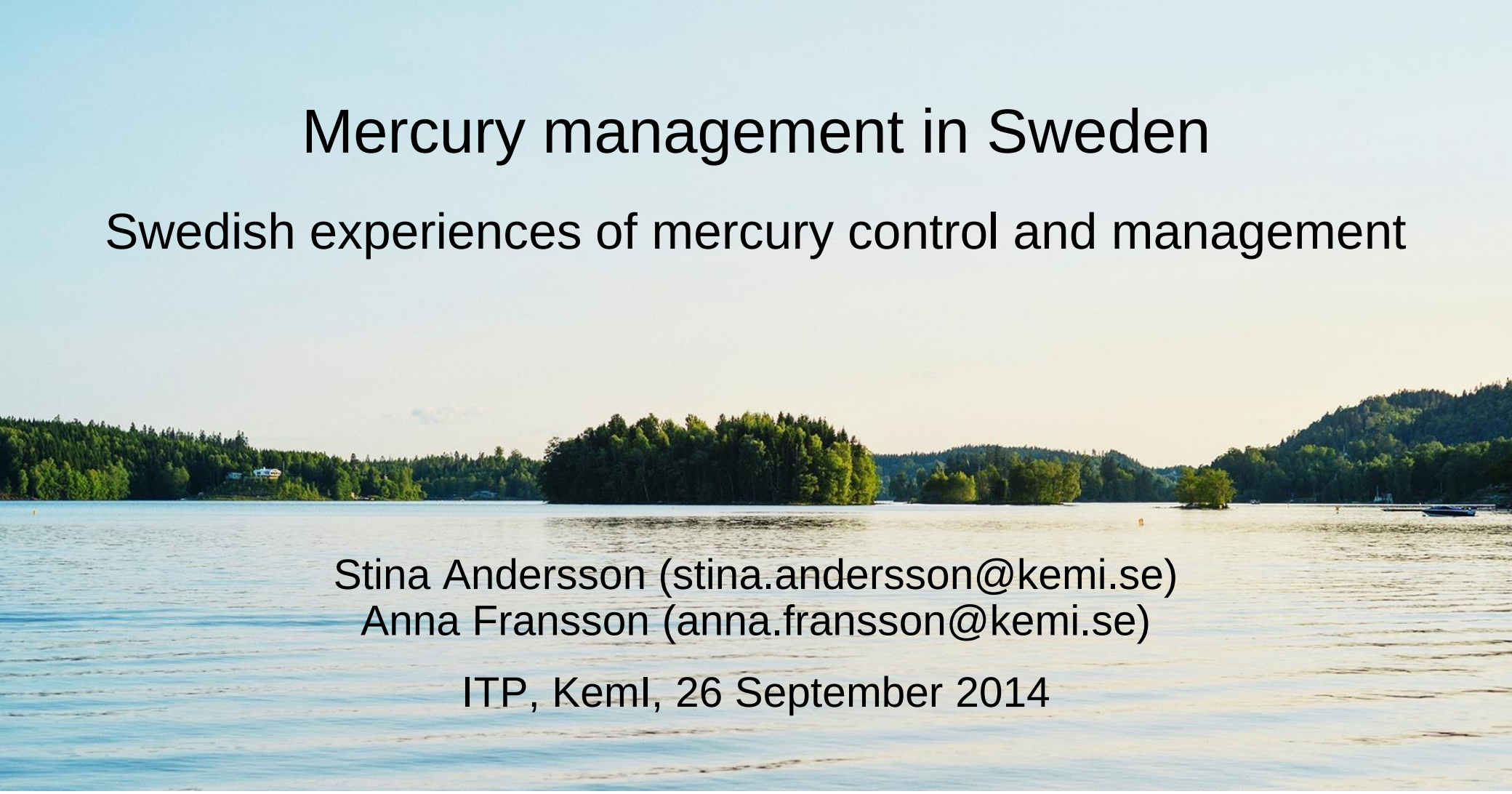
Mercury management in Sweden

Swedish experiences of mercury control and management



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ITP, KemI, 26 September 2014

KEMI
Swedish Chemicals Agency

NATUR VÅRDS VERKET
SWEDISH ENVIRONMENTAL PROTECTION AGENCY

Health effects

Mercury can produce a range of adverse health effects, including permanent damage to the nervous system, kidneys and cardiovascular system. Developing organ systems are particularly sensitive and mercury can be transferred from a mother to her unborn child.

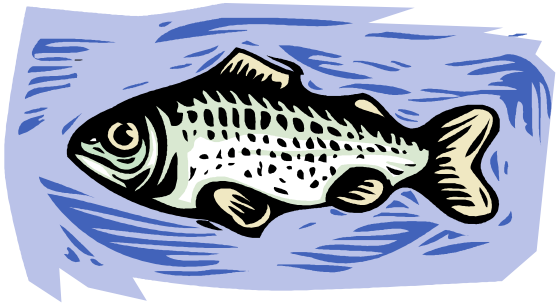
Mercury – a global environmental and health problem

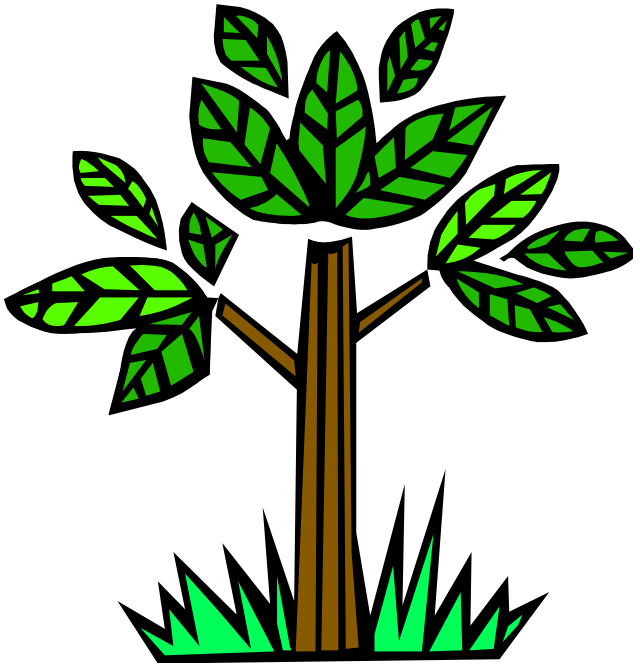
The environmental situation in Sweden

Mercury levels in soil 3-5 times higher than natural levels

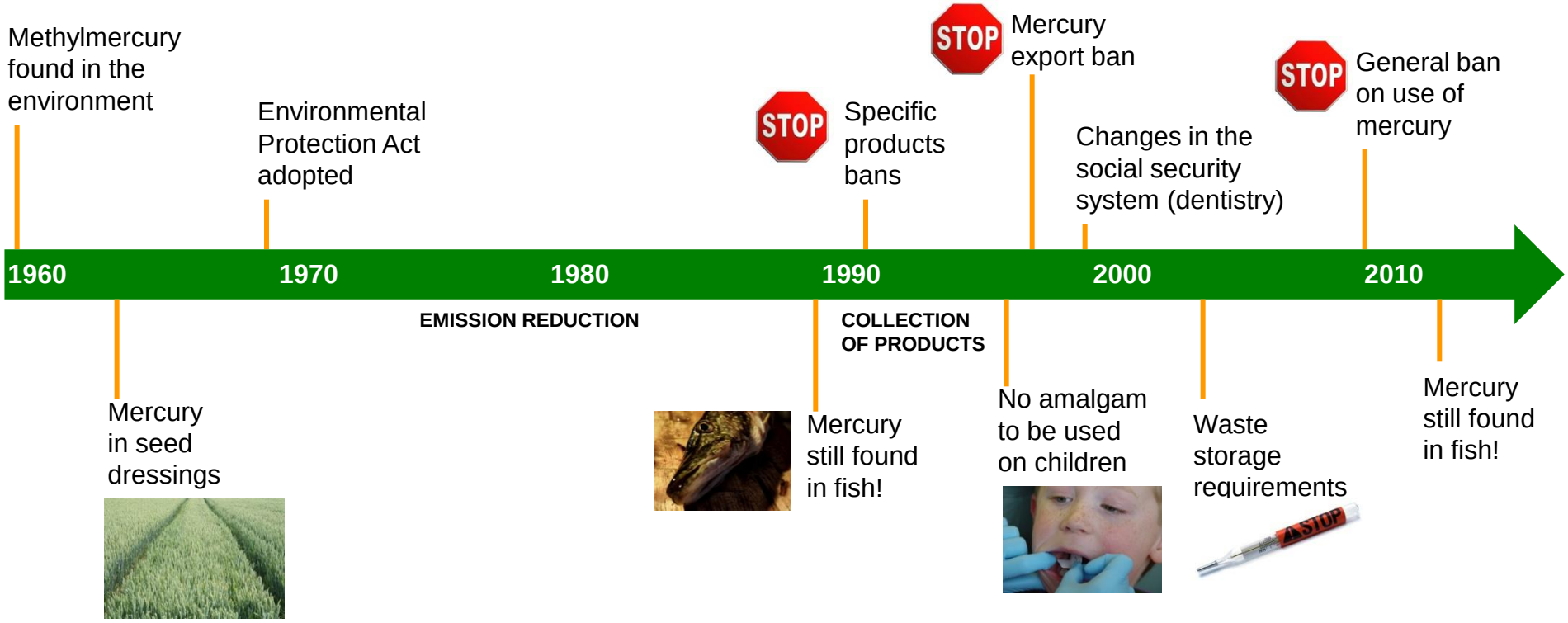
Fish in half of the lakes (about 50 000 lakes) exceed (WHO/FAO) limit value of 0.5 mg/kg

Mercury deposition must be reduced by 80 % to achieve tolerable concentrations in the environment

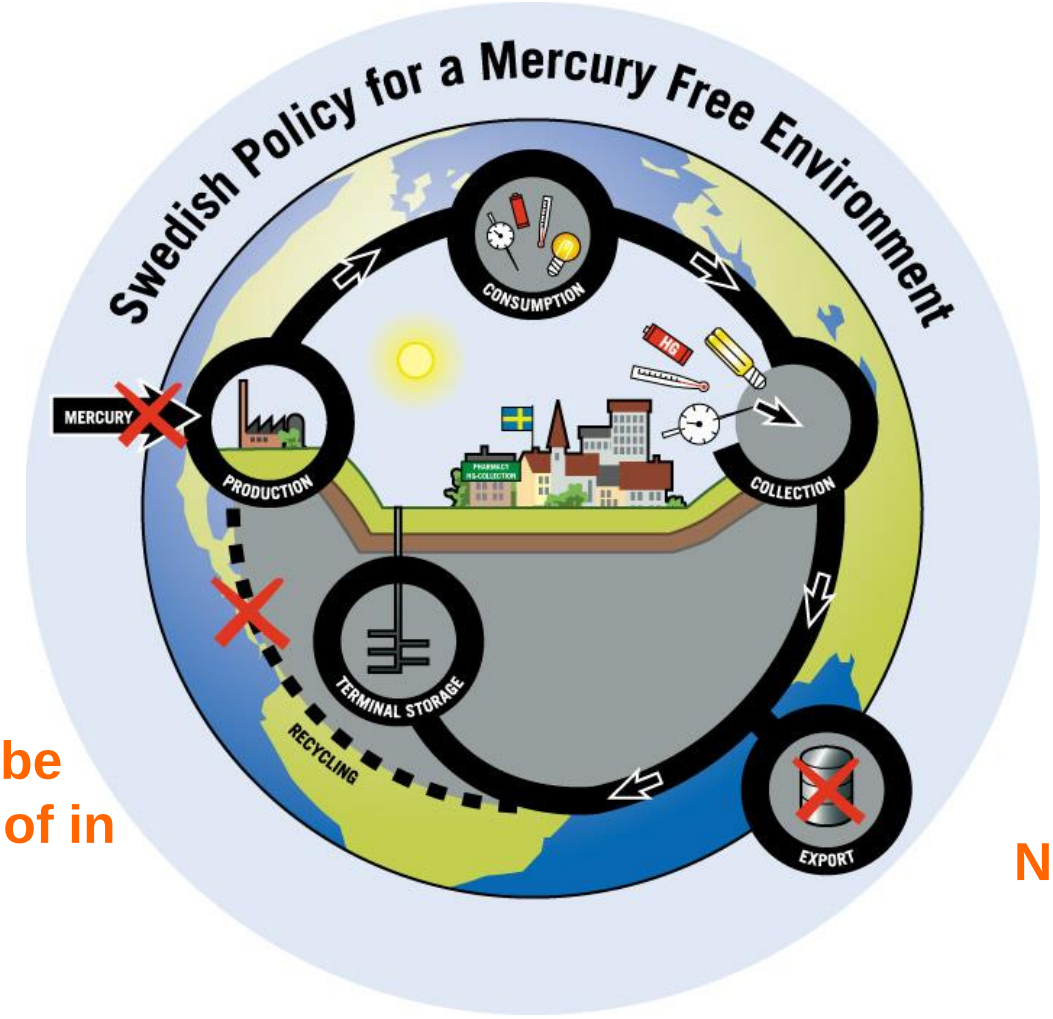




Mercury policy in Sweden – a historical overview



Phase out use in products and processes.



Mercury already in society should be collected and treated.

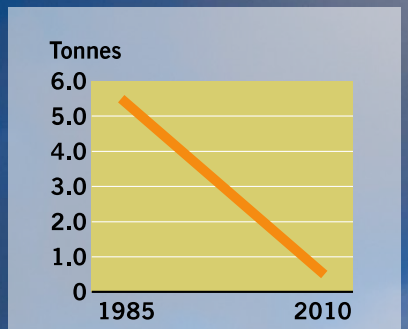
Mercury should not be recycled.

Mercury should be safely disposed of in final storage.

No export.

The aim of the Swedish Mercury Strategy

is to reduce mercury levels in the environment to natural background levels and to be able to eat fish from Swedish lakes without any concerns about health risks.



Mercury emissions from Swedish point sources decreased from about 5.5 tonnes in 1985 to 0.5 tonnes in 2012.

Some success factors behind the achievements of the Swedish mercury strategy

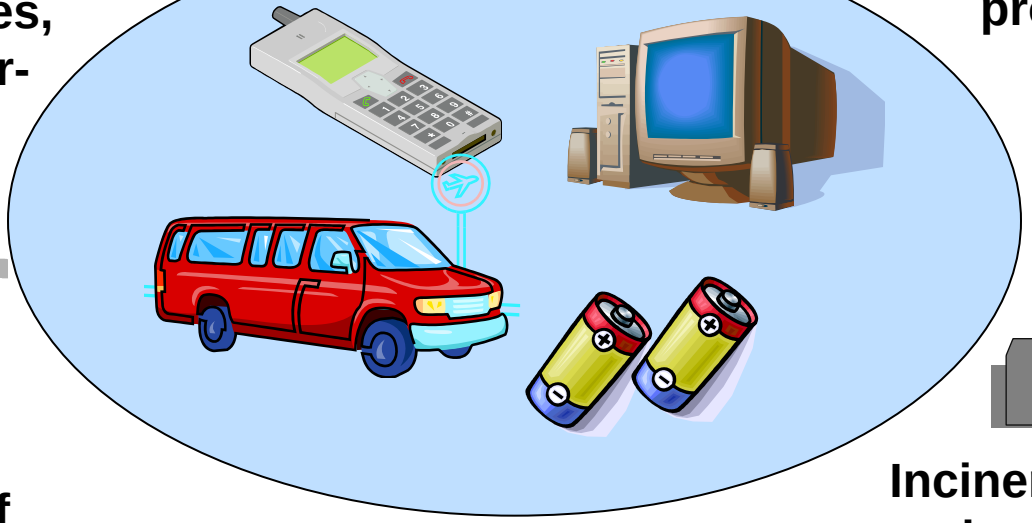
- Strong political will and leadership
- Long-term, targeted information campaigns
- General ban with time-limited exemptions
- Financial incentives

Stop use in products and processes!

Manufacturing of products

Processes, e.g. chlor-alkali

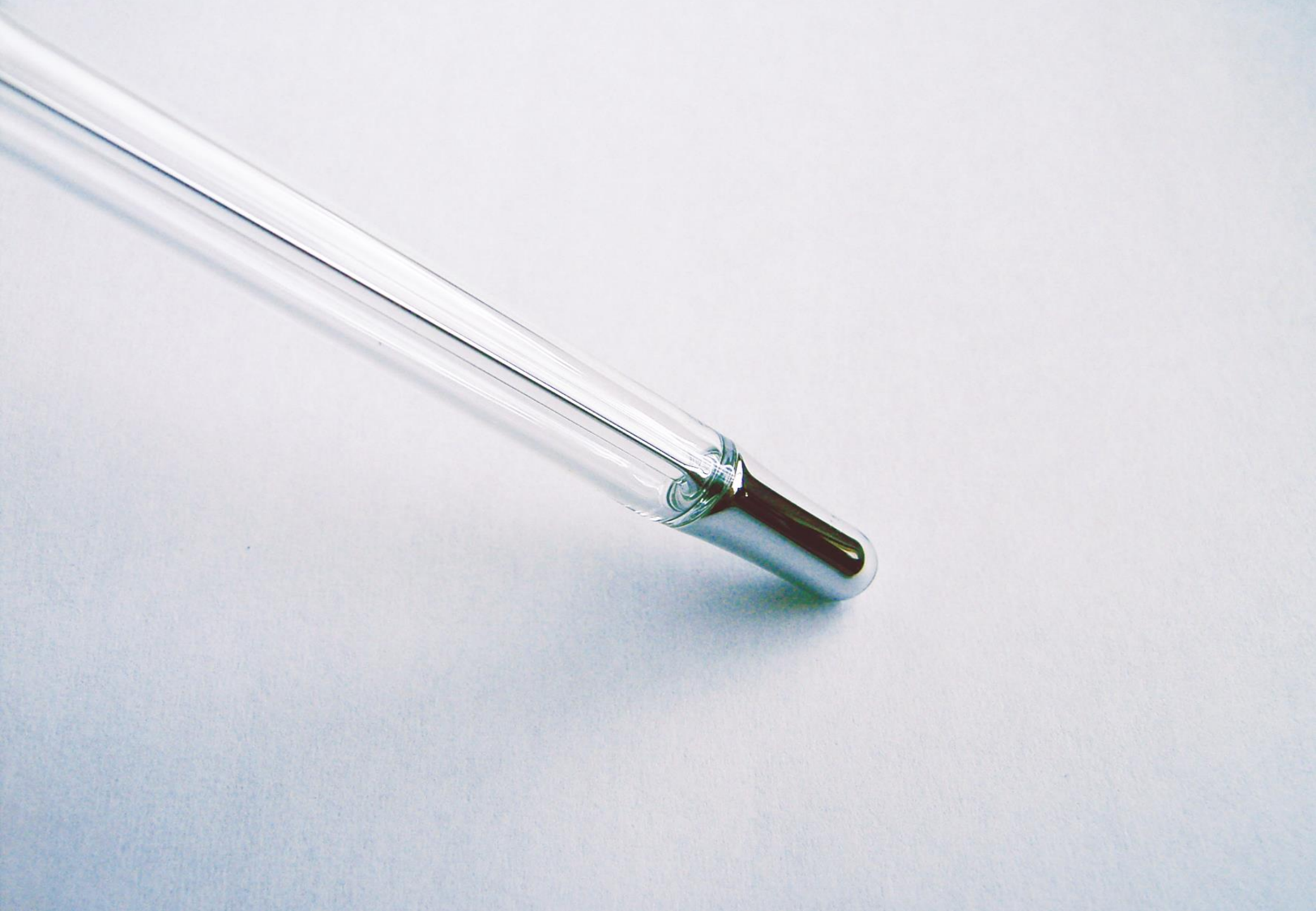
Use of products



Recycling of products

Incineration of waste and sewage sludge

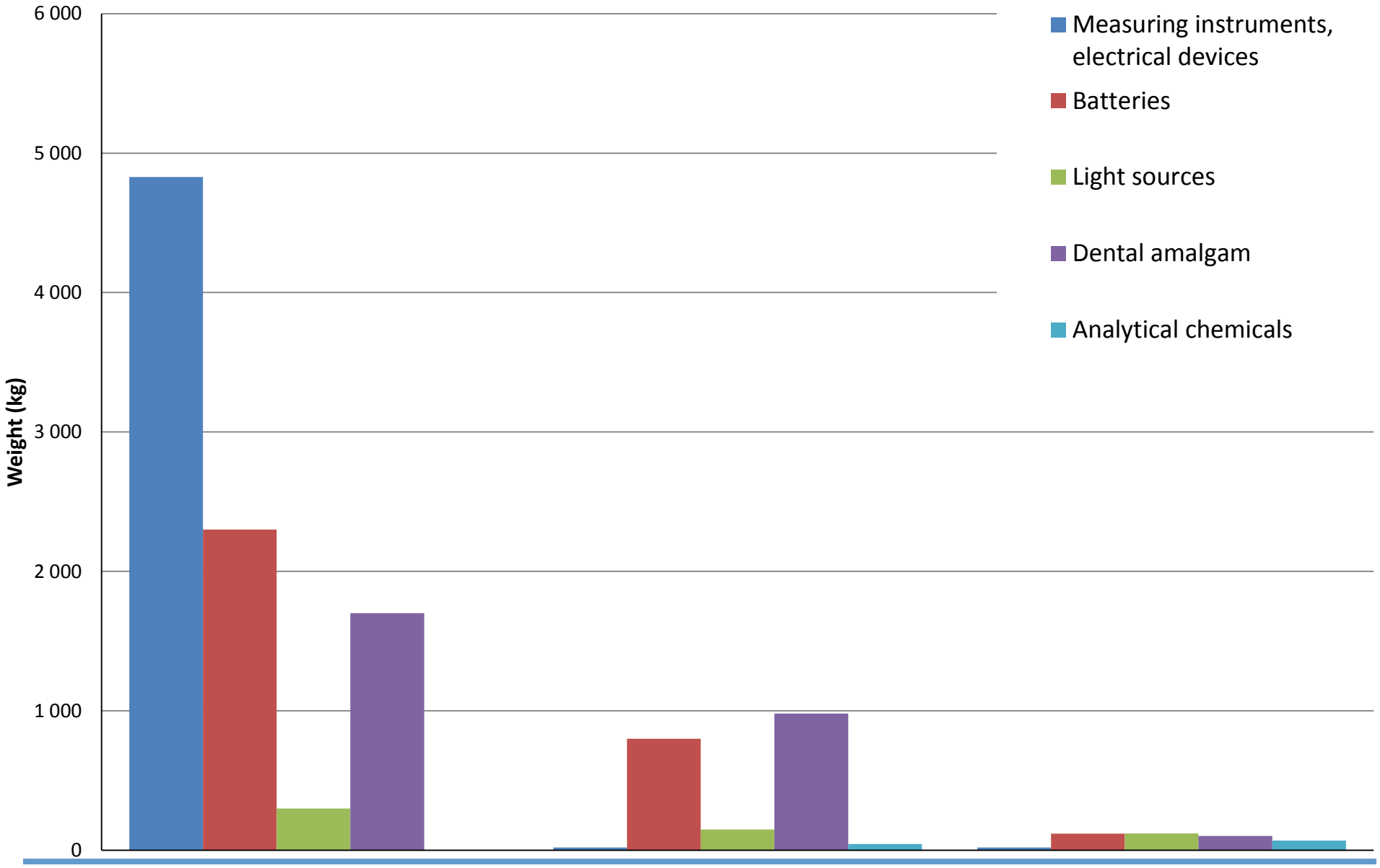
Landfills

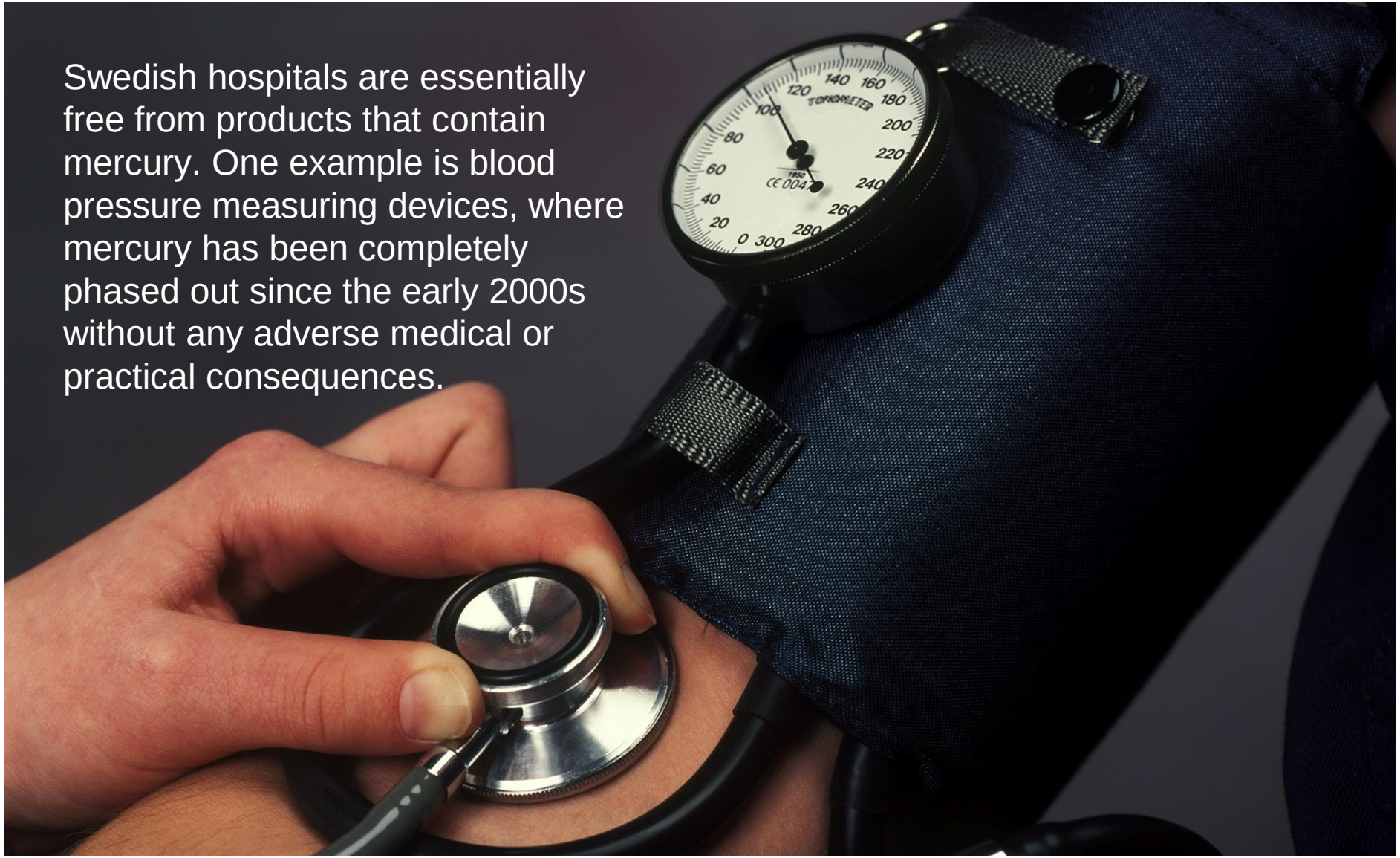



12 x 35cm

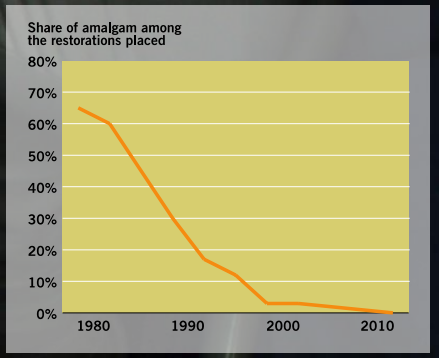

D867S
Panasonic
POWER MAX3
ALKALINE
DURACELL
RAYOVAC
AA LR6 1,5 VOLT
PRO CELL
Alkaline
POWER MAX3
ALKALINE

General ban on use of mercury in Sweden from 1 June 2009


6 000
5 000
4 000
3 000
2 000
1 000
0
Weight (kg)
Measuring instruments, electrical devices
Batteries
Light sources
Dental amalgam
Analytical chemicals
1991/92
1997
2003
Year


Swedish hospitals are essentially free from products that contain mercury. One example is blood pressure measuring devices, where mercury has been completely phased out since the early 2000s without any adverse medical or practical consequences.

The phase-out of dental amalgam was nearly complete before the general ban took place in 2009.



High awareness of risks

Early phase-out agreement in children

Success factors

Alternative materials

Change in dental insurance system

Hg

Waste

Separator

Sewerage system

Incineration

Sewage sludge

Crematoria

Landfill

Hg

Land application

General ban on use of mercury in Sweden from 1 June 2009

Some exemptions from the general Swedish ban

- Certain areas where EU-legislation allows the use of mercury, such as lamps and motor vehicles
- Military equipment
- Naturally occuring mercury

Time limited exemptions:

- COD-analysis
- Chloralkali production
- Amalgam (very strict conditions, rarely used)

The legal framework for regulation of mercury

- There are two levels of legislation: EU-law and national law
- In general EU-member states should not have national product legislation
- Regarding mercury, Sweden has applied for an exemption and is allowed to have national restrictions
- When EU-legislation exists, member states are not allowed to have national legislation in the same area

Examples of product legislation in the EU

- Measuring instruments (Reach Regulation (EC) No 1907/2006)
- Restrictions on content of mercury in electrical and electronic equipment (ROHS-directive 2011/65/EU)

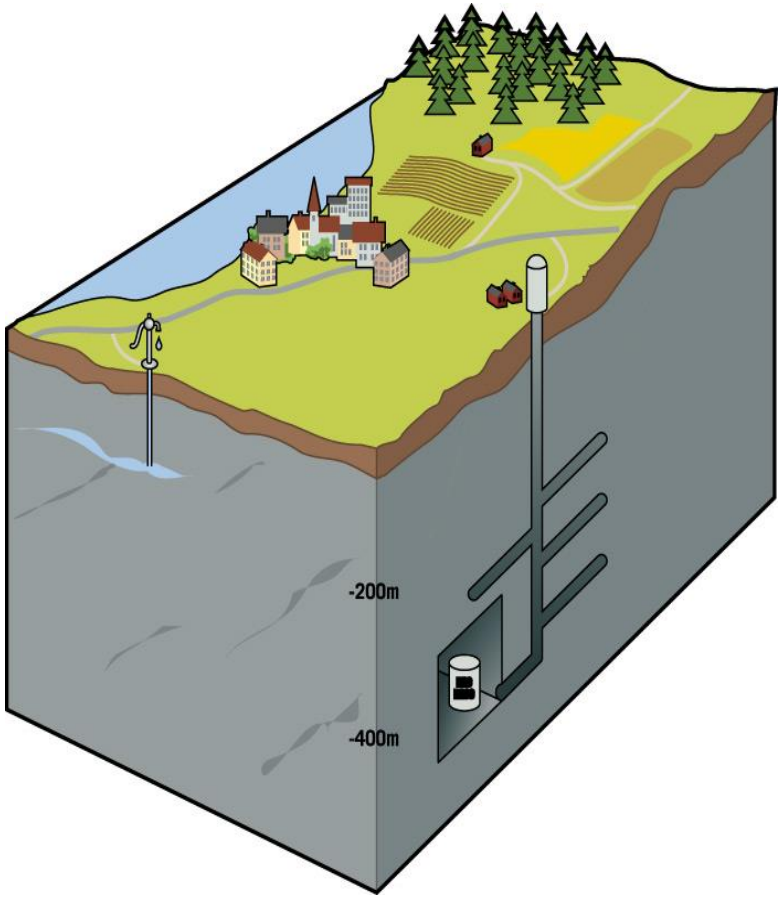
- General ban on mercury in cosmetic products (Cosmetic directive 76/768)
- Restrictions on the use of mercury in batteries (Directive 2013/56/EU amending the Directive 2006/66/EC on batteries and accumulators)
- Regulation 1107/2009 concerning the placing of plant protection products on the market
- Regulation 1102/2008 on the banning of exports and safe storage
- Directive 2000/53/EC on end-of life vehicles

Collection systems for batteries have been in place since the mid 1970s and for electronic waste since 2001.

Collect mercury already in use

- 1994 -1999 Collection of mercury and identification of mercury containing products
- Inventory in hospitals, laboratories, factories and schools

Final disposal of mercury waste

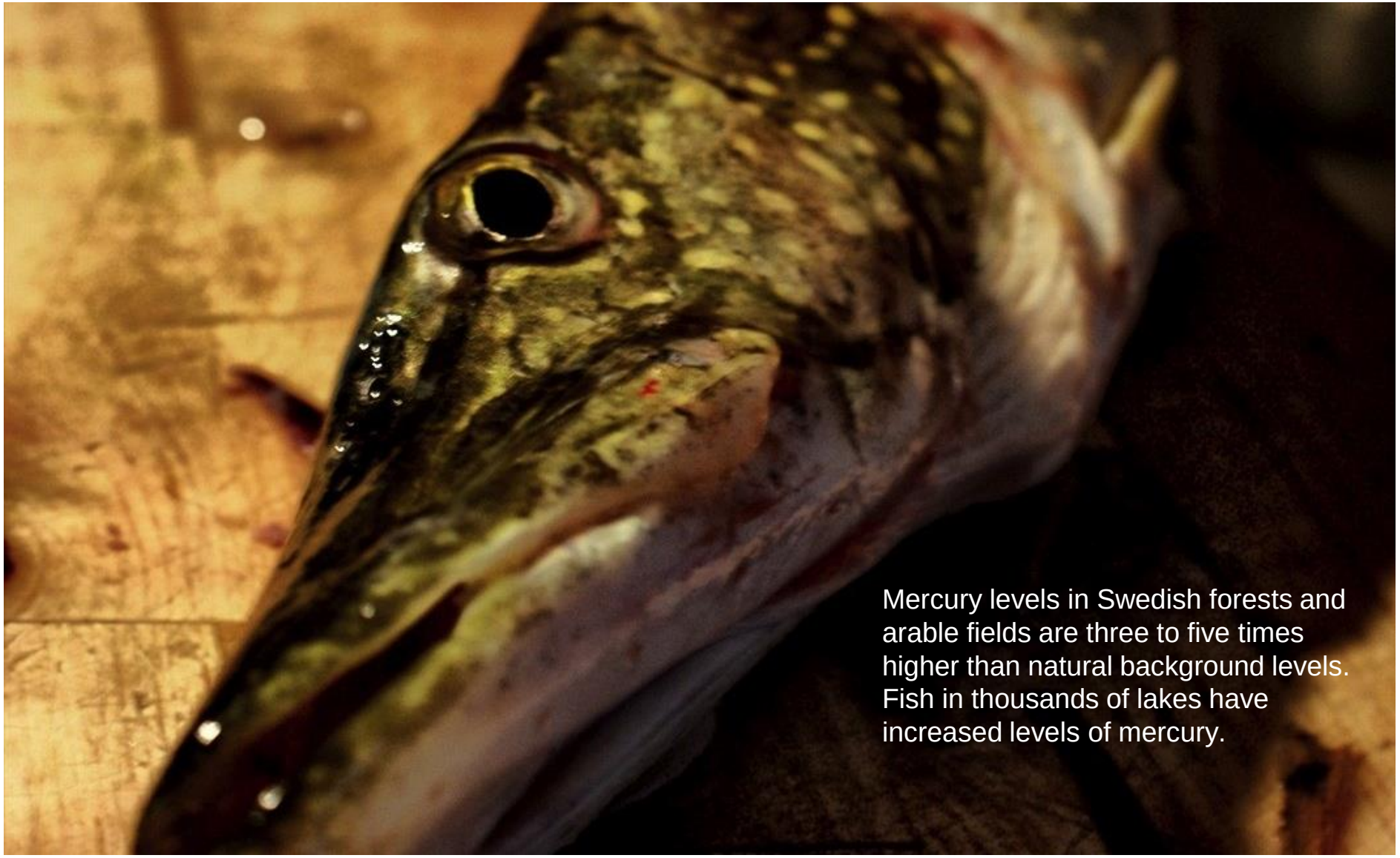


In 2003, the Swedish Parliament decided that waste containing mercury was to be permanently stored deep underground.

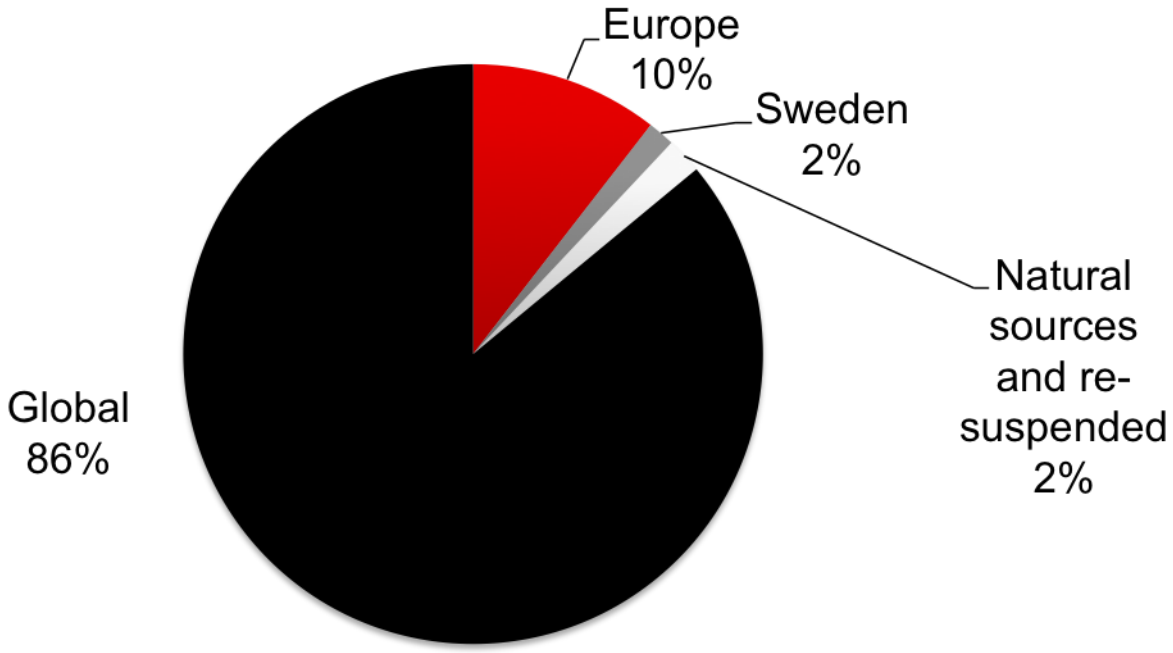
Since March 2011, there has also been an export ban and storage obligation in force within the EU.

Examples waste legislation in the EU relevant for mercury

- Directive 2008/98/EC on waste (Waste Framework Directive)
- Directive 99/31/EC on the landfill of waste
  Council Decision 2003/33/EC establishing criteria and procedures for the acceptance of waste at landfills
- Directive 2000/76/EC on the incineration of waste
- Regulation 1102/2008 on the banning of exports and safe storage
- Directive 2012/19/EU on waste electrical and electronic equipment (WEEE Directive)
- Directive 2000/53/EC on end-of life vehicles
- Batteries (Directive 2013/56/EU amending the Directive 2006/66/EC on batteries and accumulators)

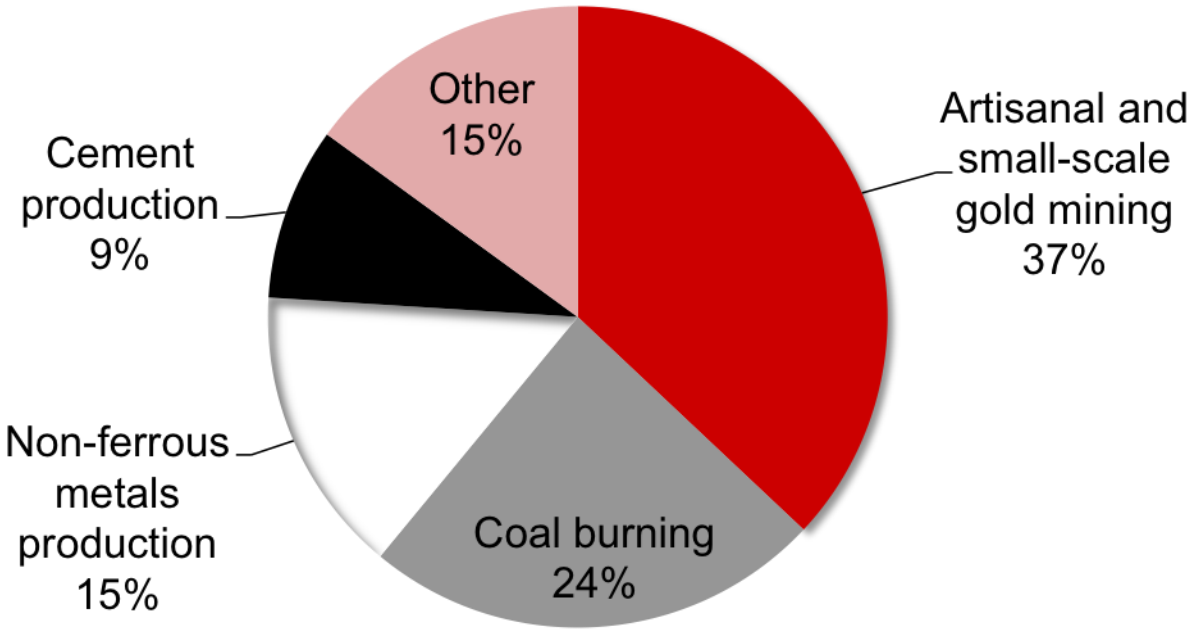

Mercury levels in Swedish forests and arable fields are three to five times higher than natural background levels. Fish in thousands of lakes have increased levels of mercury.

Mercury deposition to Sweden in 2011



Source: EMEP 2013

Biggest sources of air emissions 2010



Source: UNEP, Global Mercury Assessment 2013

International cooperation on mercury is crucial

UNEP MINAMATA CONVENTION ON MERCURY

The Convention covers the whole lifecycle:

- Supply, sources and trade
- Products
- Processes
- Emissions and releases
- Waste and storage
- Artisanal and small-scale gold mining

Questions?

More information available at

- www.kemi.se/en
- www.swedishepa.se
- http://ec.europa.eu/environment/chemicals/mercury
  (or google: eu mercury)
- www.unep.org/hazardoussubstances/Mercury/tabid/434/Default.aspx
  (or google: unep mercury)