Mercury management in Sweden and the EU

Products and processes

Petra Hagström

Stina Andersson

Brasilia, 24 April 2014

KEMI
Swedish Chemicals Agency

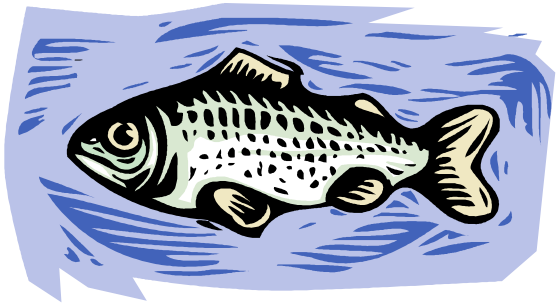
NATUR VÅRDS VERKET
SWEDISH ENVIRONMENTAL PROTECTION AGENCY

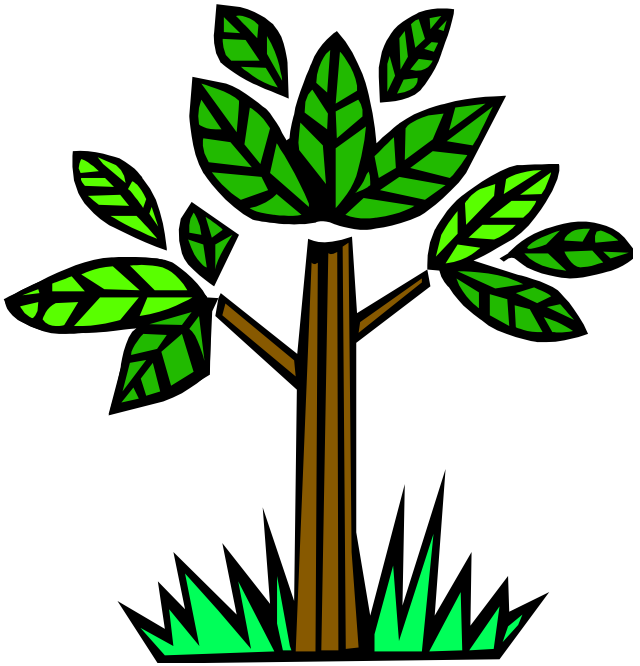
The environmental situation in Sweden

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

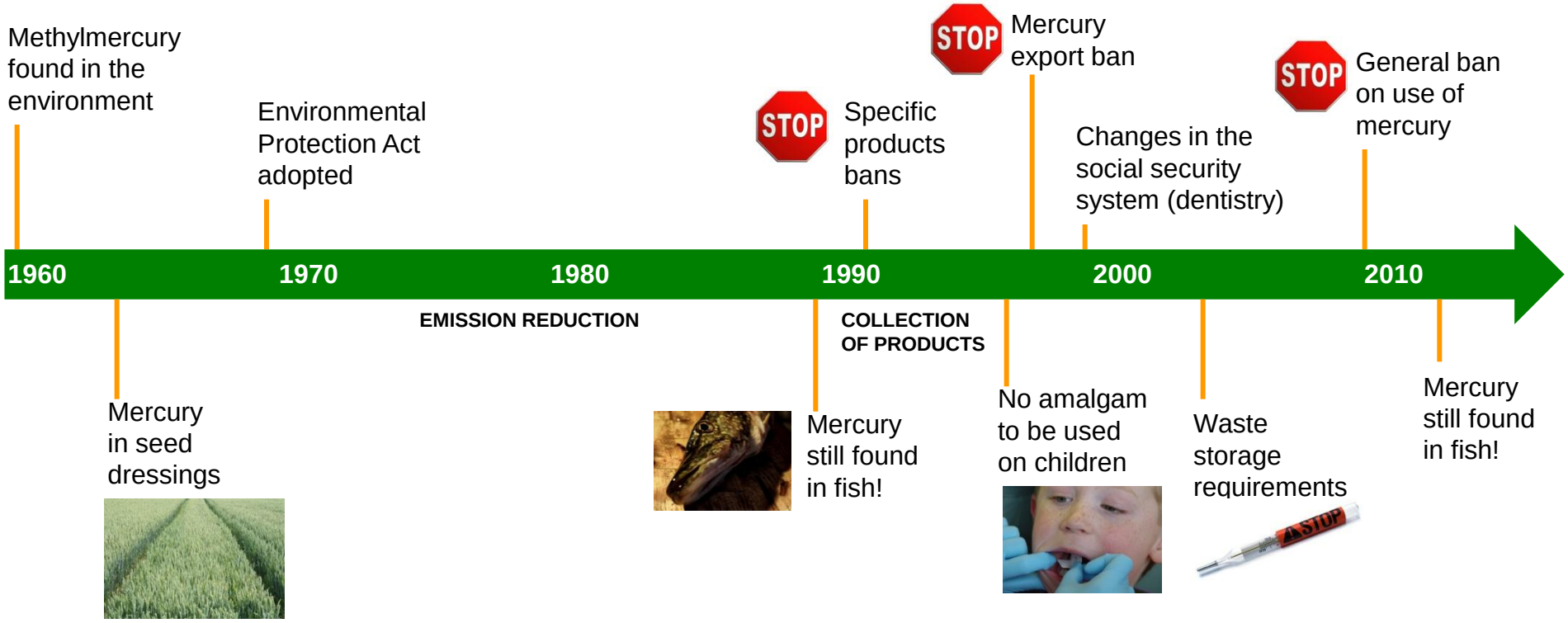
Fish in half of the lakes (about 50 000 lakes) exceed (WHO/FAO) limit value of 0.5 mg/kg

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

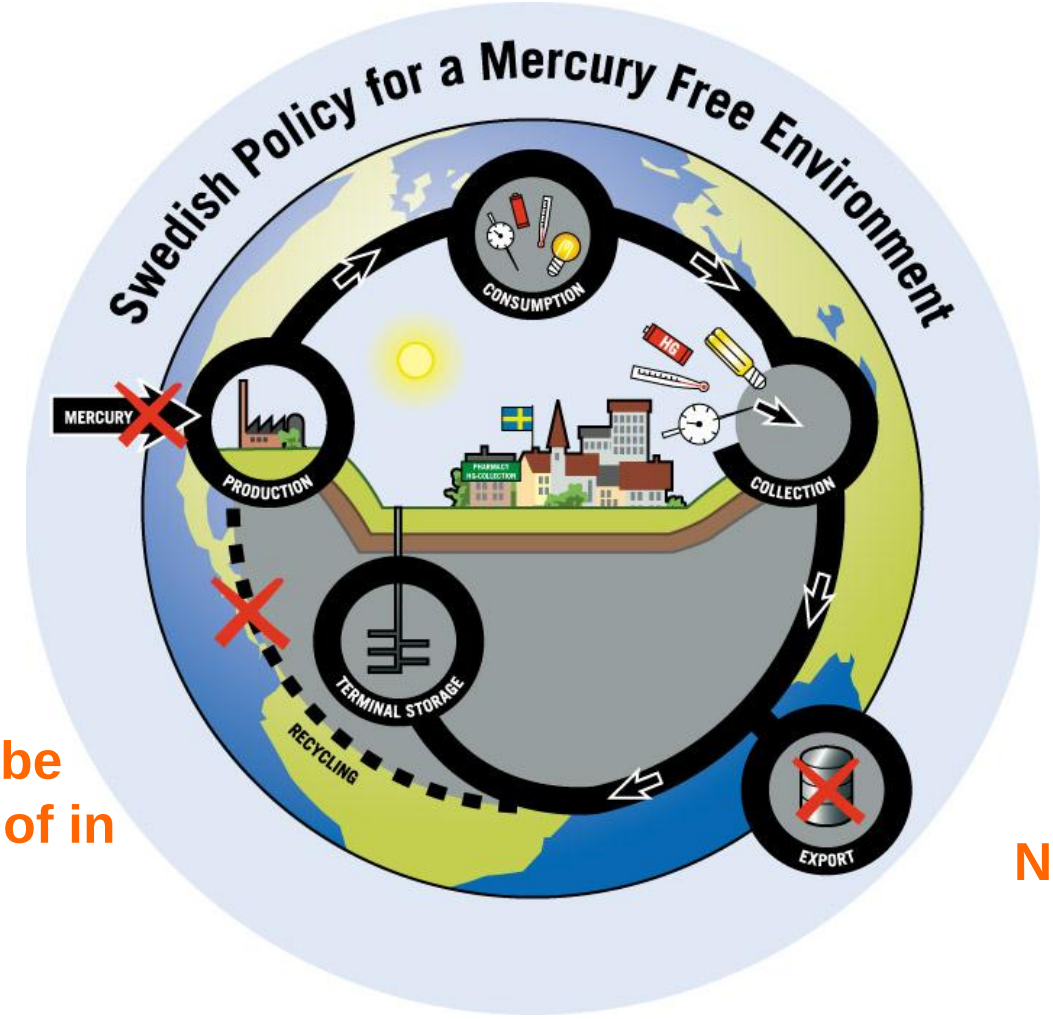




Mercury policy in Sweden – a historical overview



Phase out use in products and processes.



Mercury already in society should be collected and treated.

Mercury should not be recycled.

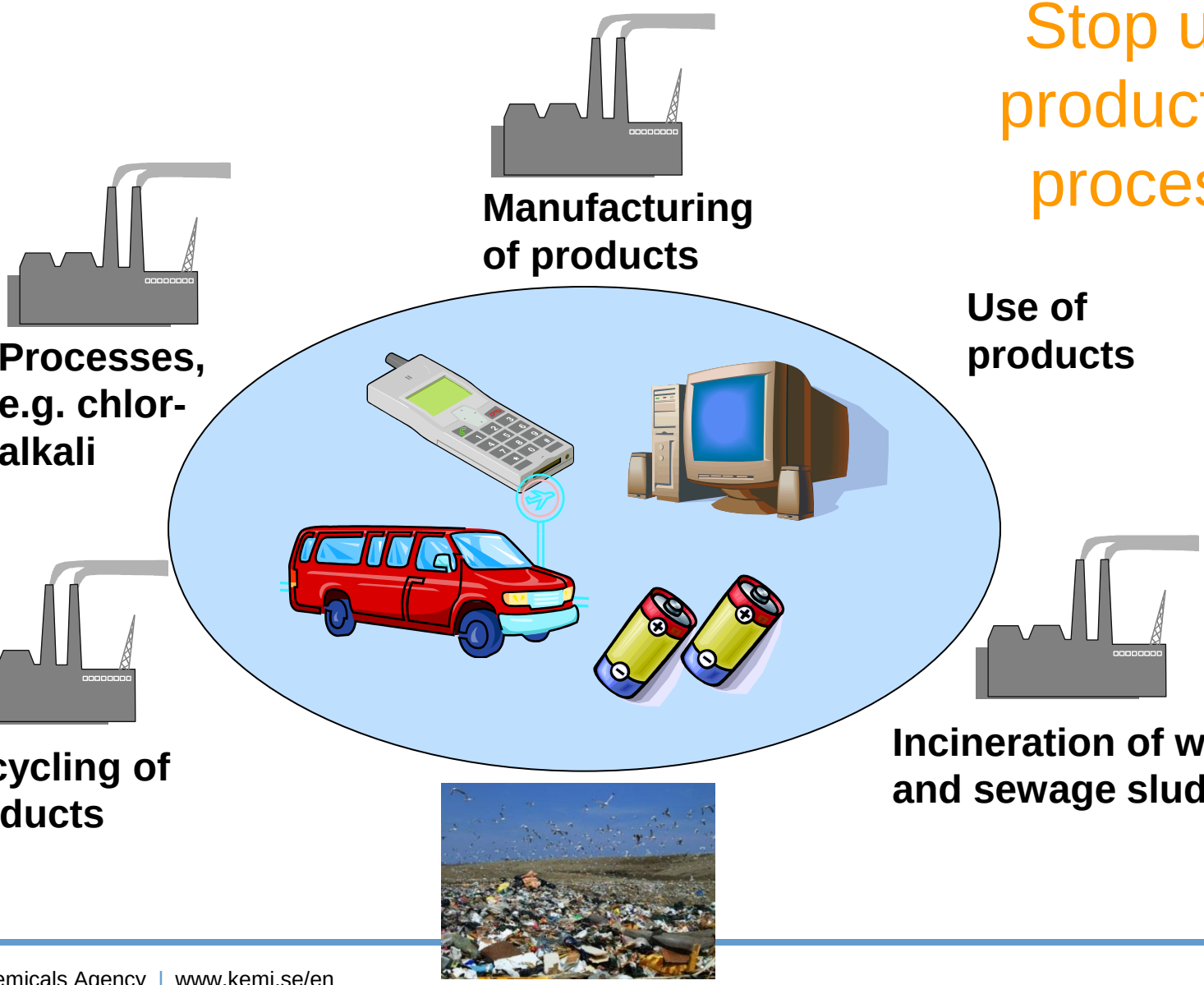
Mercury should be safely disposed of in final storage.

No export.

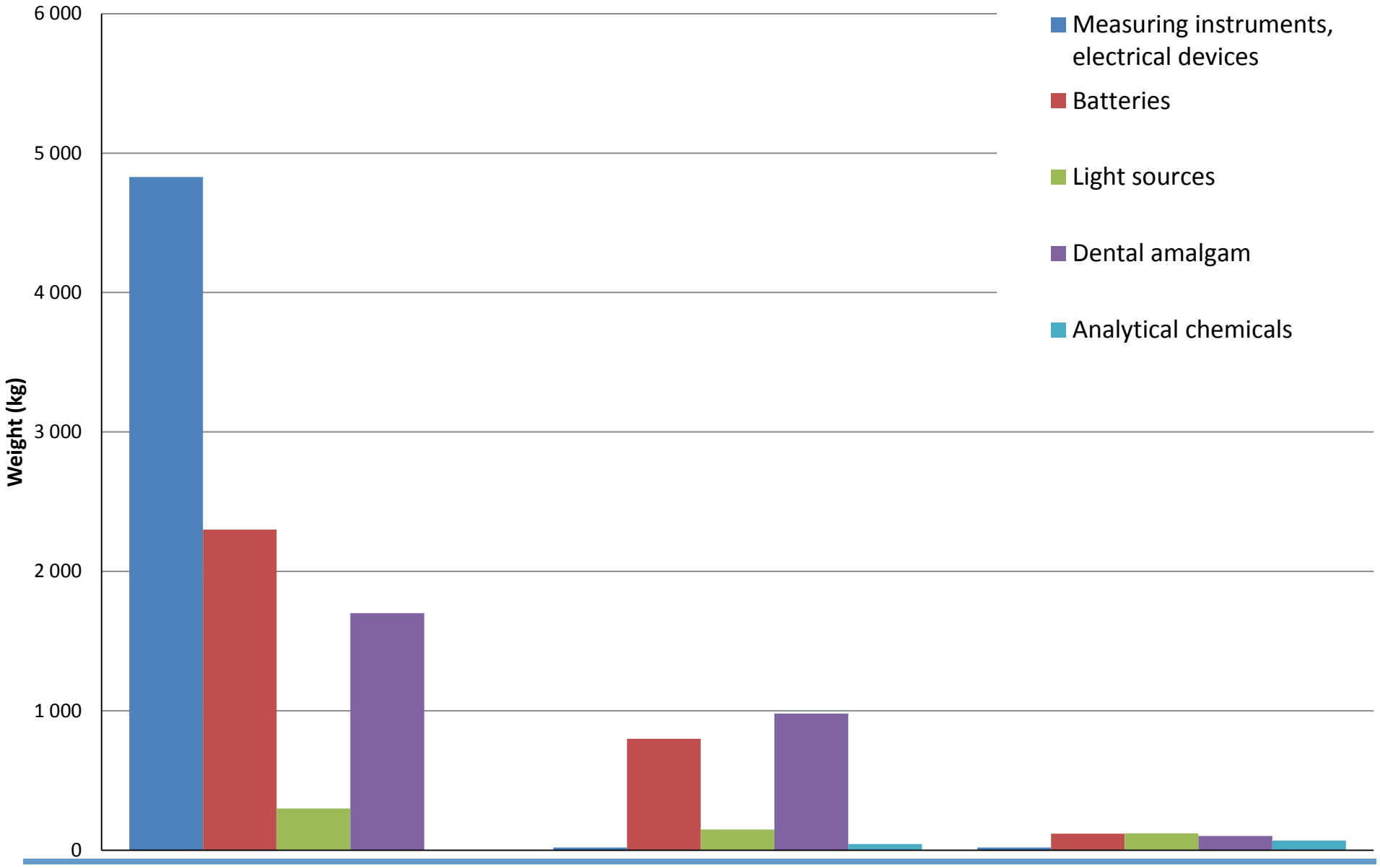
The aim of the Swedish Mercury Strategy

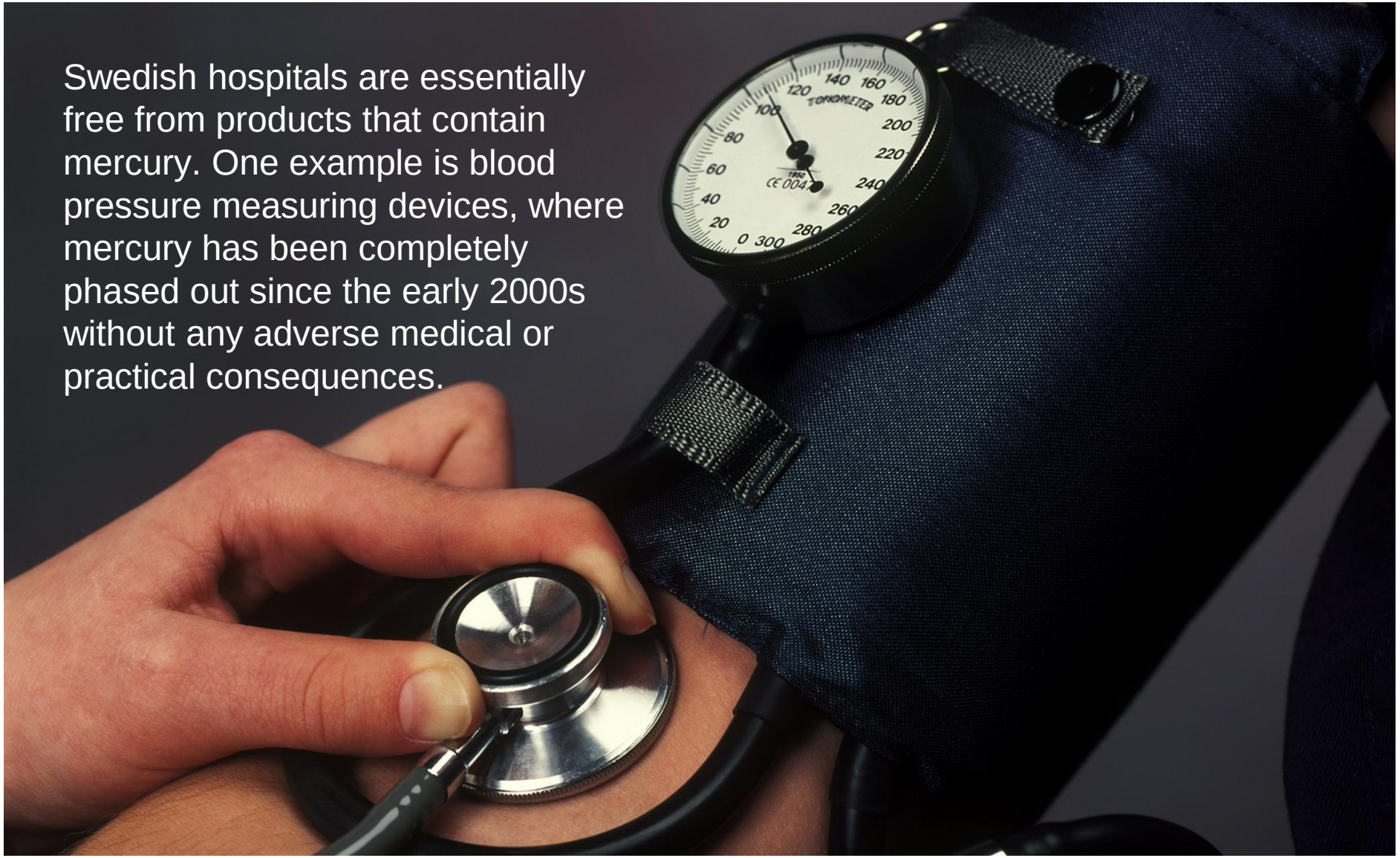
is to reduce mercury levels in the environment to natural background levels and to be able to eat fish from Swedish lakes without any concerns about health risks.

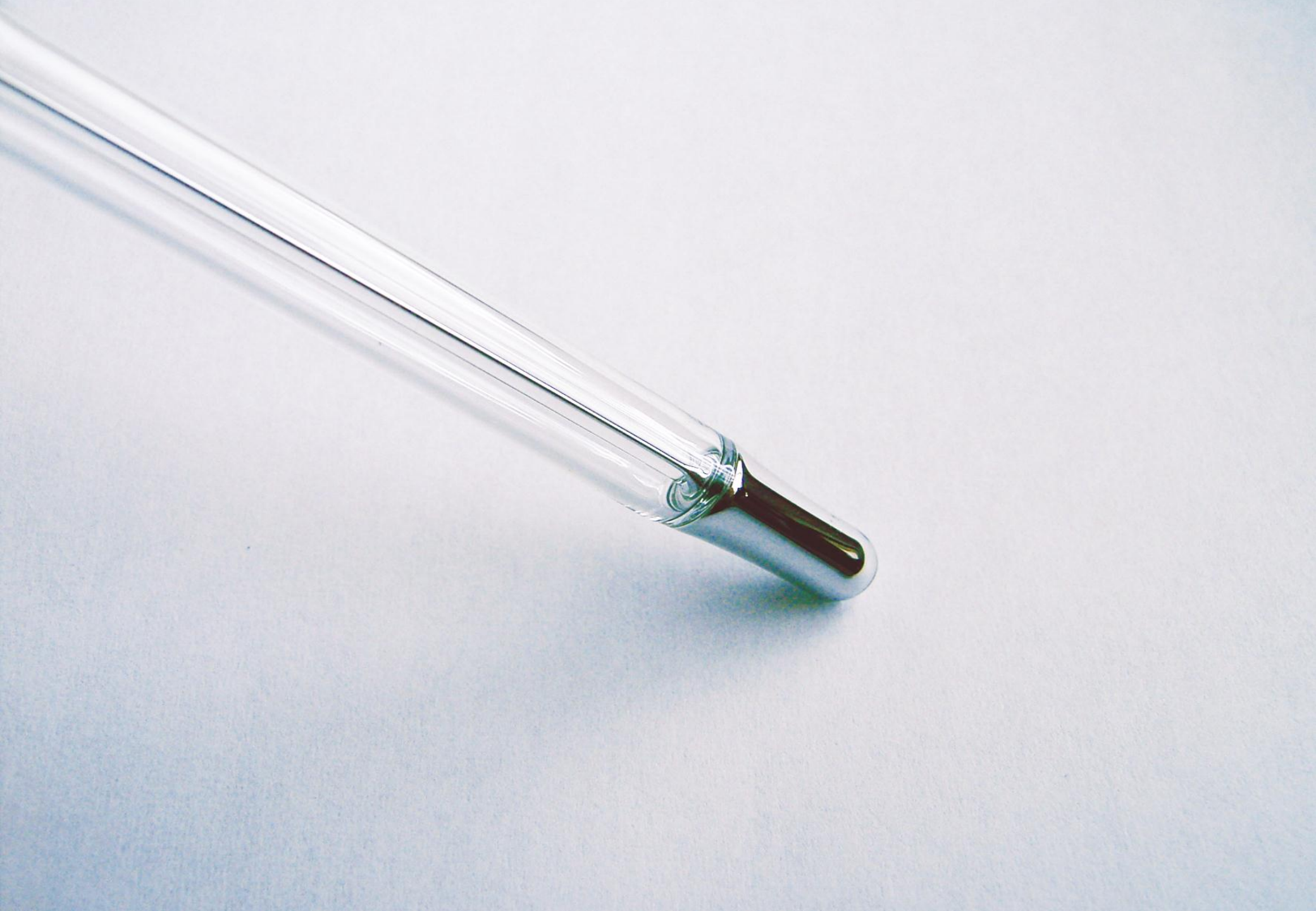
Stop use in products and processes!



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.



Dental amalgam

Metallic mercury (50%)

Mixture of

- silver (≥20%)
- tin (≤25%)
- copper (≤15%)

Hg

Waste

Separator

Sewerage system

Incineration

Sewage sludge

Crematoria

Landfill

Hg

Land application

High awareness of risks

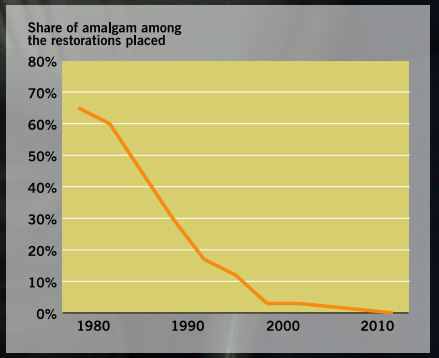
Early phase-out agreement in children

Success factors for phase-out of amalgam

Alternative materials available

Change in dental insurance system

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



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)

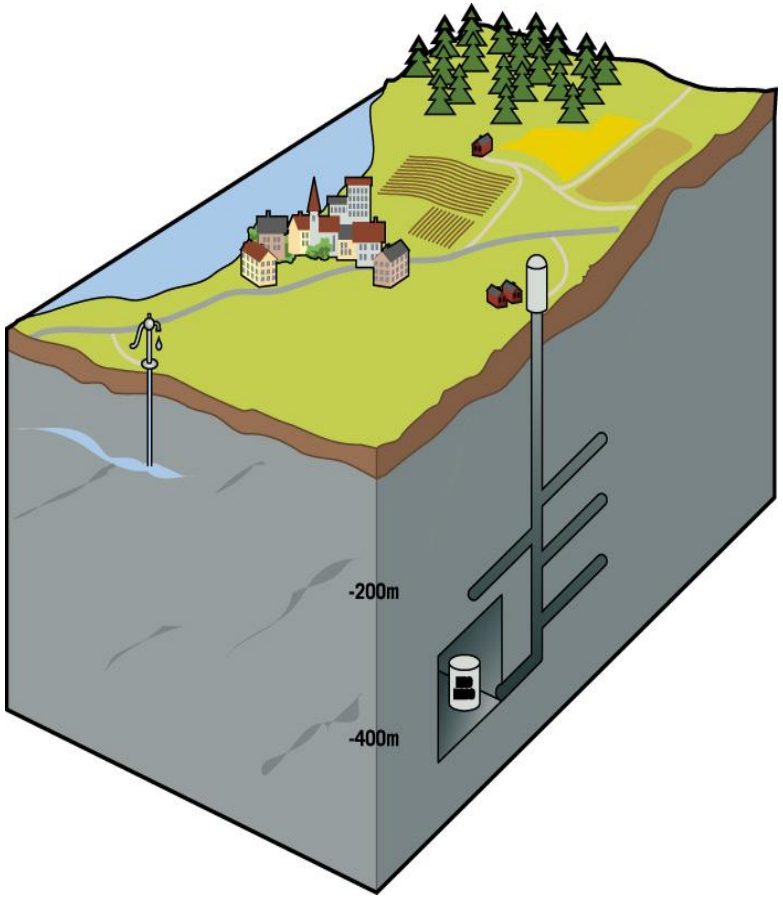
- General ban on mercury in cosmetic products (Cosmetic directive 76/768)
- Restrictions on the use of mercury in batteries (Directive 2013/56/EU amending the Directive 2006/66/EC on batteries and accumulators)
- Regulation 1107/2009 concerning the placing of plant protection products on the market
- 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

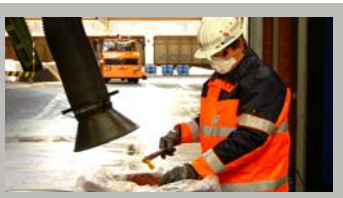
Final disposal of mercury waste



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.

Saltmine in Germany



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)

The EU Mercury Strategy

Main actions in the EU Strategy

- Reduce demand of mercury – phase out use of mercury in products and processes where feasible
- Reduce supply – stop of mercury mining
- Safe handling of our surplus mercury – export ban and storage obligation from March 2011
- Reduce emissions – coal combustion stands for 50% of remaining mercury emissions
- Actions at global level

Phase-out use of mercury in Chlor-alkali in Sweden and the EU

Mercury cell chlor-alkali production in Sweden

- First mercury cell plant in operation 1897
- Historically chlor-alkali production was strongly linked to the pulp and paper industry
- Today one mercury cell chlor-alkali plant remain and it is part of a PVC production company
- Use of mercury in chlor-alkali production included in the general ban that took effect in 2009
  - exemptions granted by the government, the latest exemption ends 10 December 2017

Mercury cell chlor-alkali production in Europe

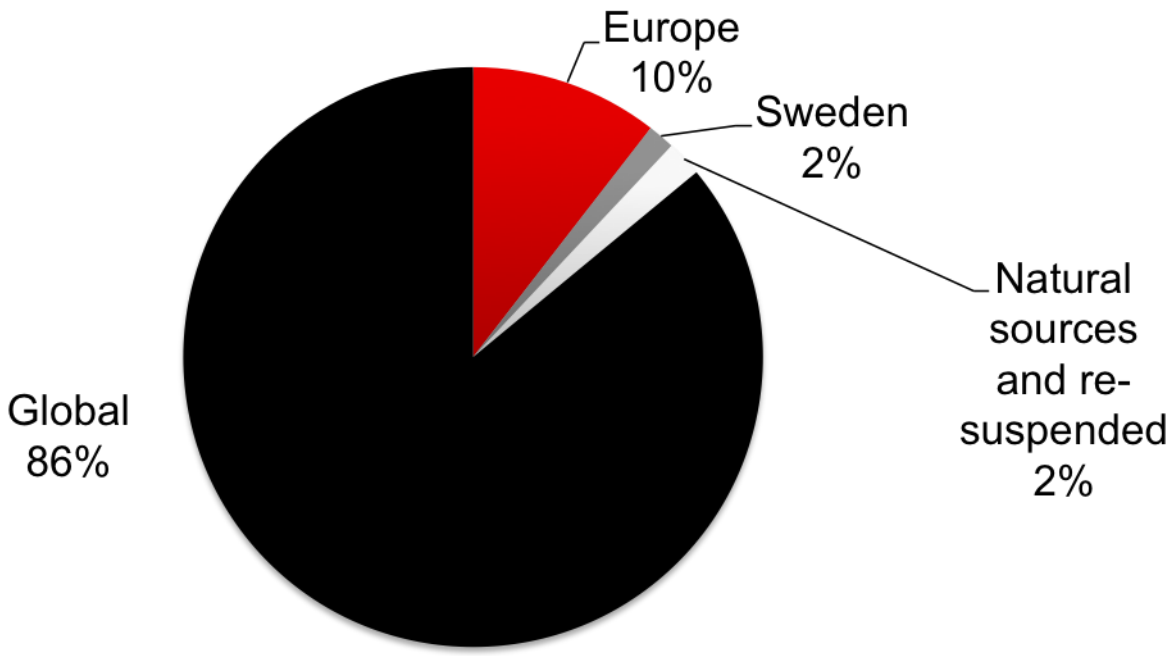
- Mercury cell technique largely a European problem
- 34 mercury cell plants out of 95 chlor-alkali plants in total in EU-27 and EFTA countries accounting for about 30 % of installed chlorine production capacity (January 2011)

Phase-out of mercury cell chlor-alkali production in the EU

- Revised chlor-alkali BREF BAT conclusions published 11 December 2013
  -*The mercury cell technique cannot be considered BAT under any circumstances.*
- BAT conclusions shall be implemented in EU countries within four years from publication
  → 10 December 2017
- Minamata convention phase-out date 2025


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

International cooperation on mercury is crucial

Questions?

More information available at

- www.kemi.se/en
- www.swedishepa.se
- http://ec.europa.eu/environment/chemicals/mercury