



Pan American Health Organization



*Regional Office of the
World Health Organization*

**Health aspects of the Minamata
Convention – Mercury Agreement - what
are the roles of PAHO?**

SDE meeting February 12th 2013

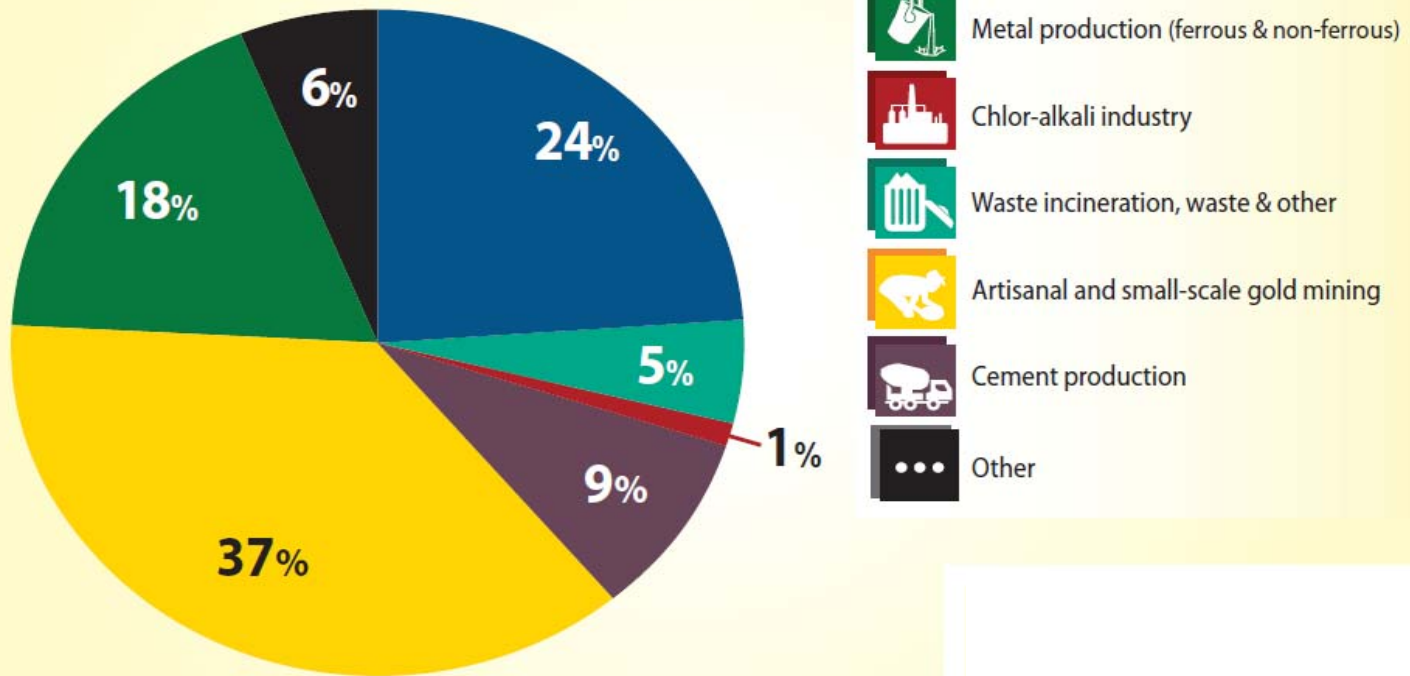
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Health in the Global Mercury Agreement

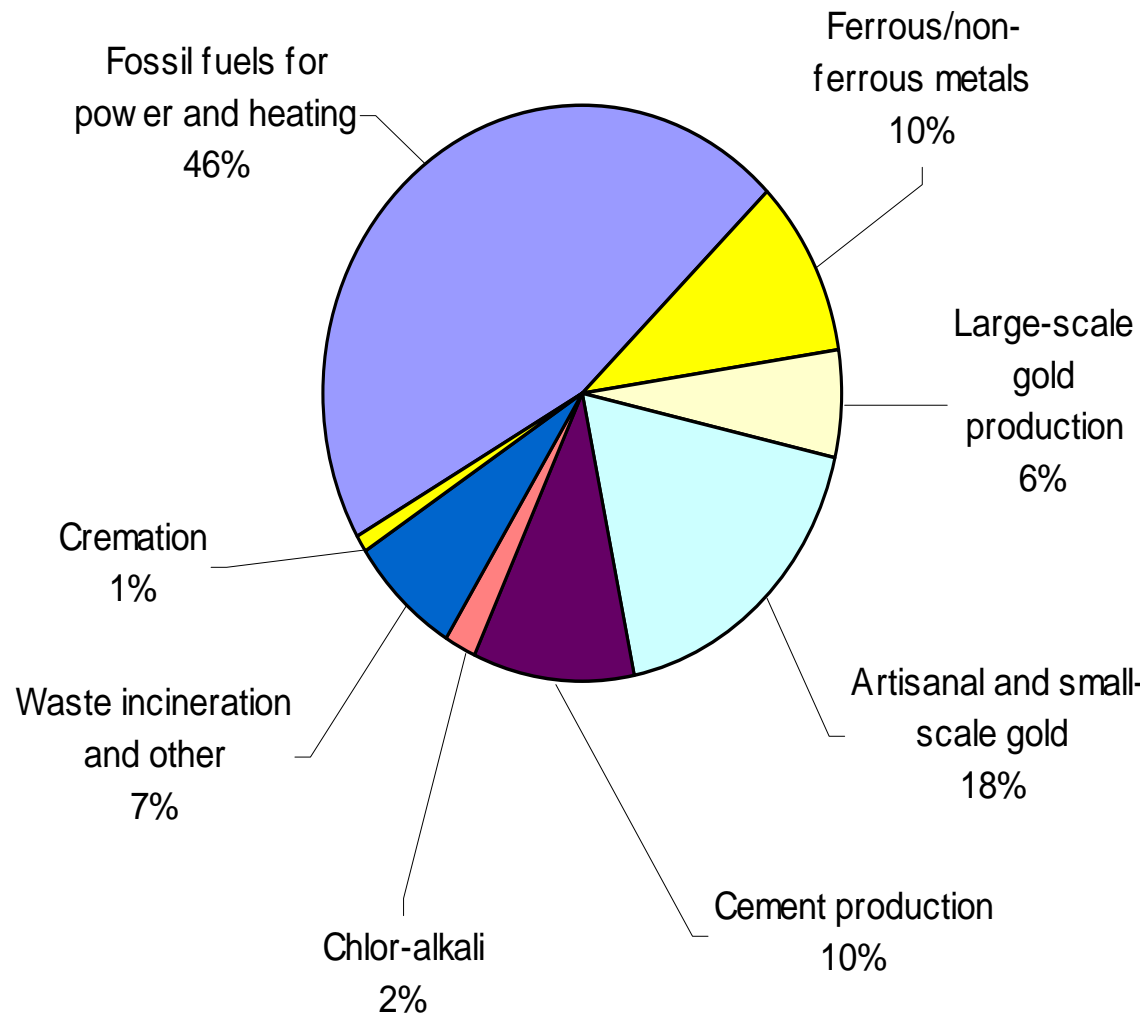
- Why is mercury a pollutant of global concern?
- What are the health aspects included in the Convention?
- PAHO's role during Convention finalization and implementation.

Mercury atmospheric emissions sources

Global anthropogenic mercury emissions in 2010



Global Mercury Emissions (2005)



Mercury as a pollutant of global concern²⁰⁰⁴

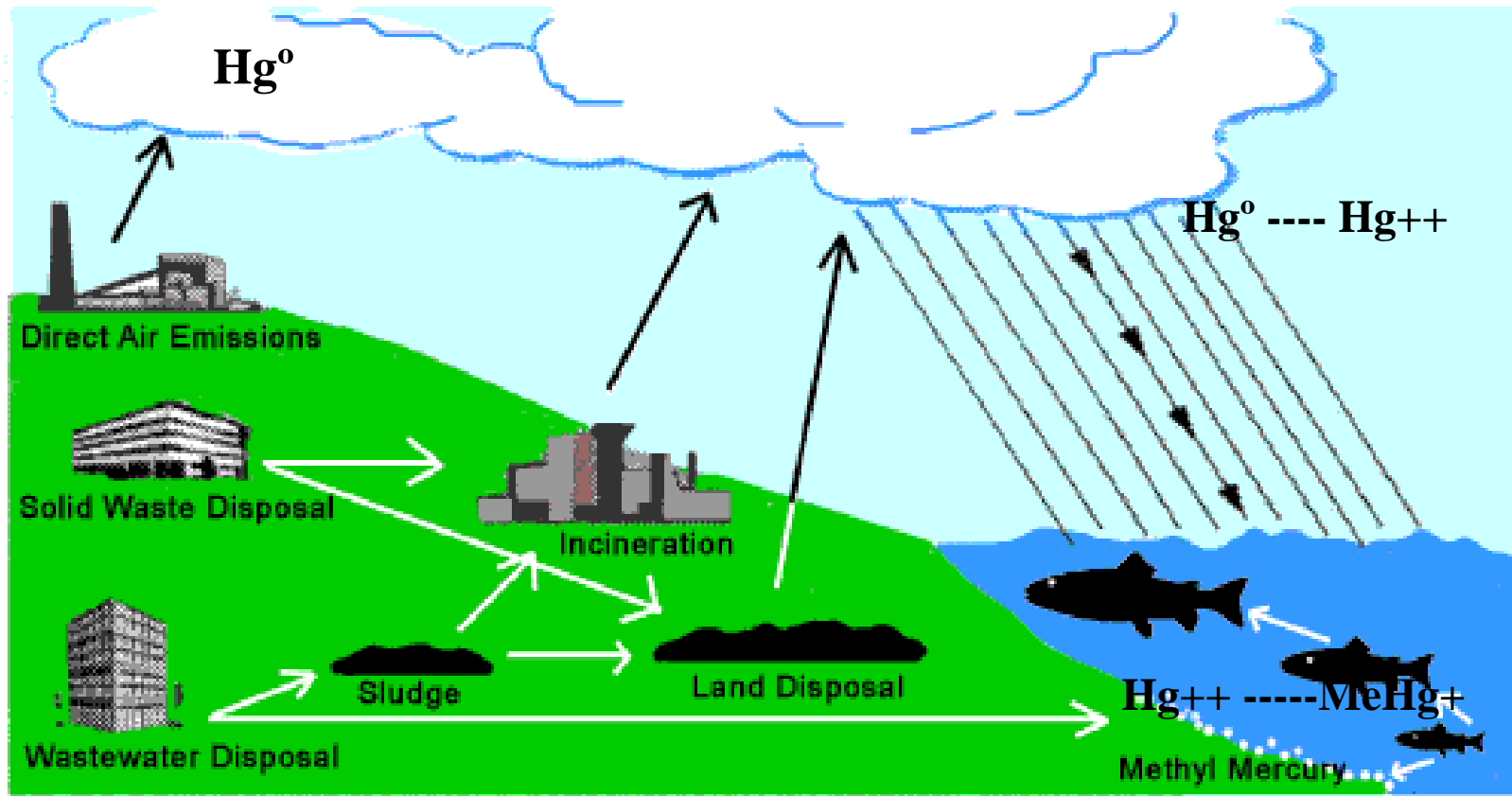
Diversity of forms and compounds

- Metallic mercury - Hg^0
- Inorganic mercury - Hg^{++}
- Organic mercury – Methyl Hg (CH_3Hg^+)
- Ethyl Hg ($\text{CH}_3\text{CH}_2\text{Hg}^+$)

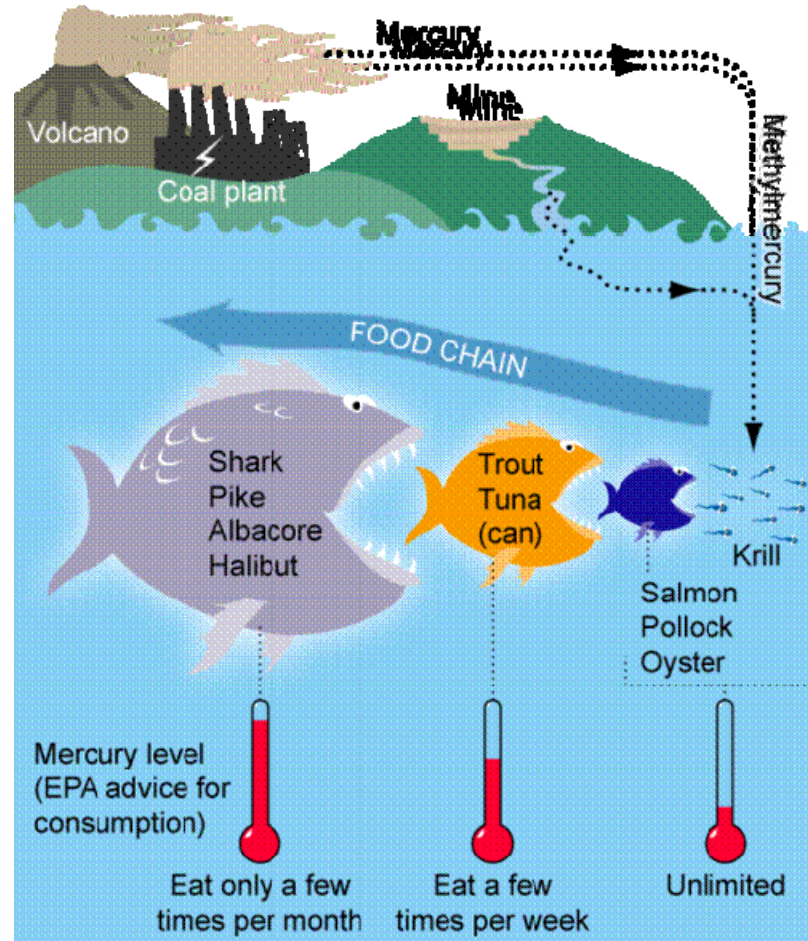
Global scope

- long-range transport in the atmosphere,
- persistence in the environment,
- ability to bio-accumulate in ecosystems
- negative effect on human health (at relatively low doses of exposures during prenatal life) and the environment
- Polluters versus exposed

Environmental fate and distribution



Mercury bio-accumulation and fish advisories



Health effects: metallic and inorganic mercury

Metallic mercury inhalation – **miners burning the amalgam of gold and mercury** - central nervous system – tremor, metallic taste, gingivitis, erythrism;

Inorganic mercury – **skin lightning creams** - impairment of kidney functions;

Methyl mercury – **fish consumption** - central nervous system - adults and children: paraesthesia (numbness in the extremities and around the mouth), ataxia (impairment of the gait), dysarthria (impairment of speech), impairment of hearing, tremor in the limbs and constriction of the visual fields (paraesthesia starting at 50 – 120 ppm hair Hg);

Ethyl mercury – **thiomersal use in vaccines** - blood half life of 5 to 7 days in the blood – quickly converted into Hg^{++} and excreted; compared to methyl mercury blood half life of 45-60 days and ability to cross the blood brain barrier.

Health effects: methylmercury

High maternal exposures during pregnancy (200 – 500 ppm Hg in hair) – cerebral palsy, microcephalia, hyper-reflexia, gross motor and mental impairments, blindness and deafness.

Relatively low maternal exposures during pregnancy associated with delays/impairment of neurobehavioral development and functions during first 6 – 8 years of life – cohort studies:

- New Zealand – 8 – 10 or 20 – 25 ppm
- Faroes Islands 10 - 20 ppm – similar to Iraq
- Seycheles – 20 - 30 ppm

Benefits of fish consumption - omega 3 fatty acids, selenium antagonistic effects to MeHg toxicity – National Academy of Science ref

Fish advisories – Maryland advisories in reference

Health in the Global Mercury Agreement

2004

Preamble

Recognition of WHO activities in the protection of human health related to mercury – Environmental Health Criteria number 1 published in 1976!

Article 1. Objective

To protect human health and the environment from anthropogenic emissions and releases of mercury and mercury compounds;

Article 6. Mercury-added products

From annex C. Public health use thermometers (exemptions for calibration instruments), sphygmomanometers, skin lightening creams and topical antiseptics.

Health in the Global Mercury Agreement

Article 6.

Para 2: Restrict the use of the mercury added products – dental amalgam

NOTE: thiomersal (with ethyl mercury) use in vaccines excluded from Annex C products to be phased out

Technical Advisory Group on Vaccine Meeting-preventable Diseases - Paving the way for immunization WDC Meeting 2012:

- “To continue using thiomersal-containing vaccines, and to communicate and educate health care workers, ministries of health and environment, parliamentarians, other decision makers and the media on the safety of thiomersal-containing vaccines.”

Health in the Global Mercury Agreement

- **Article 8.** Exemptions available to a party upon request;
- **Article 9.** Artisanal Small Scale Gold Mining – Public Health Strategy included in the National Action Plan;
- **Article 18.** Information exchange;
- **Article 19.** Public information, awareness and education;
- **Article 20.** Research, development and monitoring;

Minamata Convention - Global Mercury Agreement

Article 20 bis. Health aspects

- Development & implementation of strategies and programs to identify and protect populations at risk, especially vulnerable people;
- Scientific soundness knowledge and methods;
- Setting targets for mercury exposure reductions and public education, with public health and other sectors;
- Preventive programs on occupational exposures;
- Health care services for prevention, treatment and care of people affected by mercury exposure;
- Capacity building for prevention, diagnosis, treatment and monitoring health risks of mercury and mercury compounds;
- COPS to consult, collaborate, cooperate and exchange information with WHO, ILO and other intergovernmental organizations.

PAHO's roles

- Mapping of key messages (policy, science, capacity building, etc) and key audience (decision makers, health professionals, academics);
- Communication channels – expert panels, virtual spaces, courses on virtual campus, fact sheets, newsletters, training workshops, others;
- Resource mobilization;
- Additional suggestions?

Madeira river field work



- Fish advisory in Maryland - http://www.chesapeakebay.net/issues/issue/fish_consumption_advisories
- Risks and benefits of fish consumption http://books.nap.edu/catalog.php?record_id=11762
- 11th International Conference on Mercury as Global Pollutant –
- <http://www.mercury2013.com/index/>
- Intergovernmental Negotiating Committee - <http://www.unep.org/hazardoussubstances/Mercury/Negotiations/tabid/3320/Default.aspx>
- International Institute Sustainable Development – Report Service
- <http://www.iisd.ca/vol28/enb2822e.html>
- Analysis of health aspects in the Mercury convention
- http://www.unep.org/hazardoussubstances/Portals/9/Mercury/Documents/INC5/5_5_health.pdf
- Mercury thermometers replacement guidelines
- http://www.who.int/water_sanitation_health/publications/2011/mercury_thermometers/en/
- Mercury toxicology - www.paho.org/toxicologia

Muchas gracias!

Preguntas?