Swedish Environmental Protection Agency

The Swedish Environmental Protection Agency

- Established in 1967
- Approximately 520 employees
- Turnover of about 540 million USD,
- About 10% of the budget goes to salaries and administration.

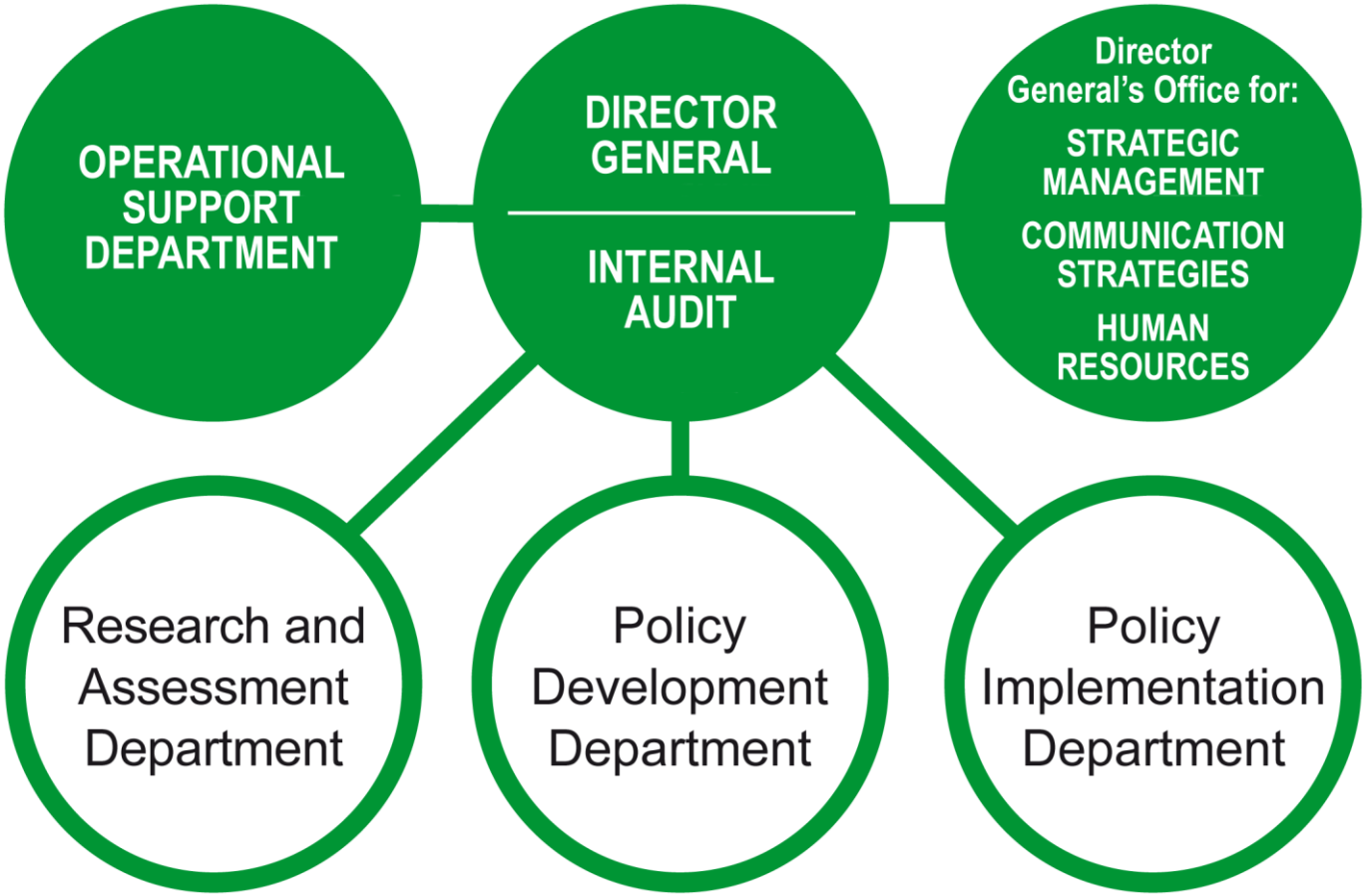
Our Vision

”A good living environment
for humans and all other living things,
now and for future generations"

Our task

- **ESTABLISHING KNOWLEDGE AND DOCUMENTATION**
  - Collecting, processing and presenting facts and knowledge
  - Make it available to the public, researchers and policy makers
- **HELPING TO DEVELOP ENVIRONMENTAL POLICY**
  - Giving the Government a sound basis for its decisions
  - working in the EU and internationally with directives and conventions related to environmental issues.
- **IMPLEMENTING POLICY**
  - Ensuring that decisions taken are also implemented in society

Organisation



ESTABLISHING KNOWLEDGE AND DOCUMENTATION

HELPING TO DEVELOP ENVIRONMENTAL POLICY

IMPLEMENTING POLICY IN COLLABORATION WITH OTHERS

Swedish EPA's responsibilities

- Coordinate efforts to achieve the national environmental objectives
- Support climate work
- Develop policy instruments
- Give advice in implementation and enforcement issues
- Pursue cases in the courts
- Monitor the state of the environment
- Initiate environmental research and spread knowledge
- Create the conditions for the preservation and sustainable use of biodiversity
- We are not responsible for supervision!

The national environmental quality objectives

-Reduced Climate Impact
-Clean Air
-Natural Acidification Only
-A Non-Toxic Environment
-A Protective Ozone Layer
-Safe Radiation Environment
-Zero Eutrophication
-Flourishing Lakes and Streams
-Good-Quality Groundwater
-A Balanced Marine Environment
-Thriving Wetlands
-Sustainable Forests
-A Varied Agricultural Landscape
-A Magnificent Mountain Landscape
-A Good Built Environment
-A Rich Diversity of Plant and Animal Life

Should be achieved by 2020!

Environmental Monitoring

Environmental Monitoring

WHAT is it and WHY is it important?

A systematic approach of collecting, measuring and analysing environmental data in order to:

- describe the state of the environment;
- follow up changes and trends in the physical, chemical and biological environment;
- identify threats to the environment;
- provide data to be used as a basis for action;
- monitor implementation and effects of action;
- analyse environmental impact of various emission sources.

The Swedish Coordinated Environmental Monitoring Programme

Monitoring data is produced and used at different levels:

- International level
  - EU directives requires data
  - Conventions requires data
    (e.g. Stockholm Convention and
    Convention on Long-range Transboundary Air Pollution)
- National level
  Swedish EPA and Sectoral Authorities are responsible
- Regional level
  County Administration Boards are responsible

What do we do at the EPA?

- No laboratory at the agency
- Consultants (commercial labs)
- Collaborations with researchers at universities
- Design and coordinate the monitoring programmes
- Collect and publish data
- Inform about results
- Environmental statistics (e.g. time trends)
- Evaluation
- Quality assurance, guidelines, investigation methods
- Working methods used in monitoring is carefully decided and documented

ENVIRONMENTAL MONITORING

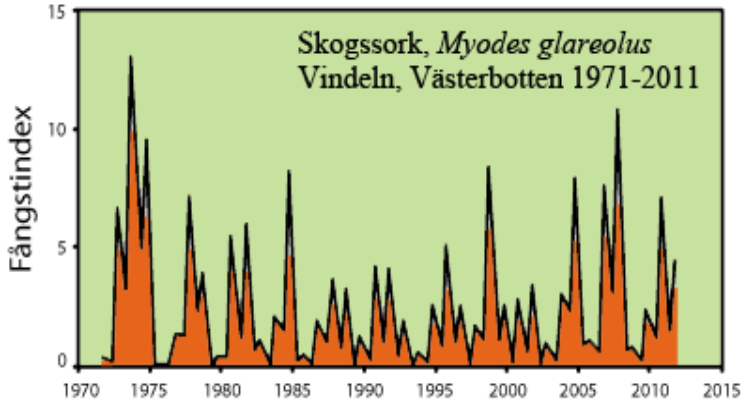
programme areas

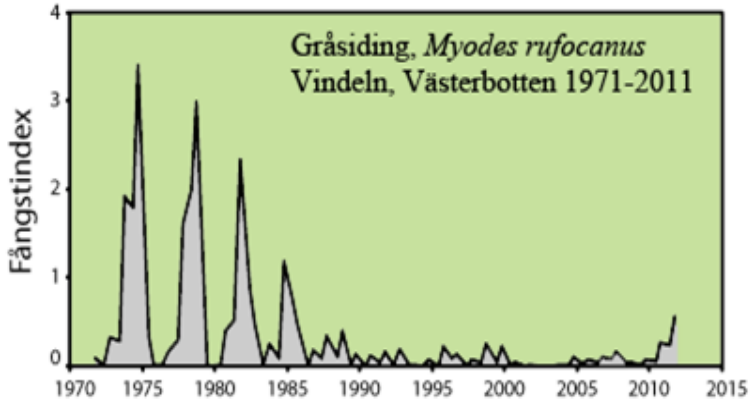
- Air
- Landscape
- Mountains
- Forests
- Wetlands
- Agriculture
- Freshwater (National Water Authority & EPA)
- Sea & Coastal areas (National Water Authority & EPA)
- Health related environmental monitoring
- Toxic substances coordination (screening, environmental specimen bank and hazardous substances in urban environment)

Environmental Specimen Bank

- Samples from more than 290 000 organisms.
- Mostly animal samples but also plants.
- Most of the samples are kept in freezers (-30°C and -80°C).
- The oldest material dates back to the 1960s.

Examples of results

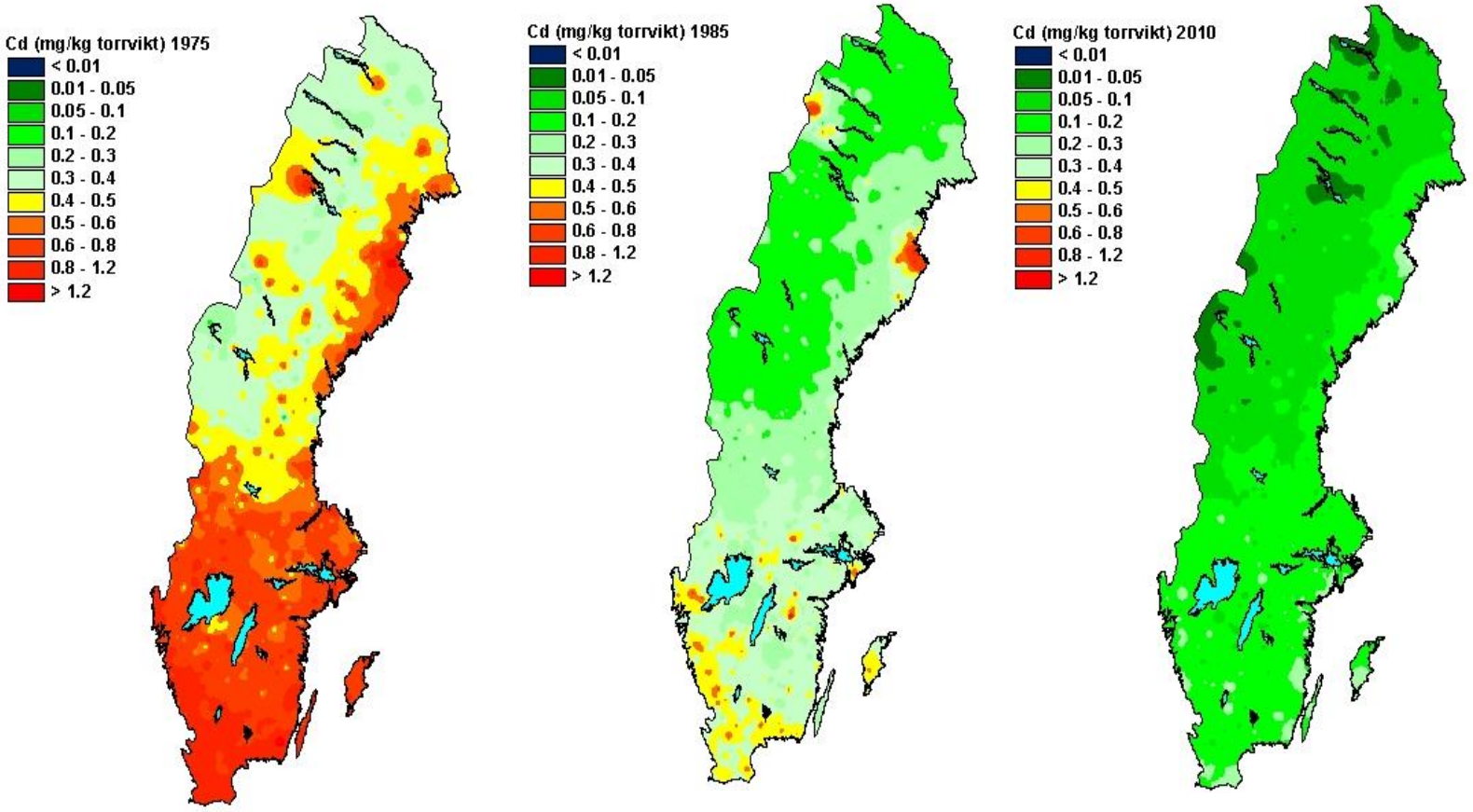




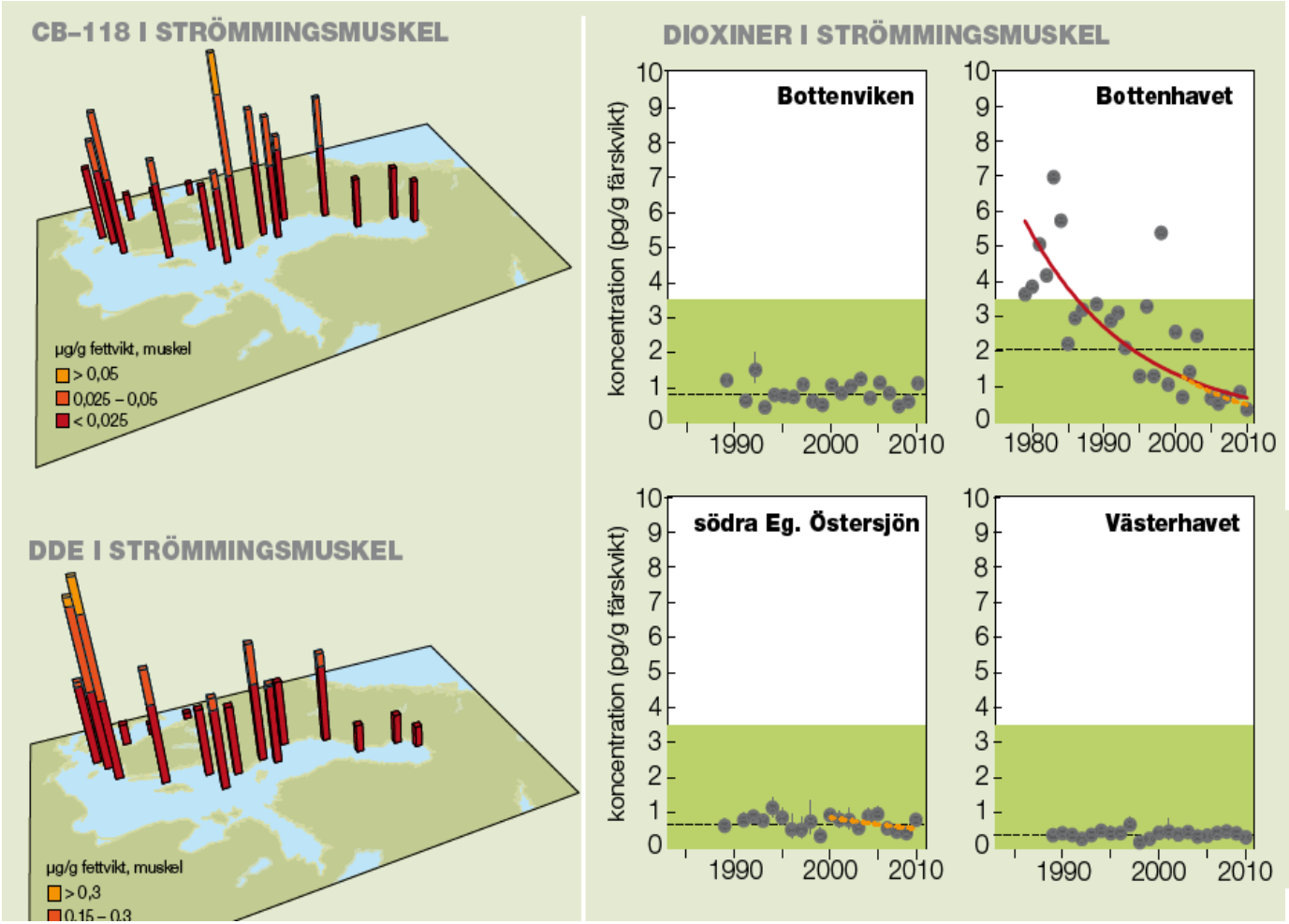
Number of yearly catches of two different types of field mice since 1971.

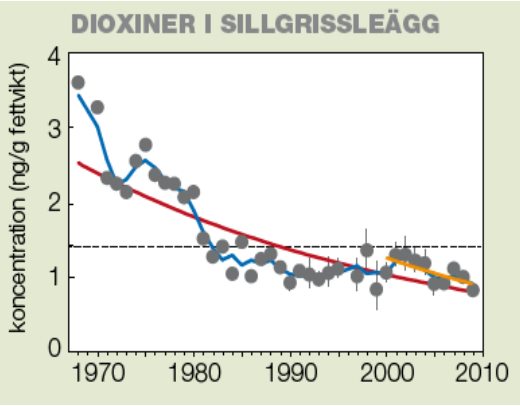
Examples of results

- Levels of cadmium in moss collected in different parts of the country 1975-2010.
- The levels reflect long distance transport of cadmium.



Levels of pollutants in herring muscle and guillemot eggs



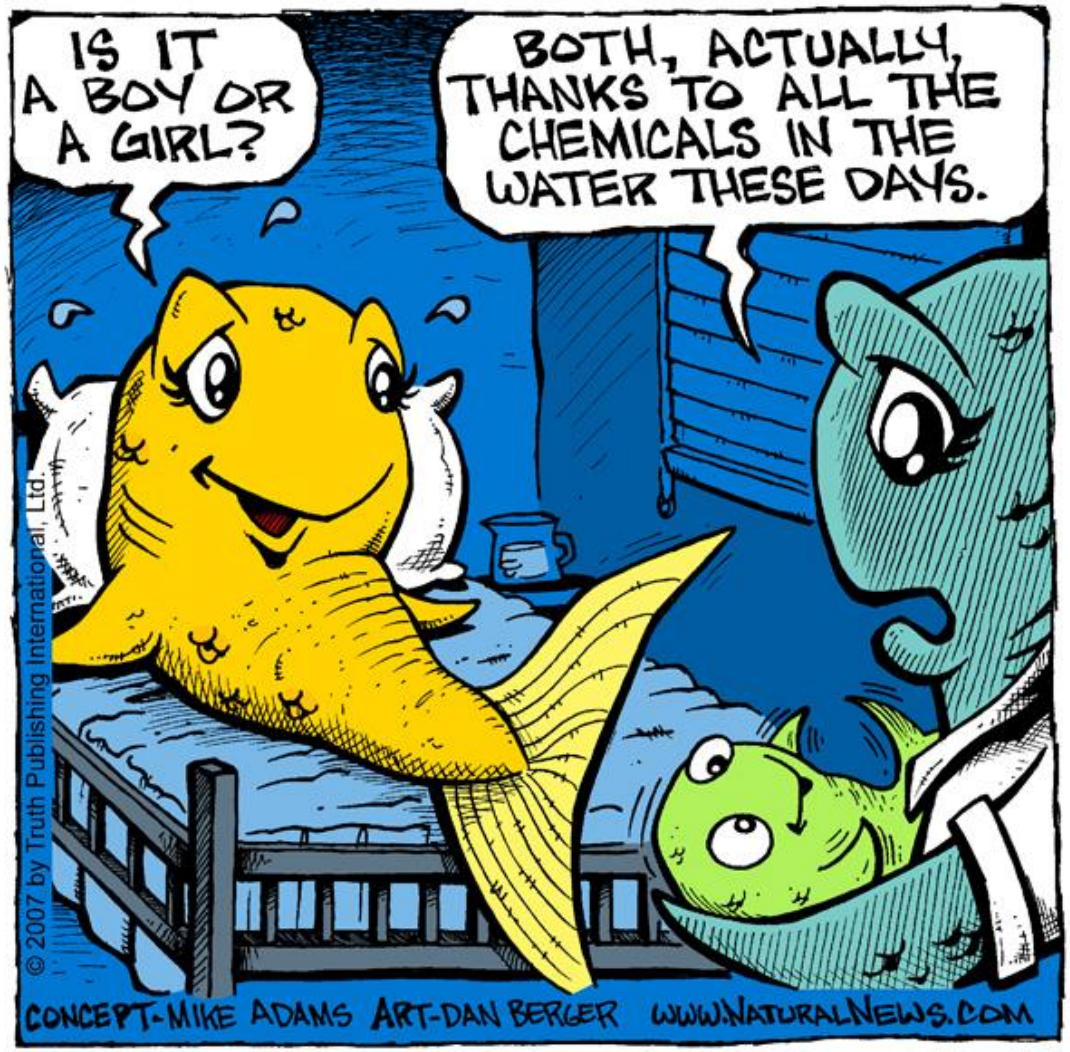


Environmental Pollutants

- Persistent Organic Pollutants (POPs)
- Pesticides
- PAHs
- Metals
- Pharmaceuticals
- Industrial chemicals

Persistent, bioaccumulative and toxic

COUNTERTHINK

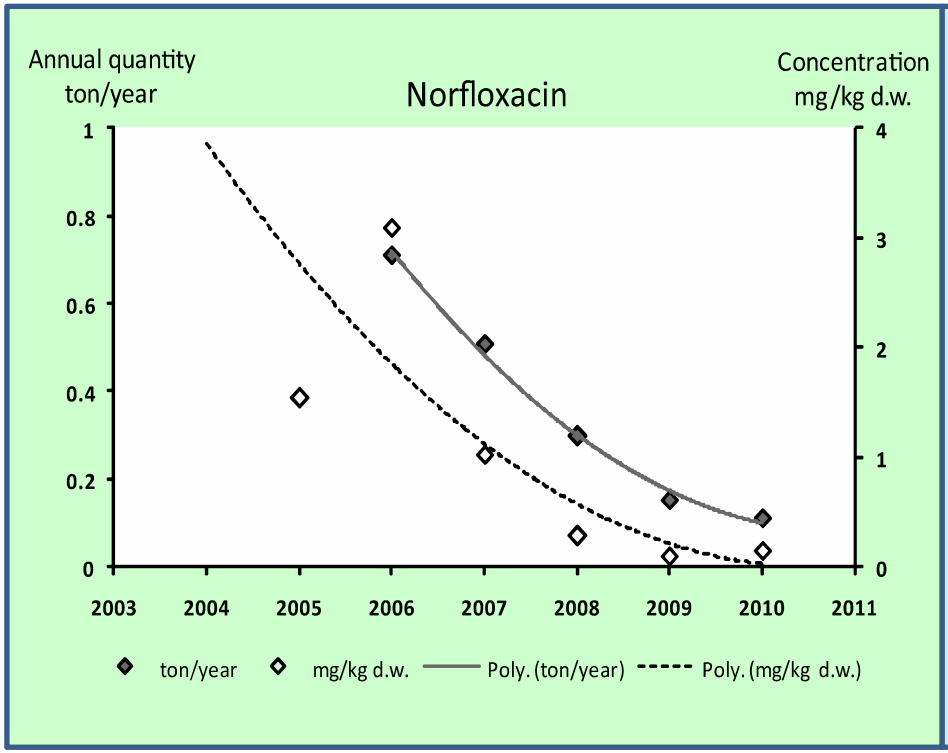


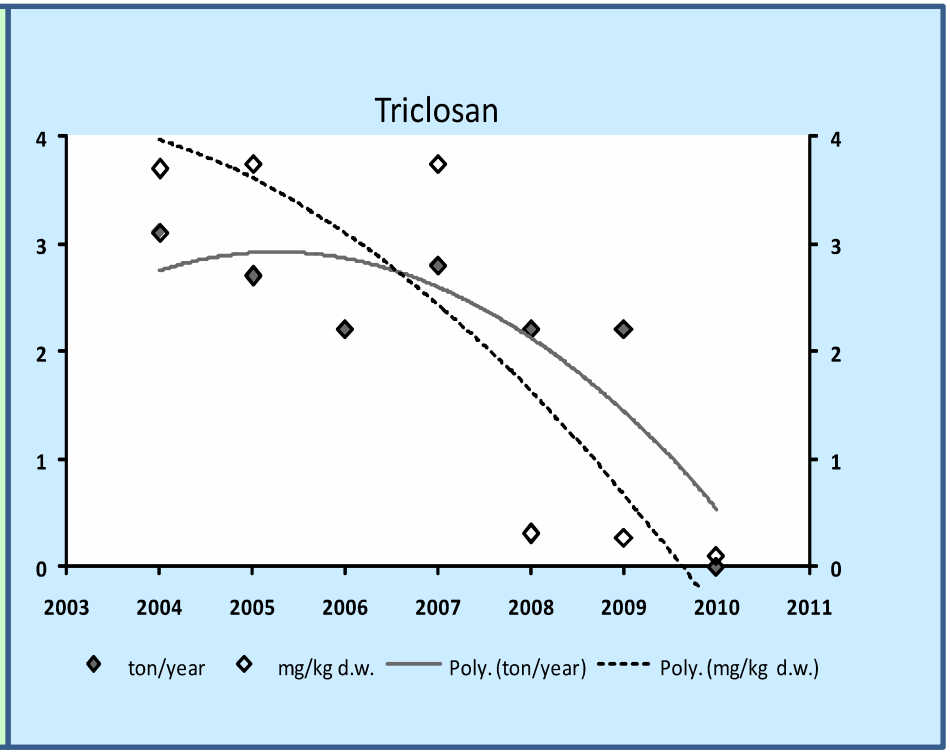
FACT: PHARMACEUTICALS DESTROY AQUATIC ECOSYSTEMS.

Environmental monitoring and screening of pollutants

- Air quality
  - measurements in cities and background sites
  - personal monitors
- Biota
  - analysis of e.g. fish, herring gull eggs, seals and sea eagles
- Waste water treatment plants
  - incoming water
  - sludge
  - outgoing water
  - fish and sediments in the recipient

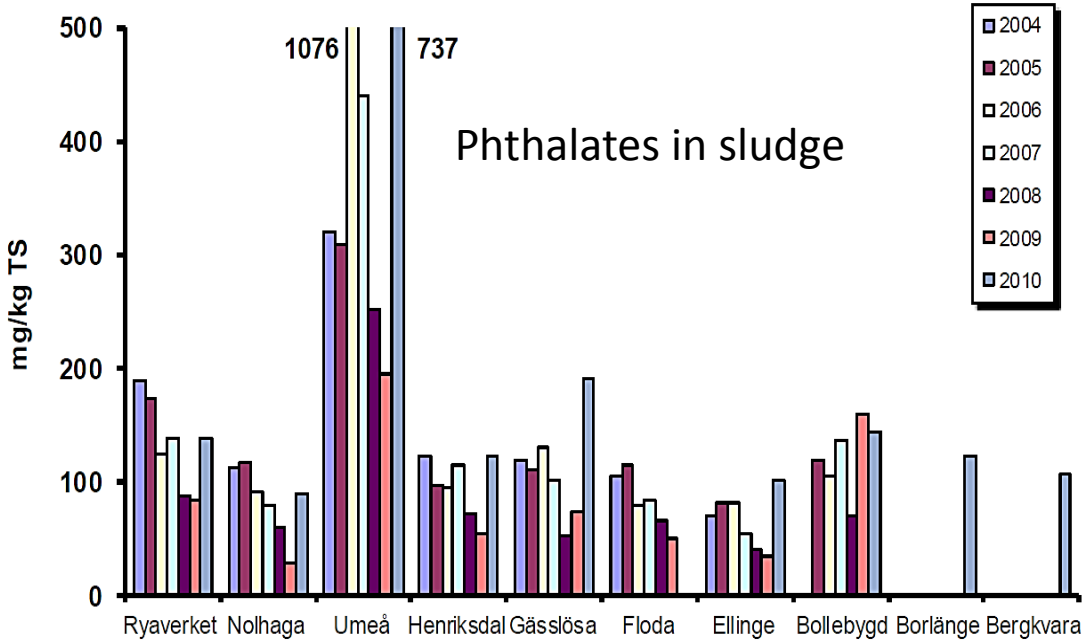
Sludge concentrations *vs.* usage





Waste water treatment plants

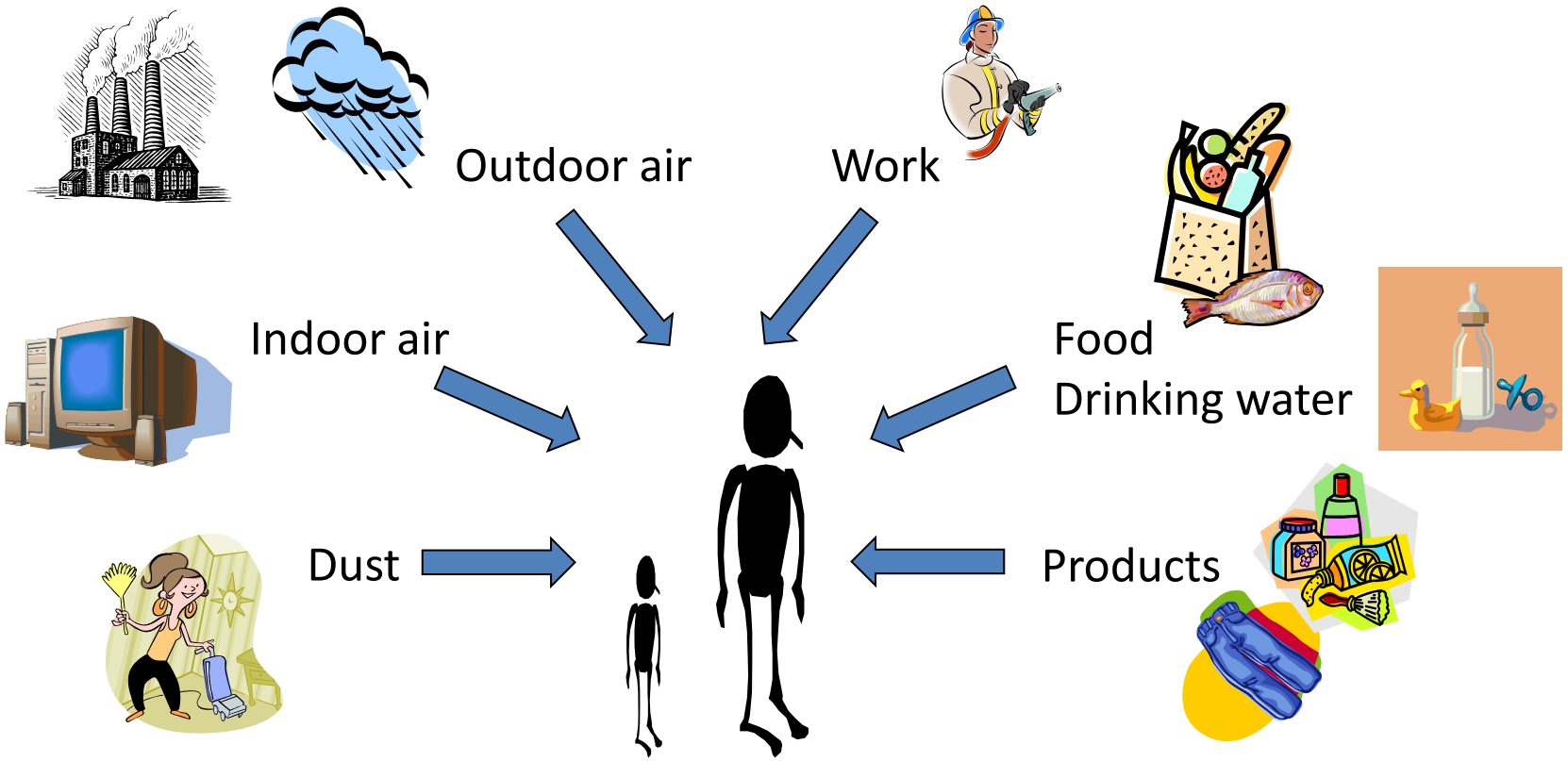
- Sludge and outgoing water is sampled annually from nine waste water treatment plants
- Analyzed for e.g. POPs, metals, pesticides and pharmaceuticals
- Biobanking



Human monitoring

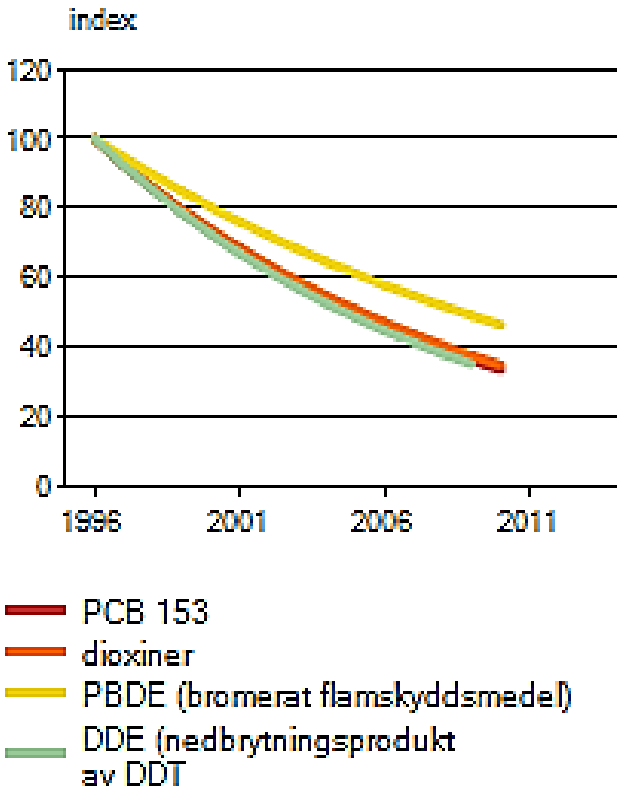
- Mother's milk
- Blood & Serum
- Urine
- Hair
- Food
  - market basket surveys
  - food questioners

How are we exposed to environmental pollutants?



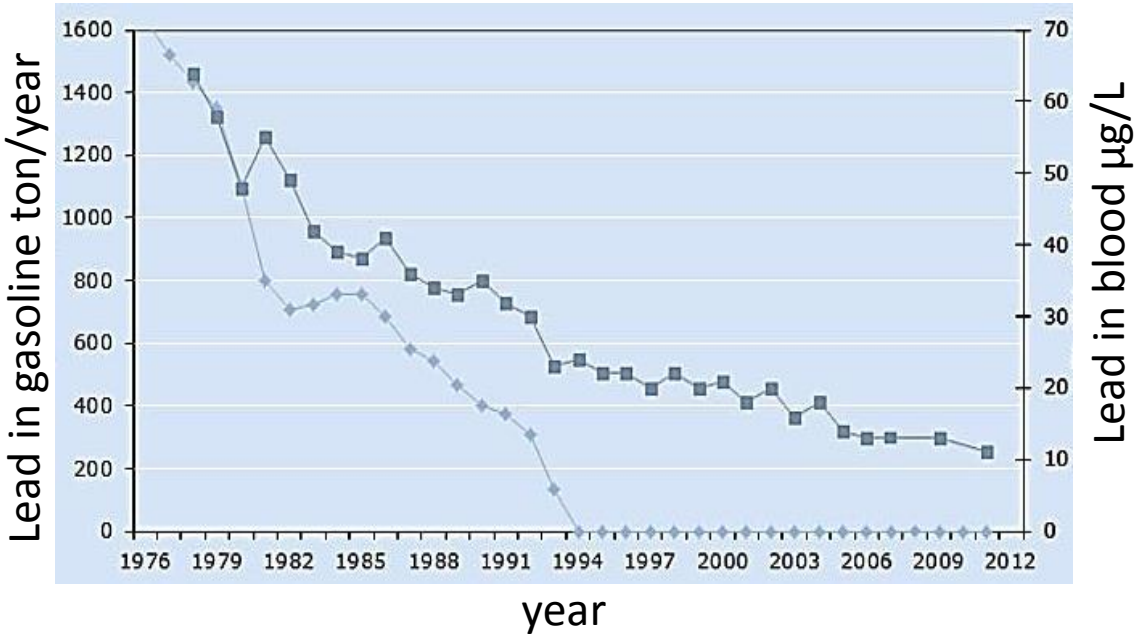
POPs in mother's milk

- National Food Agency
- Milk samples from first time mothers from Uppsala County
- Questioners on diet and lifestyle
- Biobank
- Time-trends
- Children, dust, hair, blood and urine



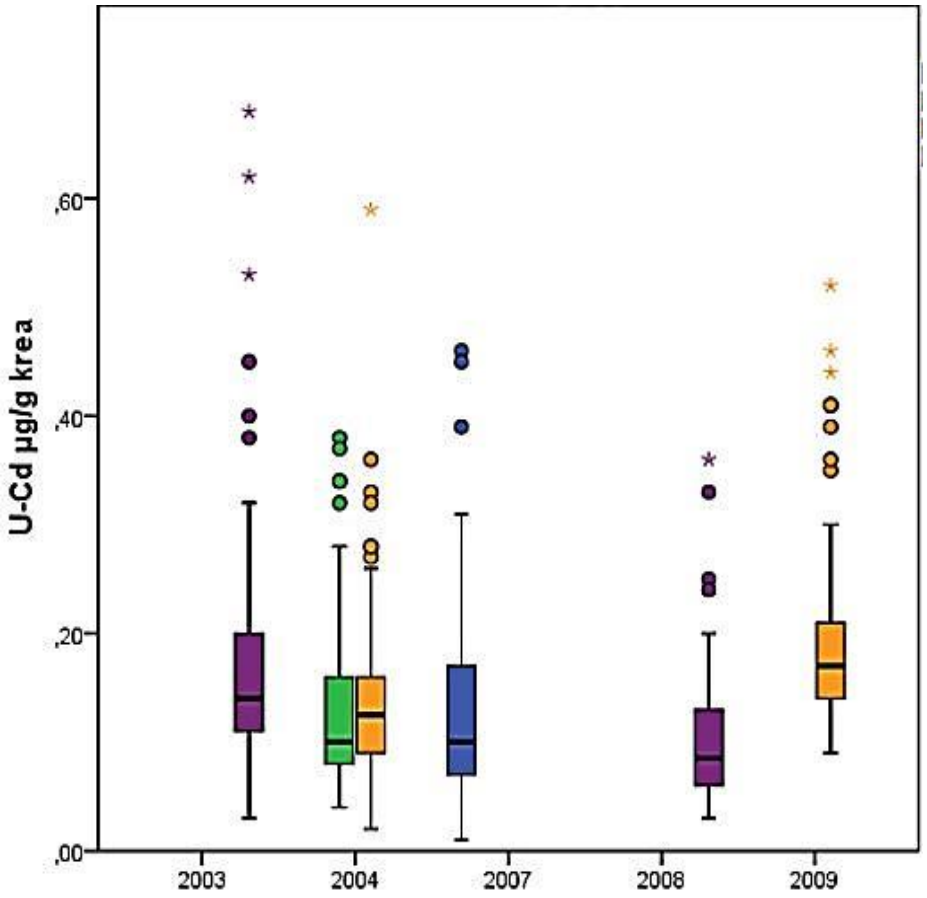
Lead in blood from children

- Comparison of blood lead in children and usage of lead in gasoline.
- Negative effects from lead exposure on performance in school and cognitive function



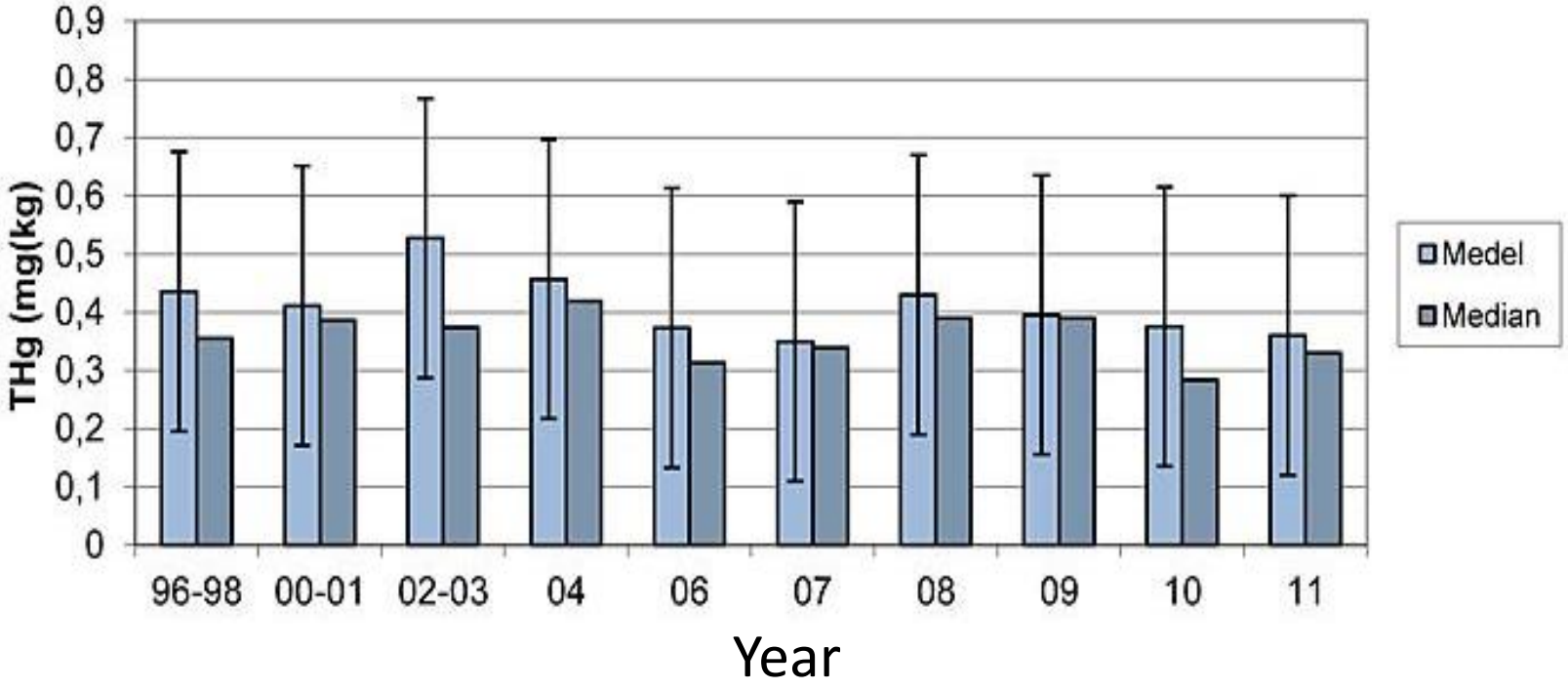
Cadmium in urine

- Cadmium are measured in urine from women
- Kidney and bone are sensitive to cadmium
- The cost of fractures caused by high cadmium levels in Sweden has been estimated to 4.2 billion SEK / year



Mercury in hair

- Hair samples collected from women visiting maternity clinics
- Strong correlation with fish consumption
- No time-trend



Food - Market basket surveys

- Obtain information on levels of nutrients and potentially harmful components in commonly consumed products.
- Mean intake of analyzed components can be estimated and changes over time investigated.

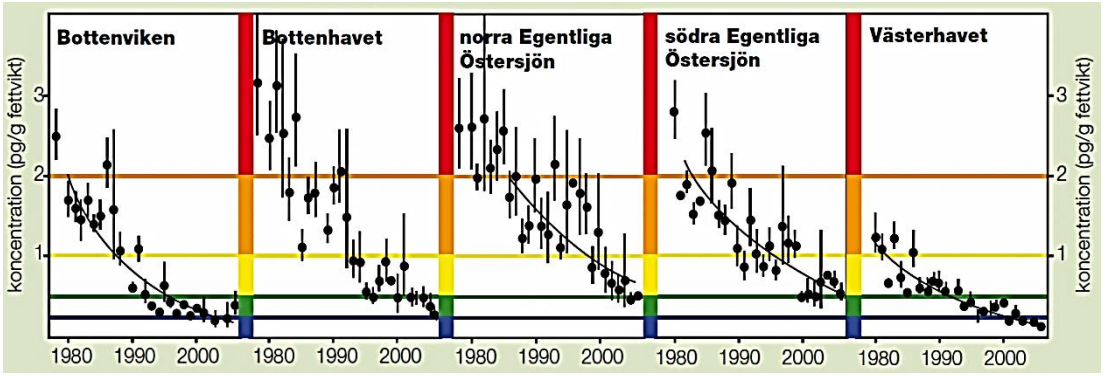
➢ POPs have been analyzed in :
eggs, fats/oils, fish products, meat and dairy products.

➢ The highest levels of POPs were found in fish.

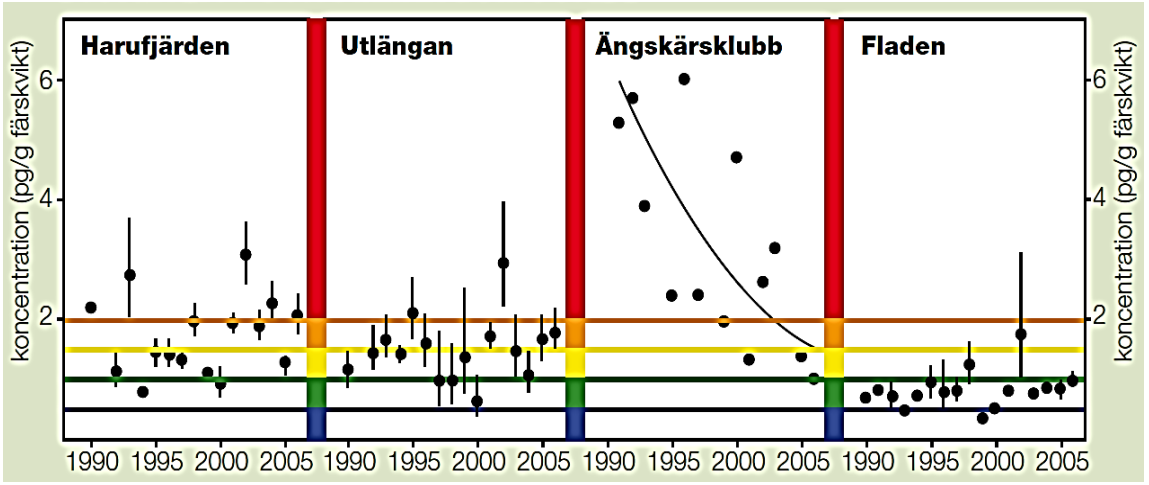
Food - analysis of POPs in fish

- Exemption from EU regulation on max levels of dioxins in fish intended for human food
- Dietary guidelines for children, young women and women that breast feed

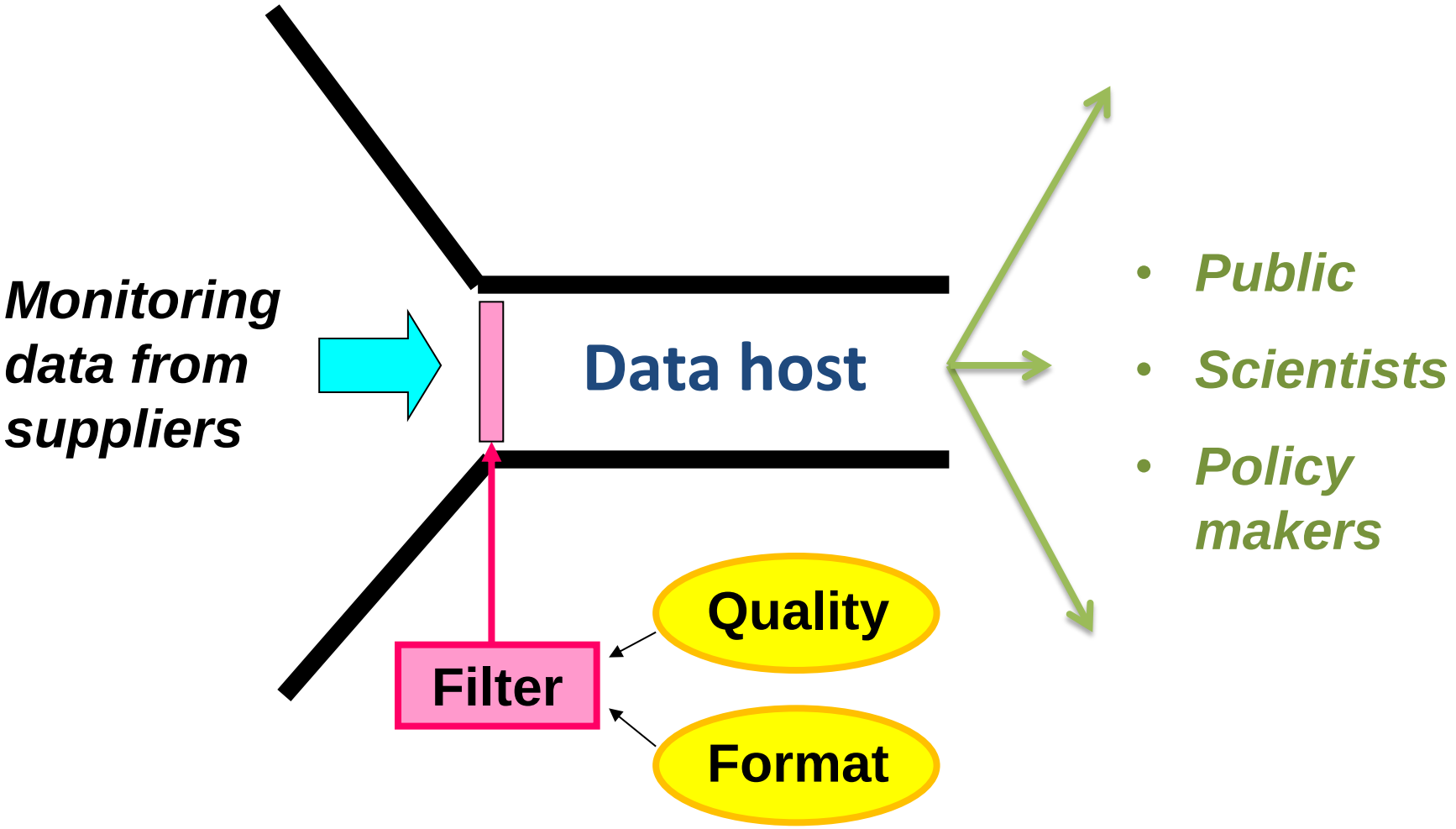
PCB in herring muscle



Dioxins in herring muscle



Data storage



Questions and comments?

Links to monitoring data and reports can be found at our web page:

www.naturvardsverket.se

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