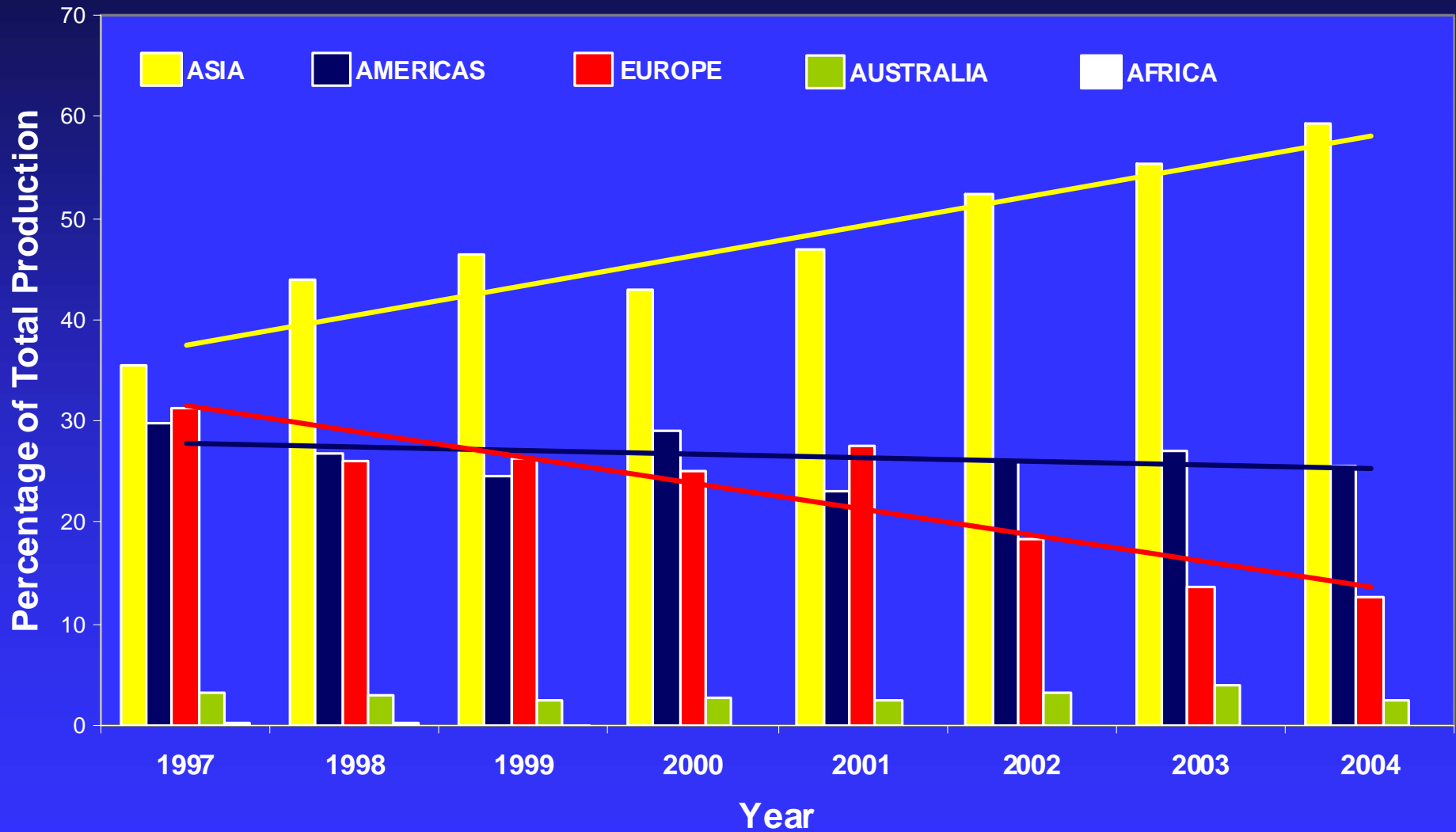
- **To monitor scientific and regulatory developments**
- **To respond to regulatory issues**
- **To ensure market access for products**

# Outline

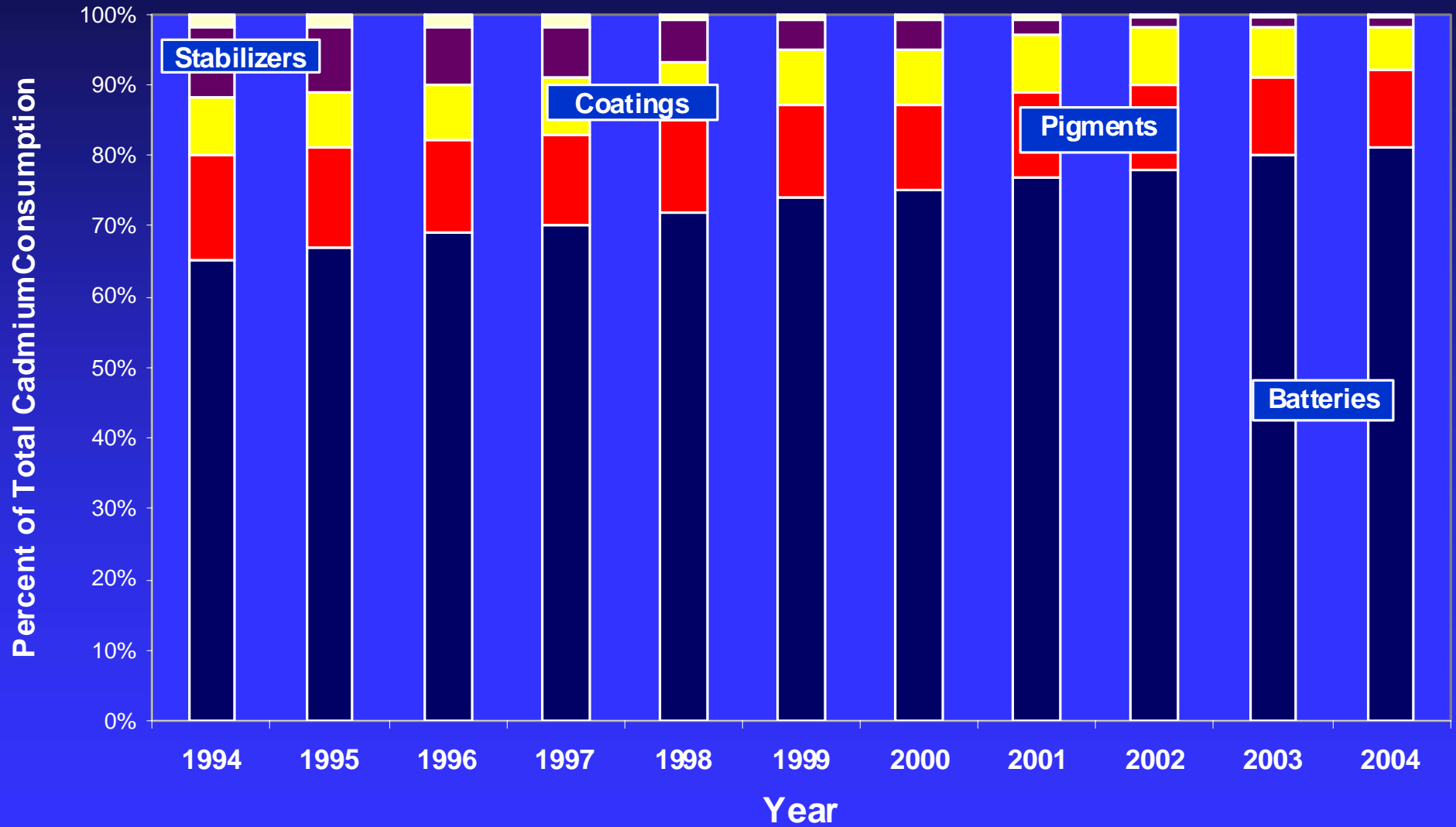
- Cadmium Production & Market
- Environmental Regulations
- Emissions Trends
- Emission Sources & Contribution
- Summary



# Cadmium Production by Geographic Region



# Cadmium Application Patterns, 1994 - 2004



# Unique properties of Cd needed for high specialty applications



# Environmental Regulation



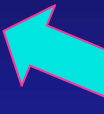


# Cadmium emissions are well regulated ...

- Air : industrial and ambient
- Water
- Soil and foods
- Fertilisers and pesticides
- Waste
- Health safety



# Cadmium Environmental Emissions Regulations

- International : UNEP, UNECE, OECD, IFCS 
- Regional : EU, NAFTA, OSPAR, HELCOM, ...
- National
- Local

# Organisation for Economic Cooperation & Development NiCd Battery Recycling Program

**1990** - Cd nominated as pilot substance in Risk Reduction Program

**1994** - OECD Risk Reduction Monograph on Cd Published

**1995** - OECD Workshop on Cd, Saltsjobadan, Sweden

**1997** - OECD Workshop on Ni-Cd Battery Recycling, Lyon, France

**1998** - OECD Workshop on Implementation of Actions to Enhance Ni-Cd Battery Collection and Recycling, Mexico City, Mexico

**2000** - OECD Web Site of Recycling Facilities and Programmes  
OECD Ni-Cd Battery Recycling Experiences Document  
OECD Expert Group on Recycling Rate Data  
OECD Ni-Cd Battery Label

# Proposed OECD label for NiCd Batteries



# Much over-lap on International Programs on Cd

- Transboundary emissions
  - ◆ UNEP
  - ◆ UNECE
- Product restrictions
  - ◆ UNEP
  - ◆ UNECE
- Assessing the need for global action (Hg, Pb, Cd)
  - ◆ UNEP
  - ◆ IFCS

Same information needs/evaluation for UNEP, UNECE, IFCS

# United Nations Environment Program

« assessing the need for global action »

- Heavy Metals Program (Hg, Pb, Cd)
- Decision Forum, February 21-25, 2005, Nairobi
  - ◆ Governing Council Requests Study on Scientific Information on Cd (and Pb) Transport
  - ◆ Opted for Voluntary Partnerships Rather Than Binding Agreements on Hg (Coal-Fired Power, Chlor-Alkali, Gold Mining)
- Review workshop September 2006, Geneva, CH

# United Nations Economic Cooperation for Europe Convention on Long Range Transboundary Air Pollution

- Covers : Pb, Hg and Cd
- 36 countries signed , 24 ratified
- Entry into force in December 2003
- Applies BAT to point sources to reduce emissions
  - ◆ Significant reductions noted since 1990
- Task Force on Heavy Metals formed to revise Protocol
  - ◆ Revise the need to add other metals & products
  - ◆ Proposes Effects-Based, Critical Loads Approach

# Intergovernmental Forum on Chemical Safety

« Side event » on heavy metals, Sept 2006 Budapest, H

## Purpose

Improve understanding & awareness to negative human and environmental impacts from exposure to Hg, Pb and Cd

« with the goal to convince policy makers on the urgent need to start global action to reduce harmful metal emissions »

## Objectives

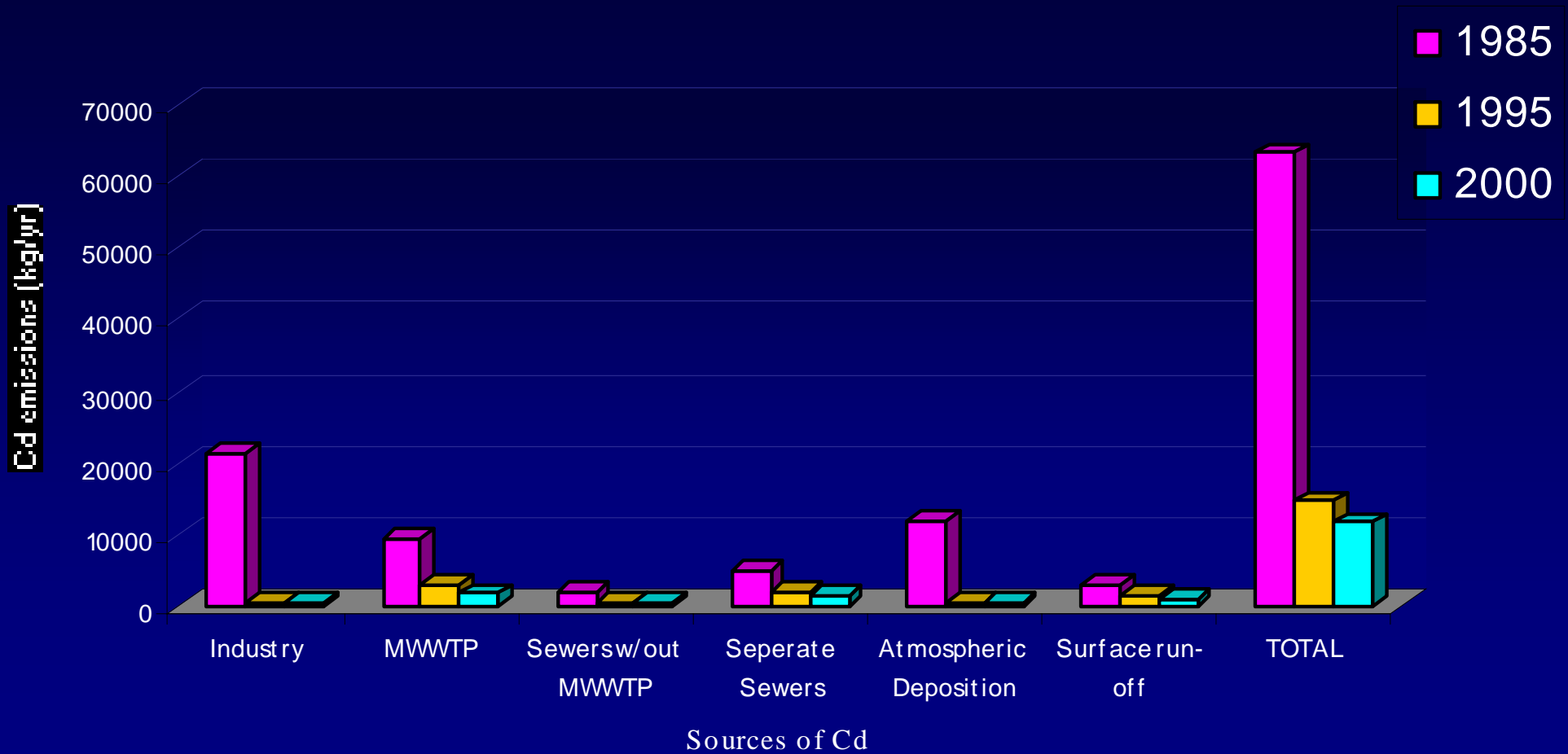
- Present case studies (gold mining, Pb in children, LRTAP)
- Discuss policy responses to challenges posed by Hg, Pb, Cd
- Catalyse discussions on need for global regulatory actions



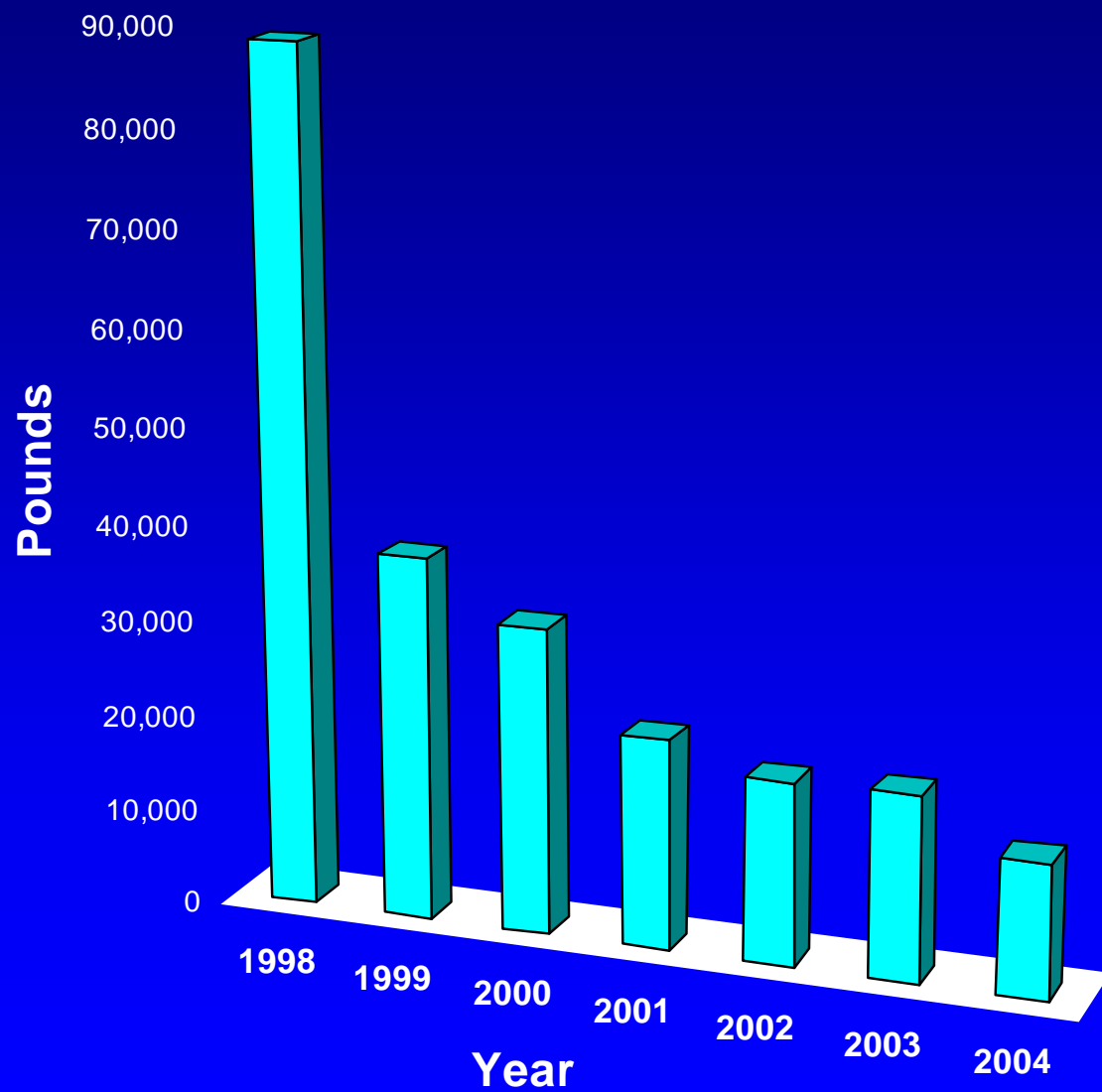
# Emission Trends



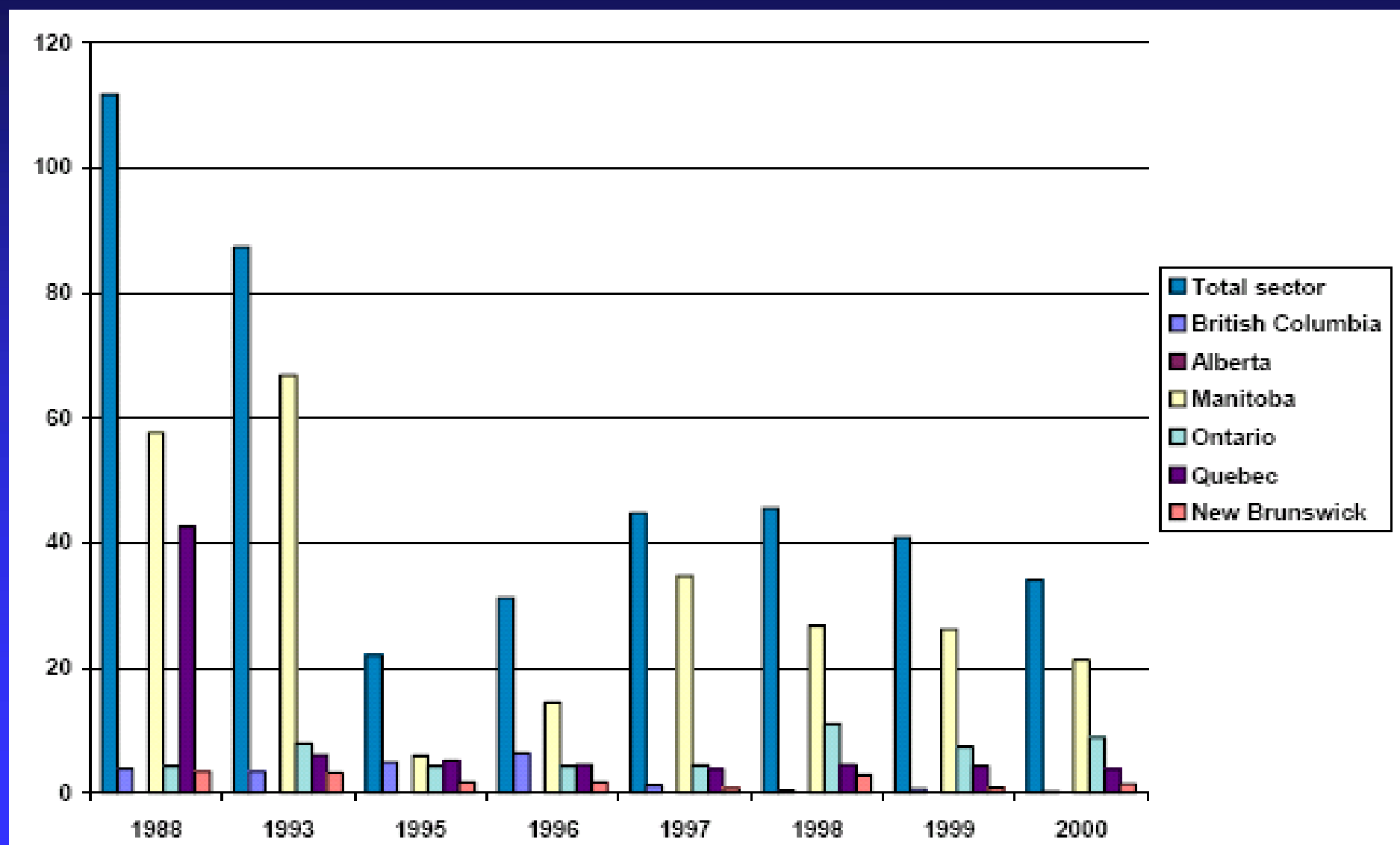
## Evolution of Cd input into German river basins from various sources between 1985-2000



# USA TRI Cadmium Air Emissions, 1998-2004

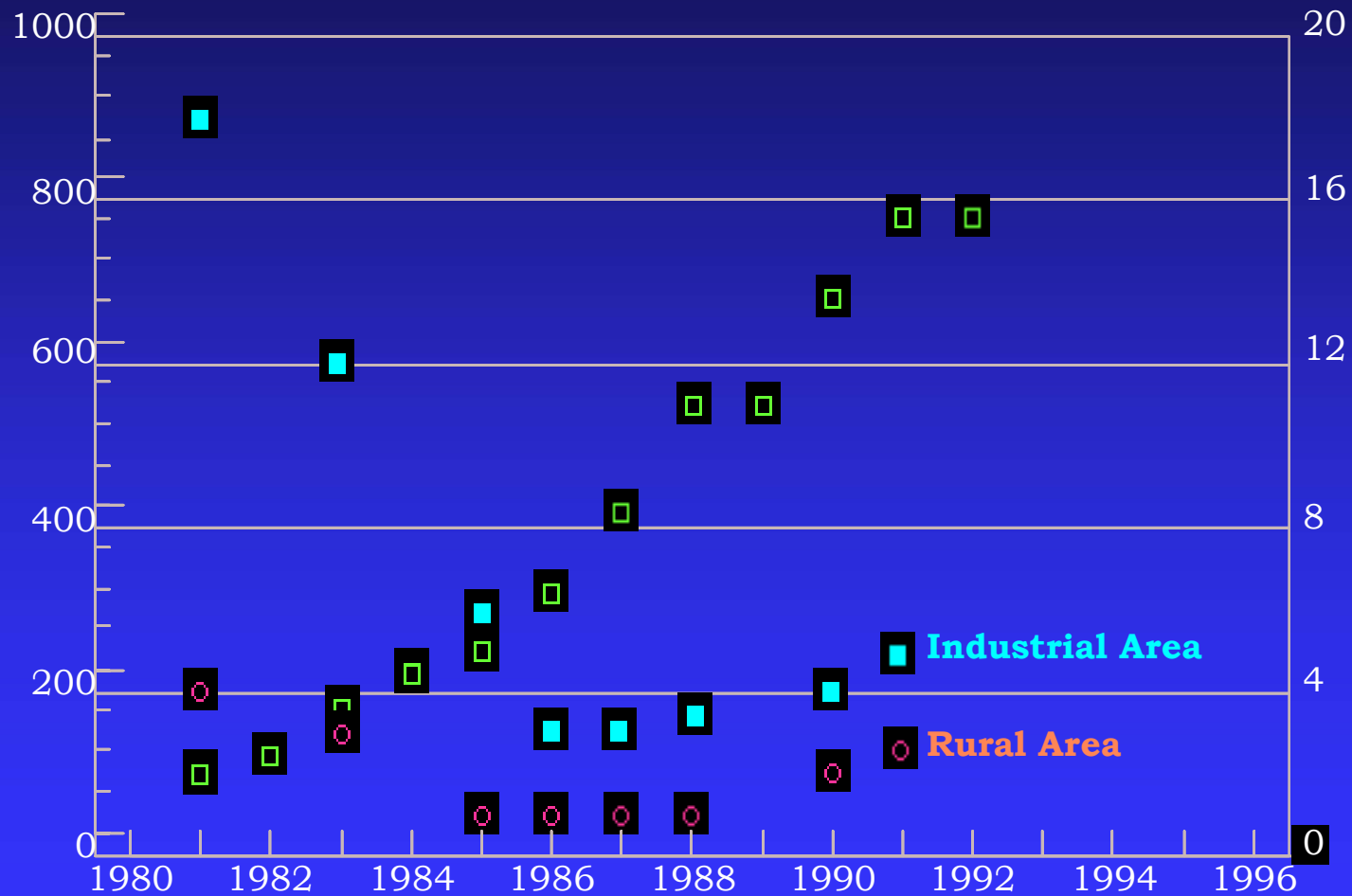


# Historical trends in Cd air emissions in Canada (T/yr) Base Metals Smelting Sector



Millions of NiCd's  
Produced in Japan

Maximum Cadmium  
Air Concentration (ng/m<sup>3</sup>)



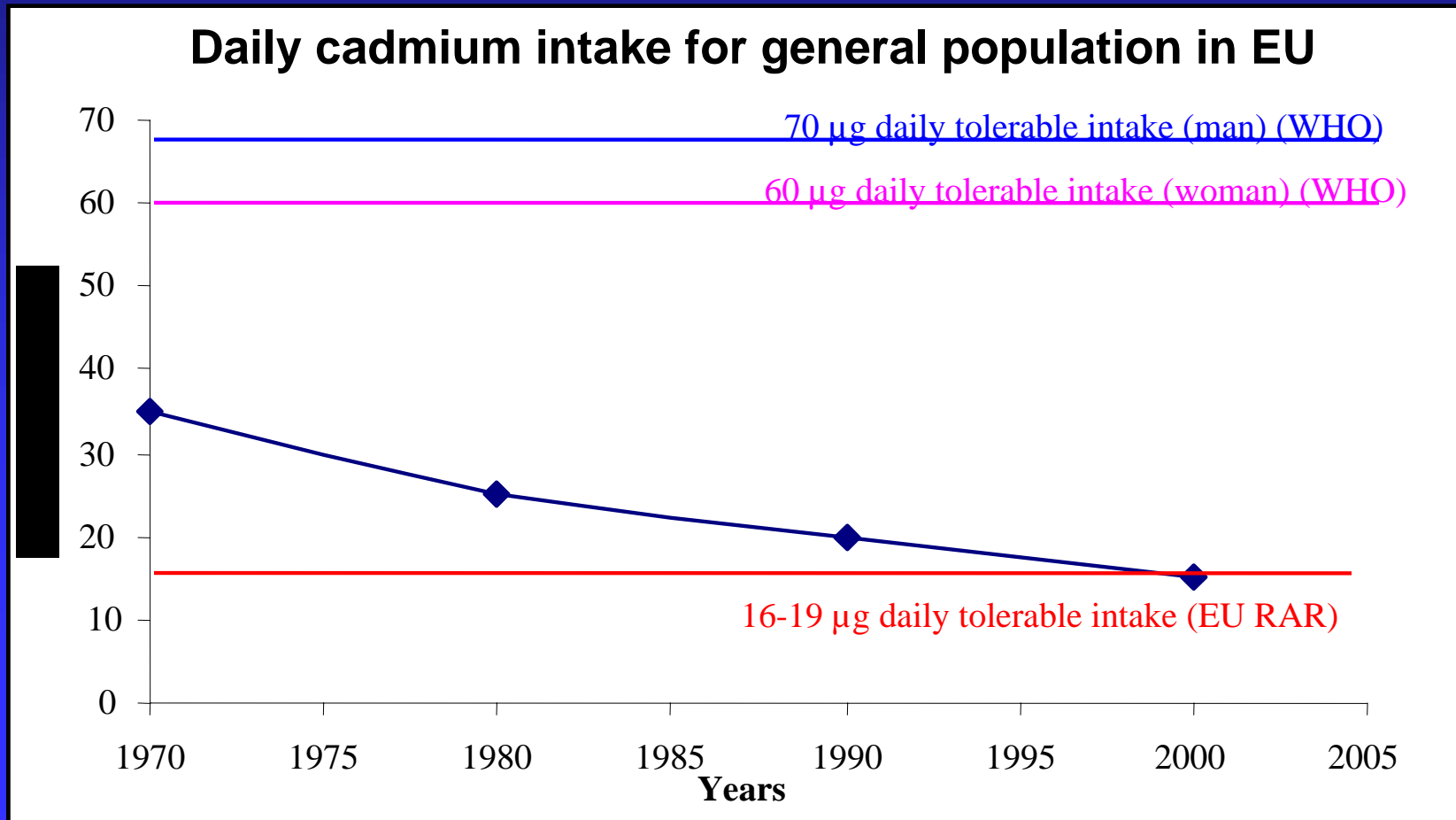
Source: BAJ

Year

# What is the right protection level ?

- Scientific evidence brings us to the PTWI
- EU risk assessment decides on a lower level of protection

**A risk can always be found – depends on level of protection you want**



# Emission sources and contributions



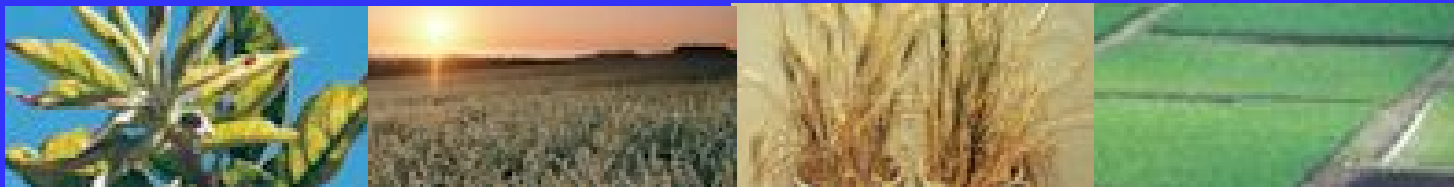
# Sources of Cadmium Emissions

## ■ Natural !

- ◆ Forest fires, volcanoes, soil erosion, sea spray
- ◆ Accounts for 20-50% of emissions (Nriagu 1989/ Richardson 2001)

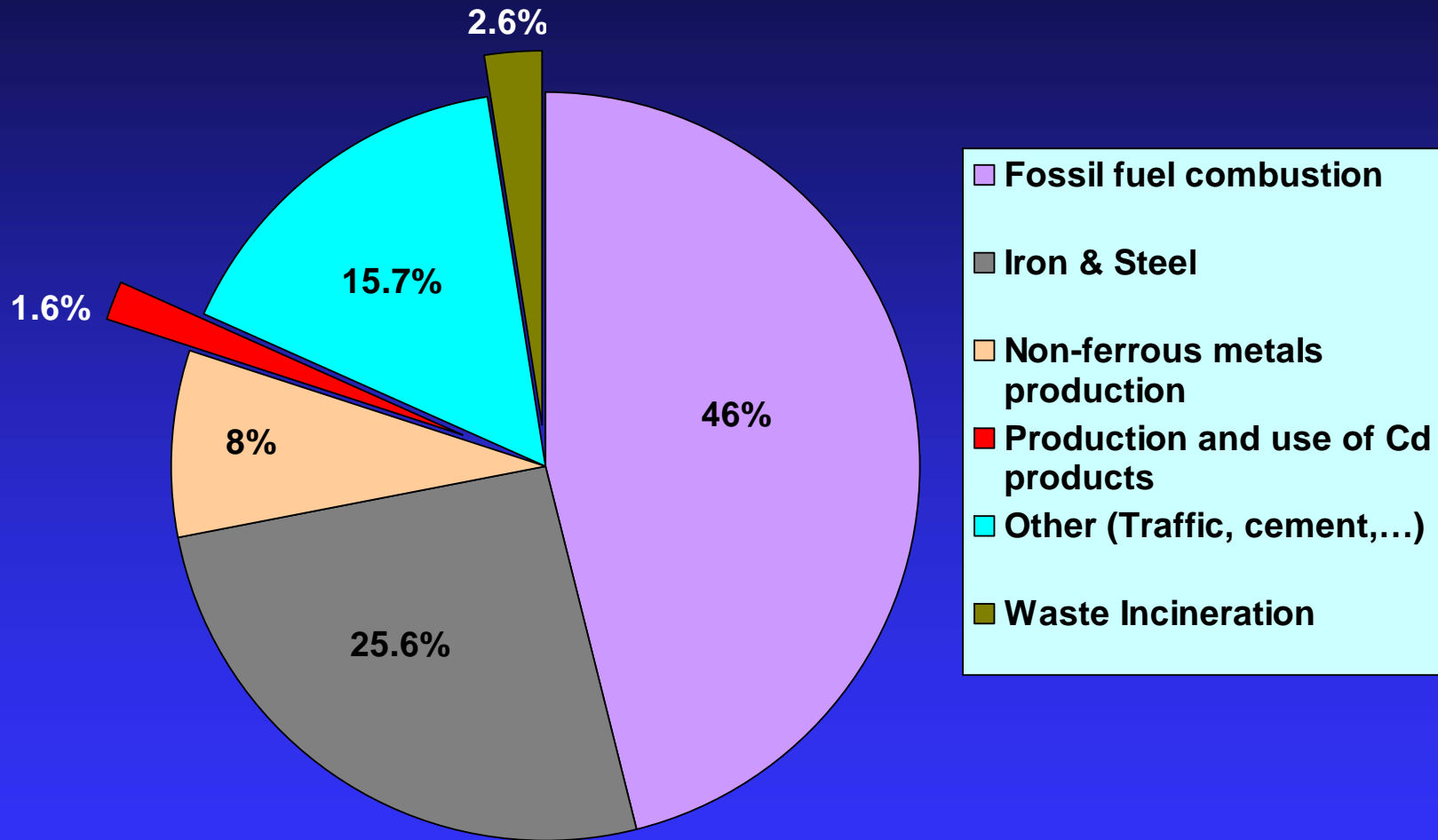
## ■ Anthropogenic

- ◆ Intentional additions to products
- ◆ Impurities in other materials



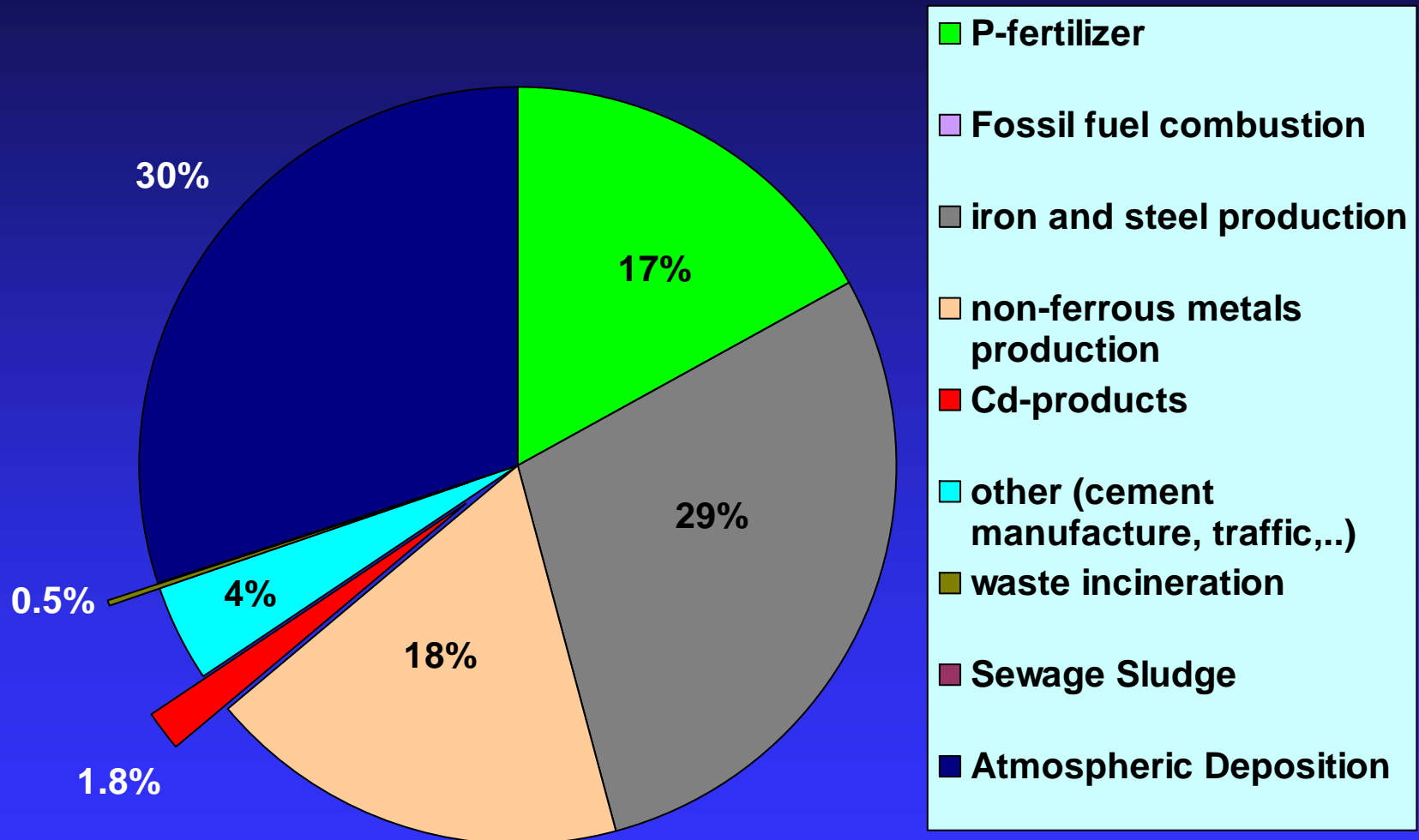


# Main source of Cd air emissions : impurities in natural resources; fossil fuel, iron & steel,..



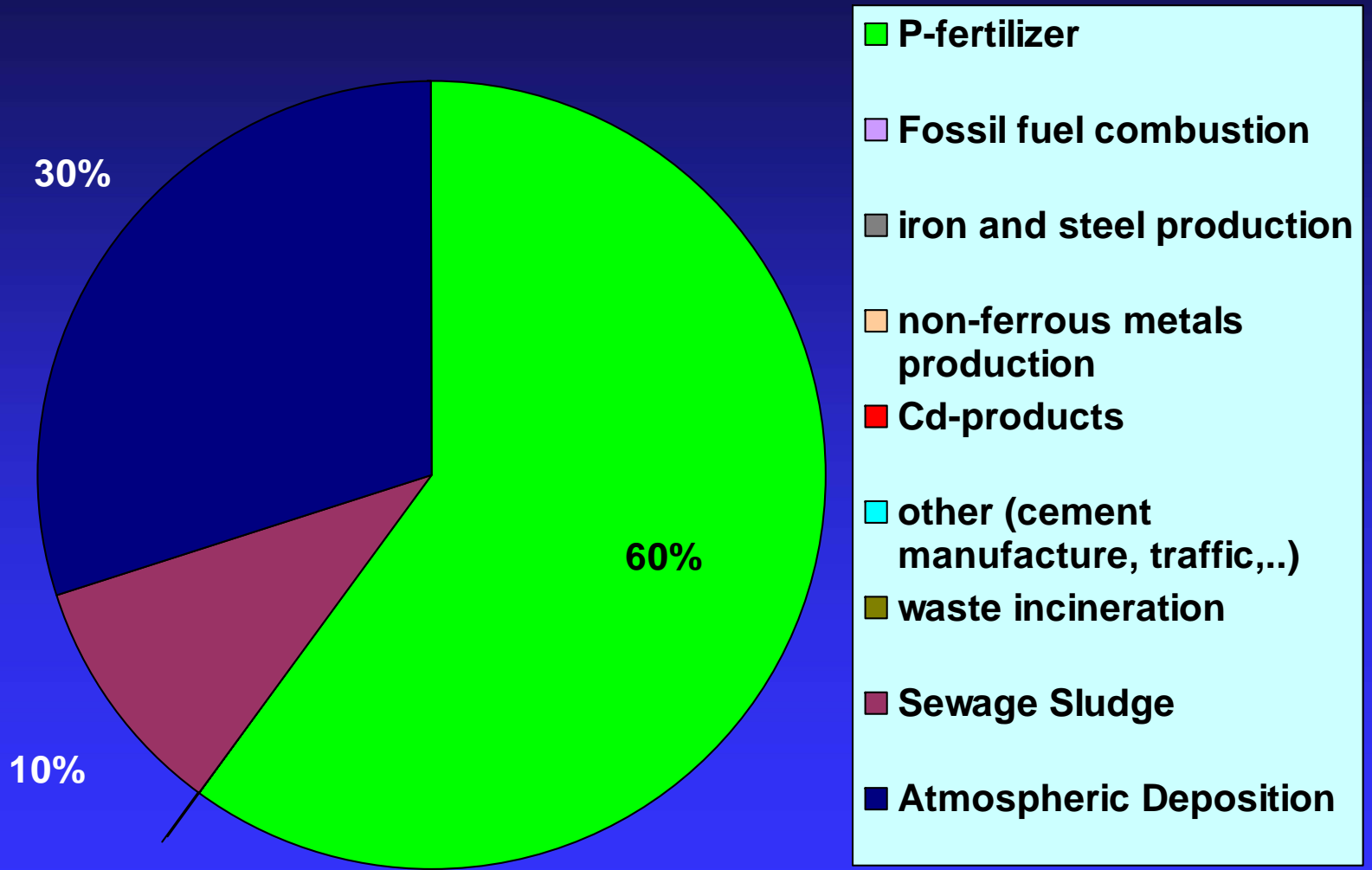
Contribution of anthropogenic Cd to air (EU Cd RAR; (reference year 2002))

# Main source of Cd water emissions : impurities in natural resources; fossil fuel, iron & steel,..



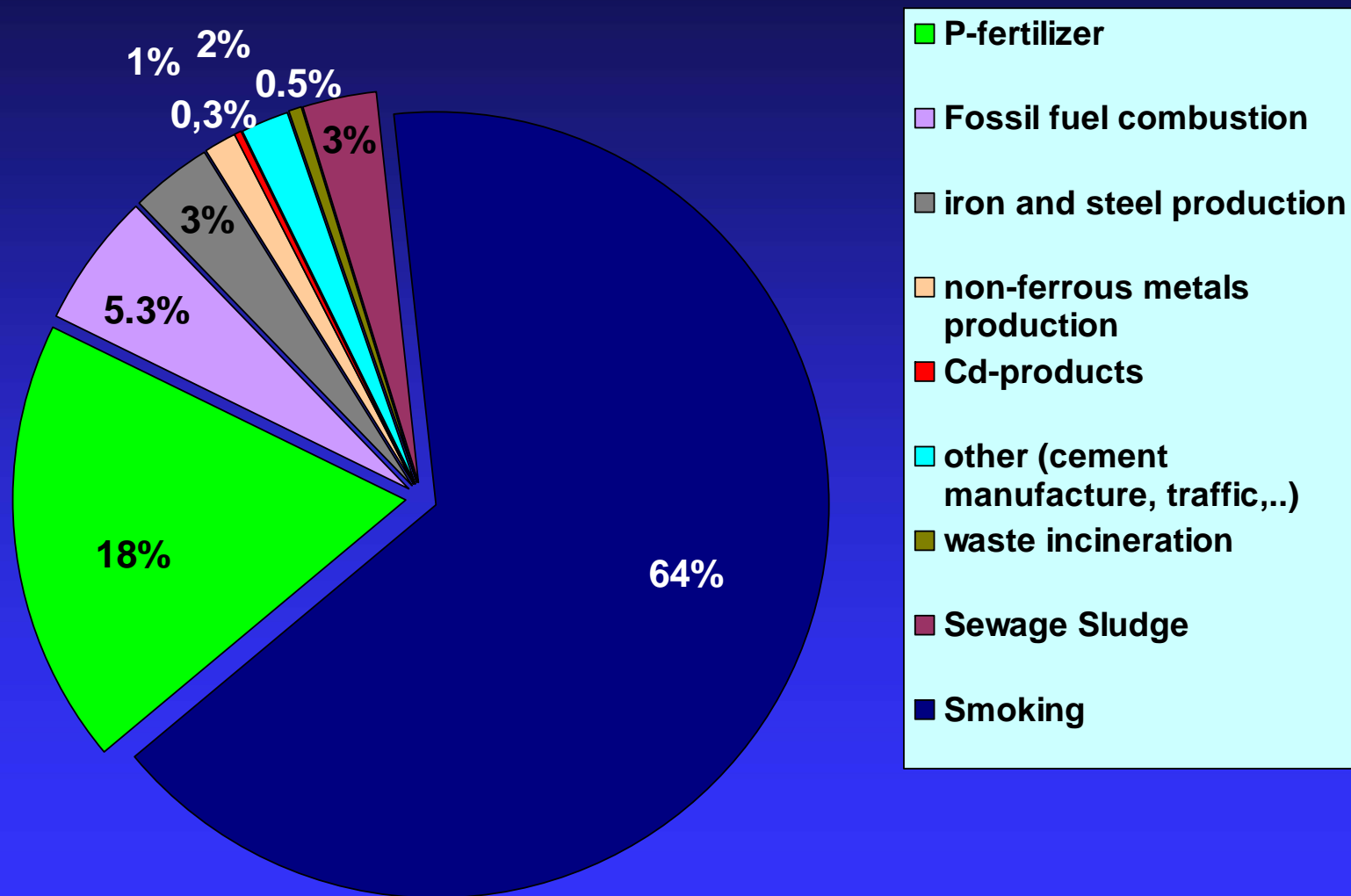
Contribution of anthropogenic Cd to water (EU Cd RAR; (reference year 2002))

# Main source of Cd soil emissions : impurities in natural resources; fertilizers, fossil fuels,..



Contribution of anthropogenic Cd to soil (EU Cd RAR; (reference year 2002))

# Human Health : Most Cadmium intake comes from smoking !!



Contribution of anthropogenic Cd the general population (Cd RAR, '05)

# Summary

- Cd emissions have reduced drastically in the last 20 yrs
- Cd emissions are stringently controlled by current and upcoming regulation

## In the context of International Regulatory Forums

ICdA promotes :

- reduction in emissions at industrial sites using BAT<sup>o</sup>
- collection and recycling of products (NiCd batteries)
- & provides guidance on managing occupational exposure to Cd

# ICdA

International Cadmium Association

Members only website: [www.icdamembers.org](http://www.icdamembers.org)

Public website: [www.cadmium.org](http://www.cadmium.org)