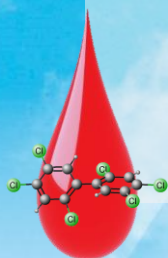


Delayed emissions of POPs from transboundary waste streams may cause spatially and temporally divergent monitoring trends



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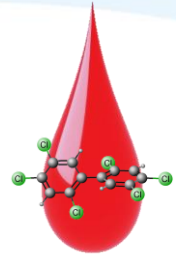
⁴University of Oslo, Norway



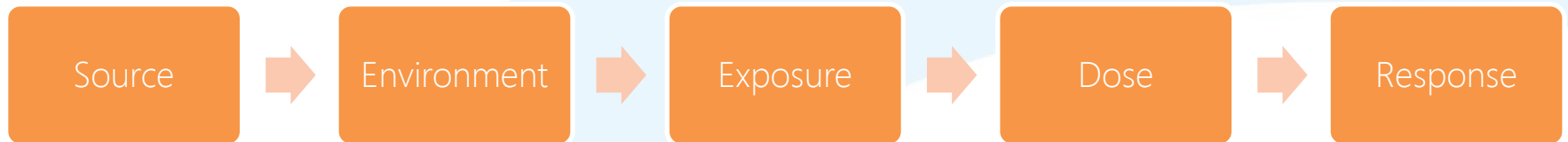
Norsk institutt
for luftforskning

Objectives

- Part 1: Lessons learned from studying time trends of POPs in Norwegian cohort
= Temporal trends in emissions matter!
- Part 2: Implications for human biomonitoring studies with regards to delayed emissions of POPs from transboundary waste streams



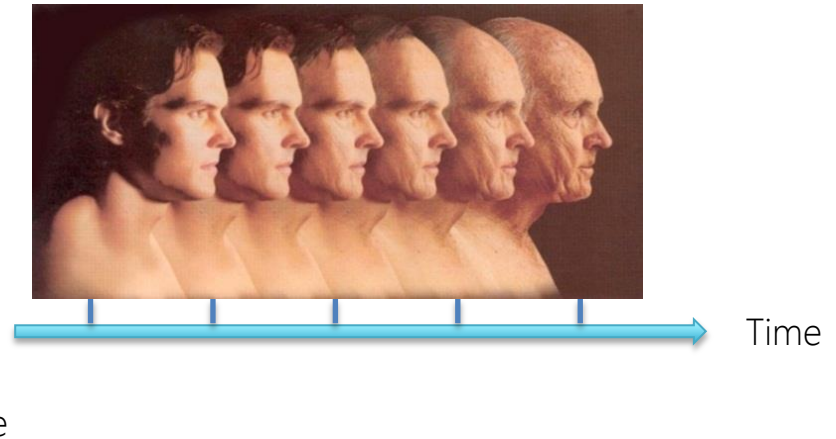
Human monitoring studies



Cross sectional design:



Longitudinal design:



The Tromsø Study – a rare longitudinal study

- 60 men followed for 30 years



Sampling years:

1979 1986 1994 2001 2007

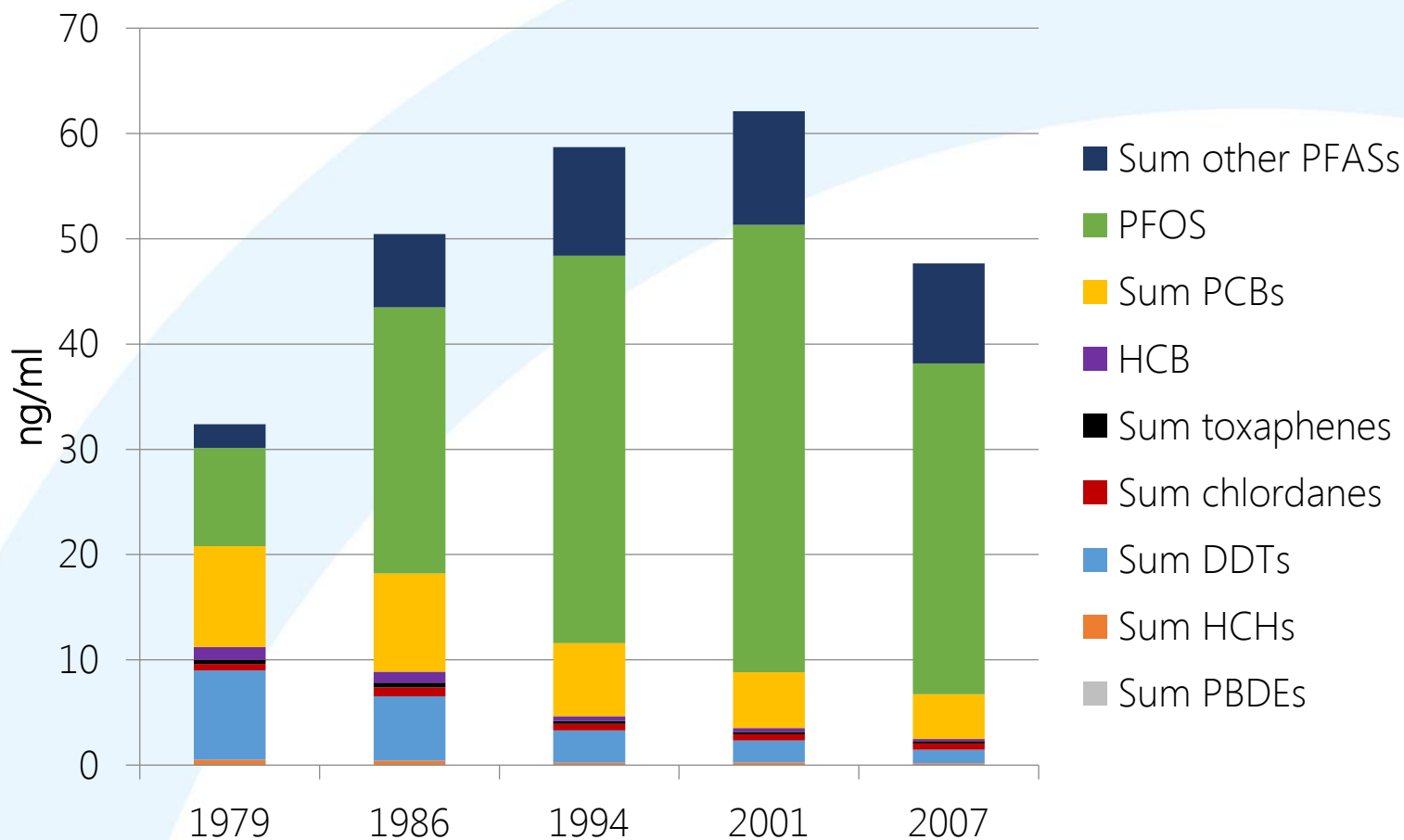


Median
age:

42 49 57 64 70

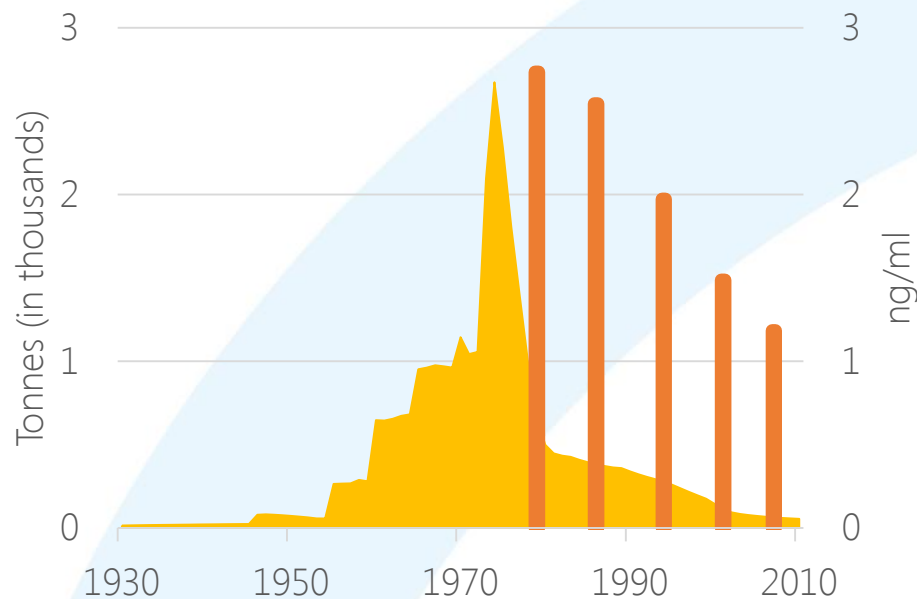


Dynamic serum POP burden

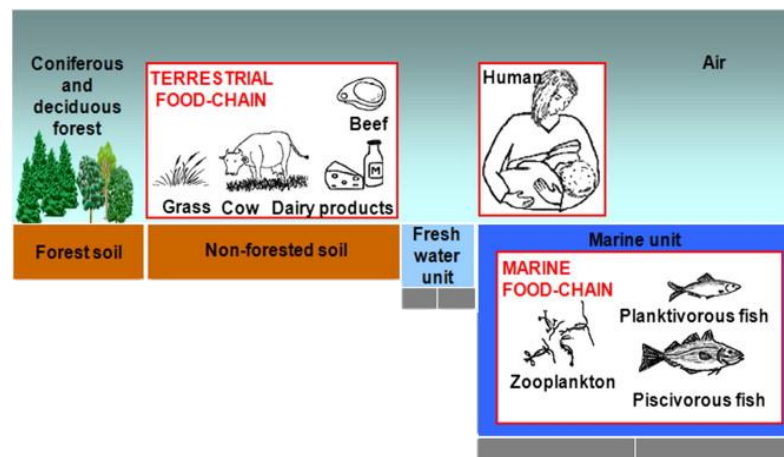


Linking human concentrations and emissions

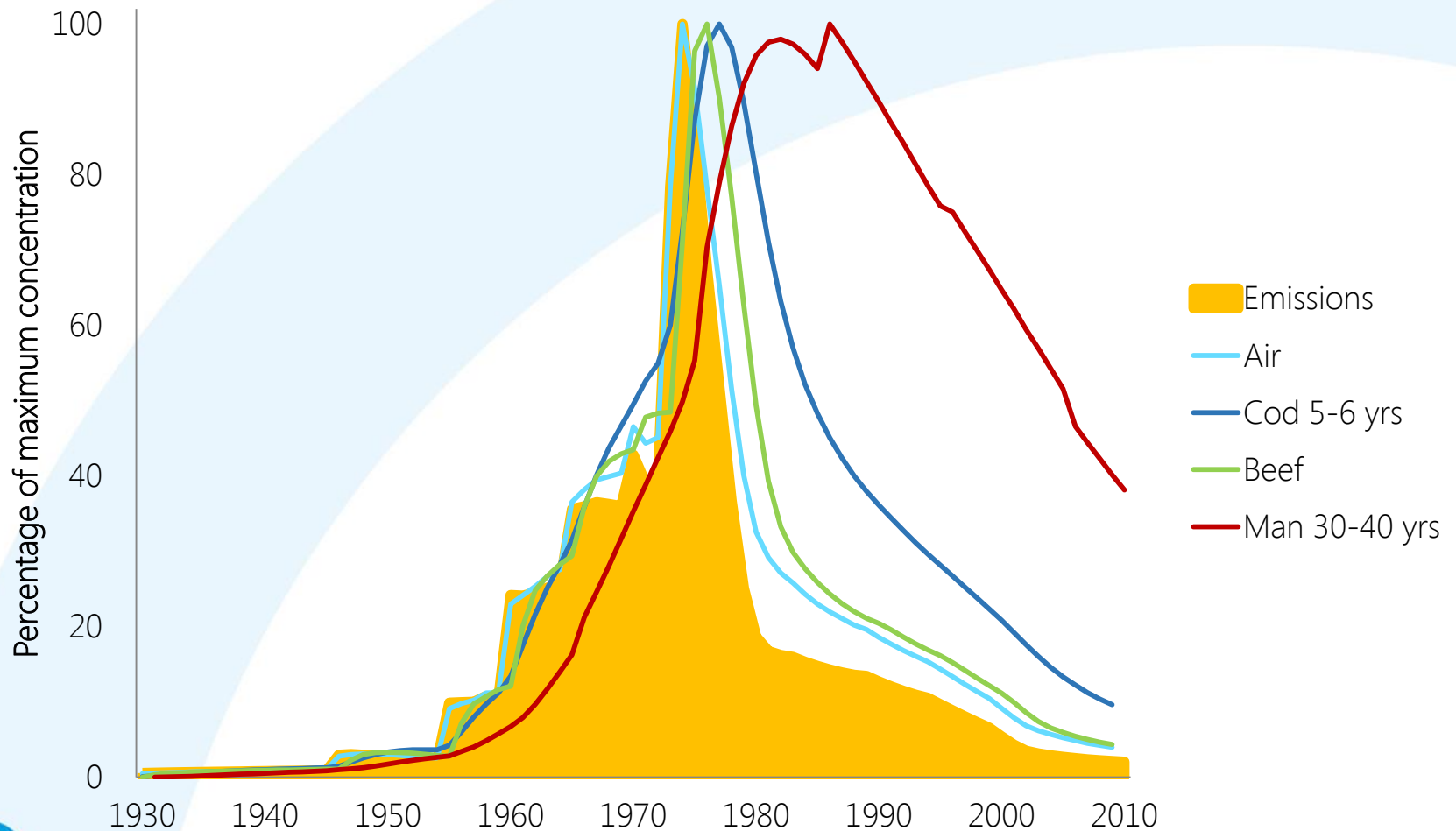
PCB-153



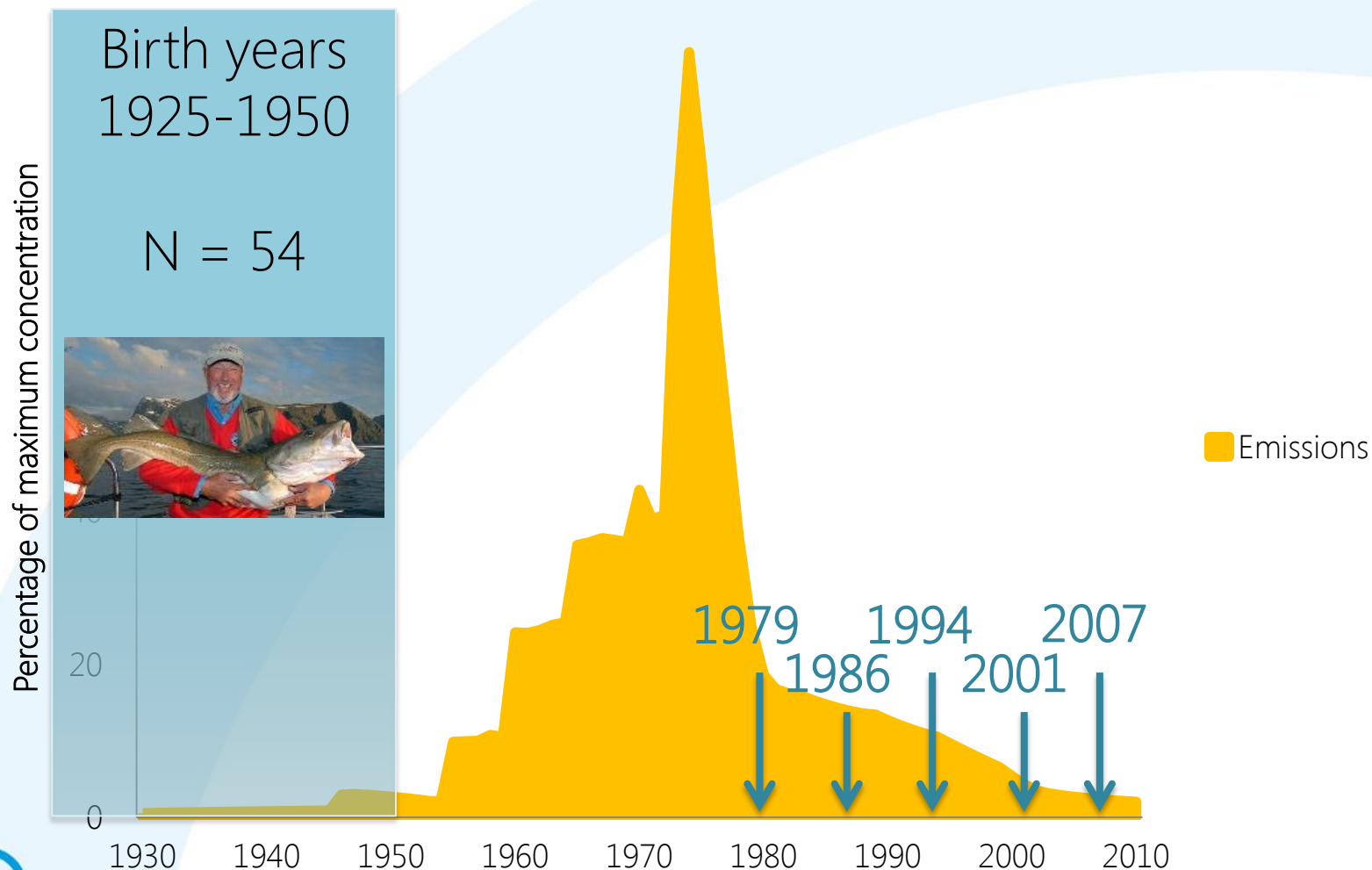
Mechanistic modeling



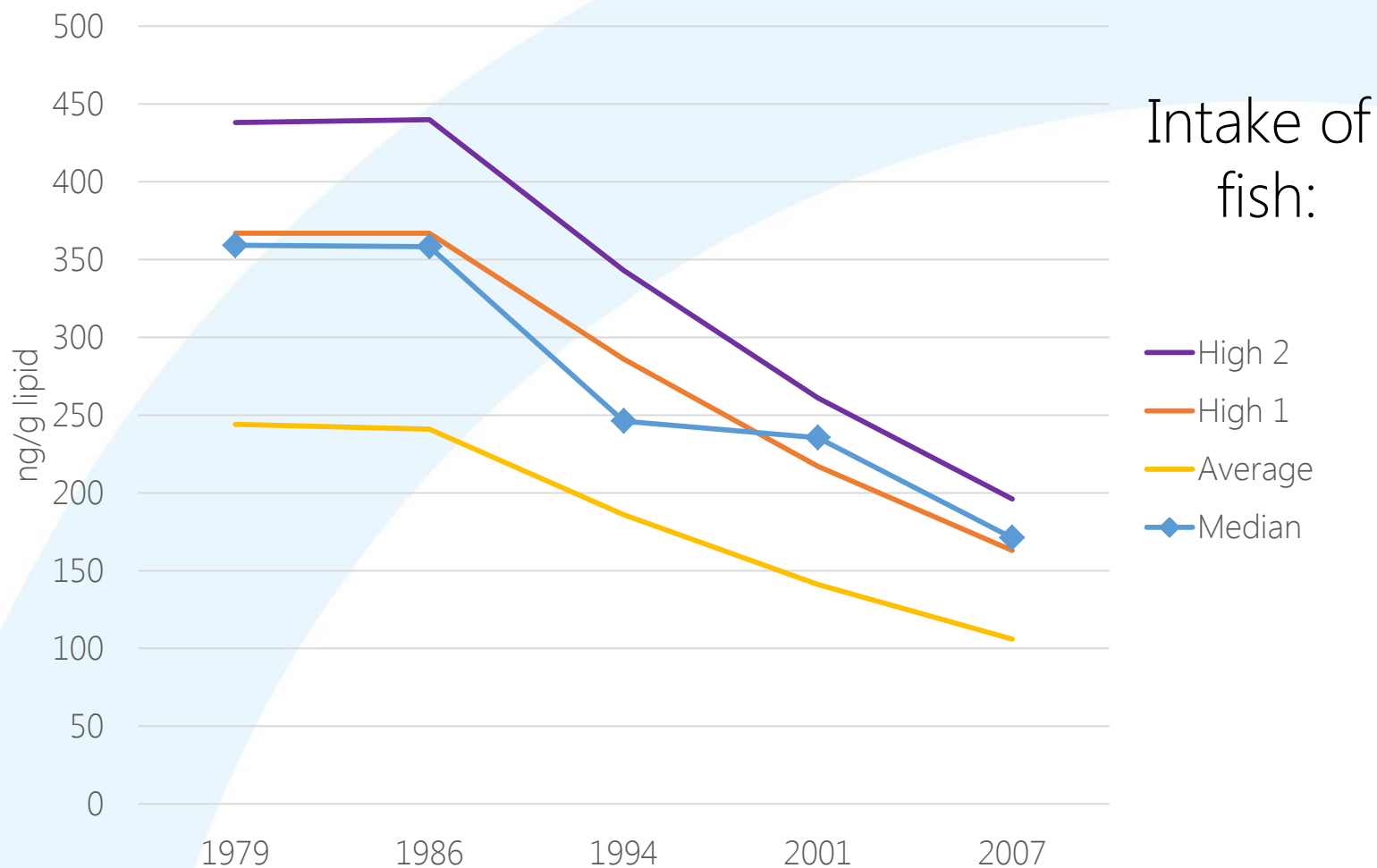
Modeling time trends



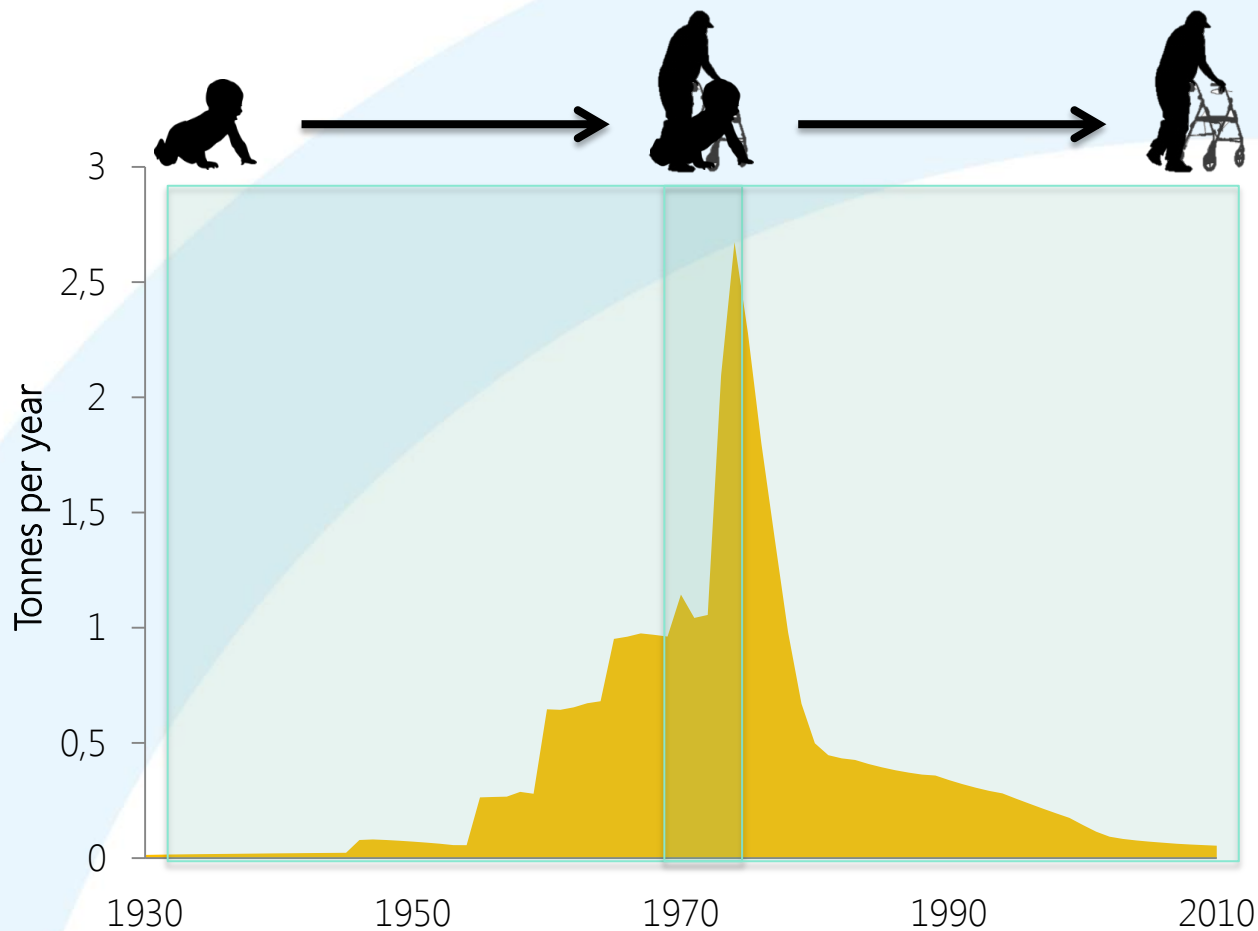
Modeling time trends – the Tromsø men



Modeling time trends – the Tromsø men

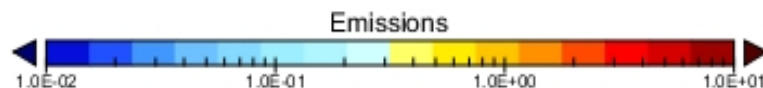
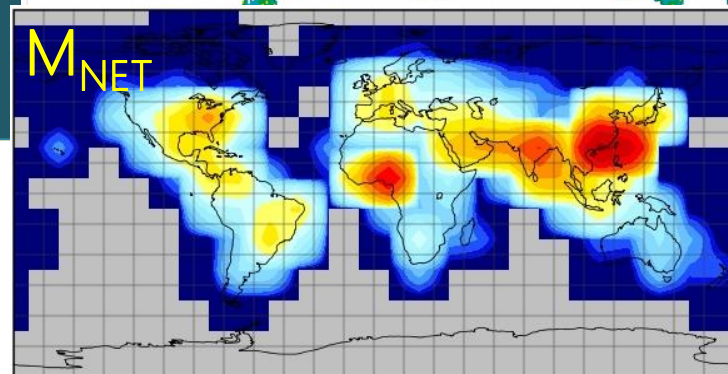
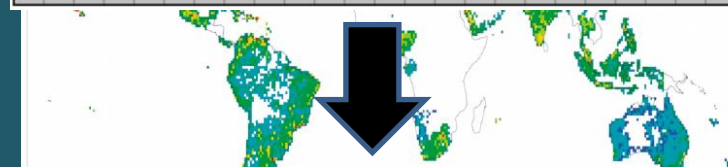
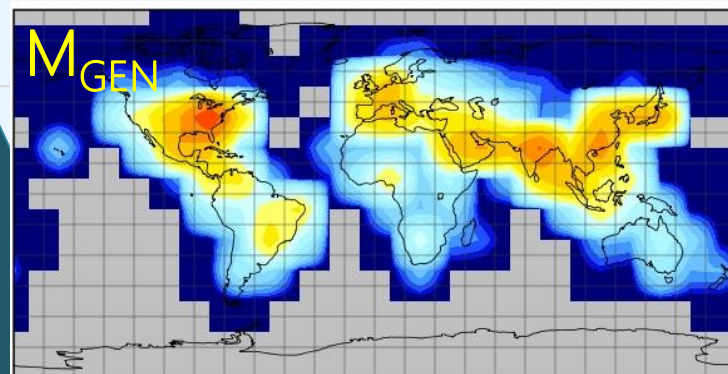
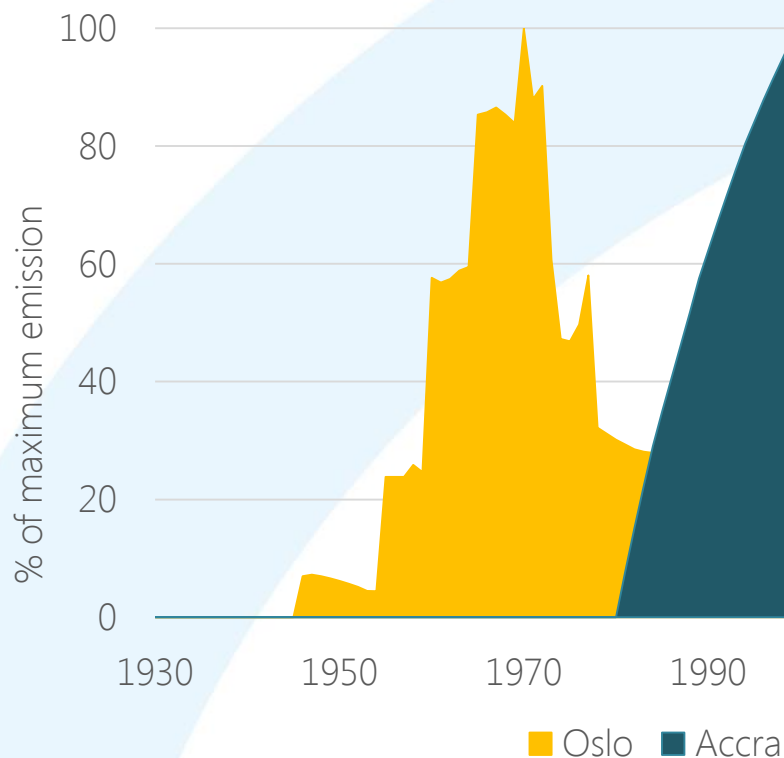


Lessons learned – the Tromsø men



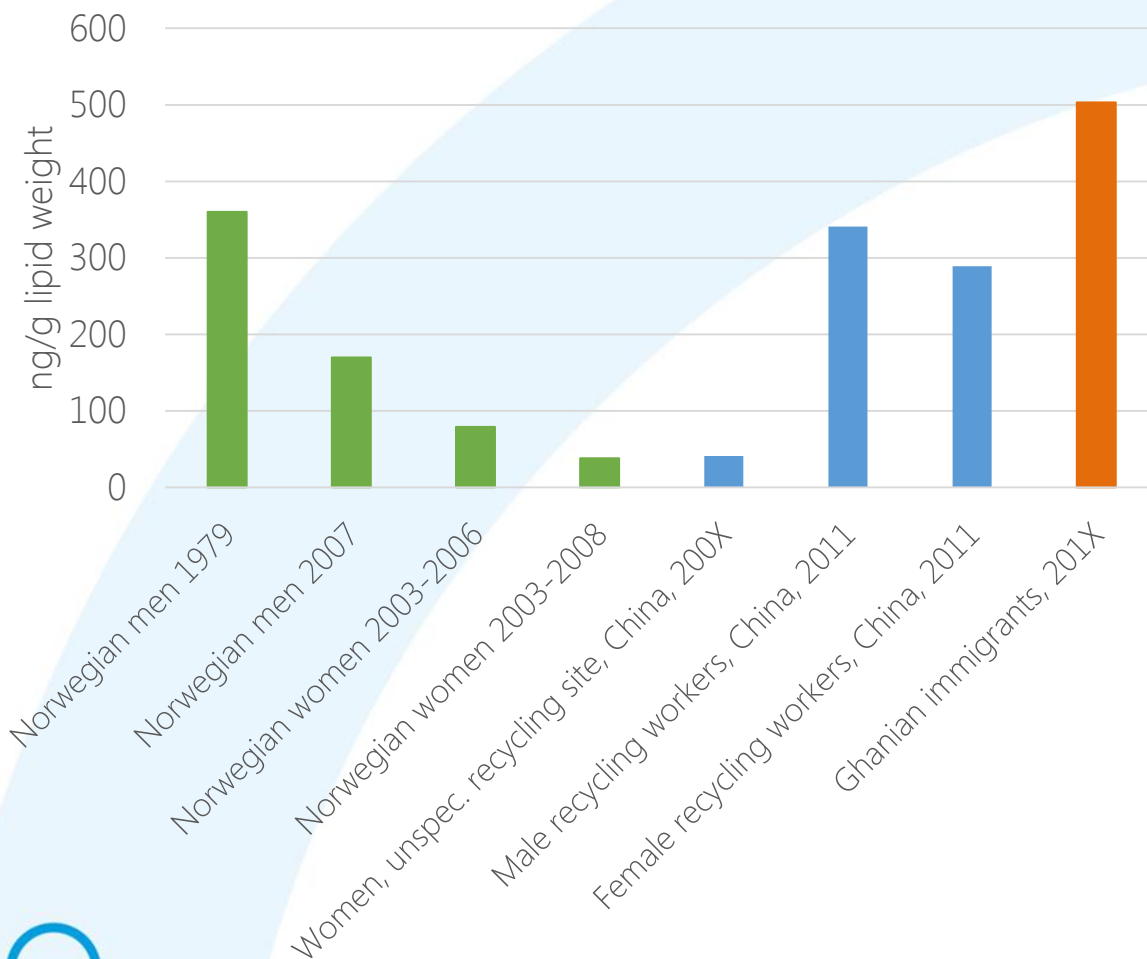
Emissions from transboundary waste streams

Electronic waste

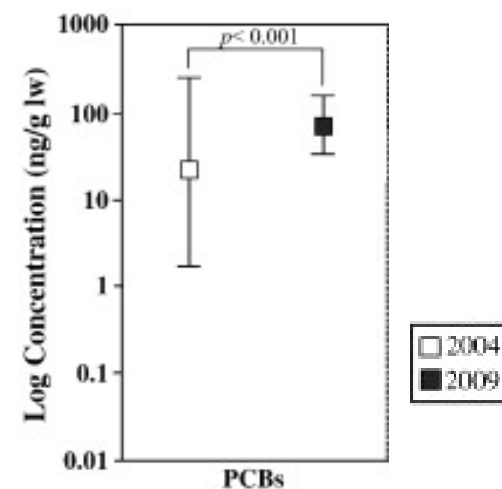


Monitoring from known e-waste areas

Blood serum PCB-153

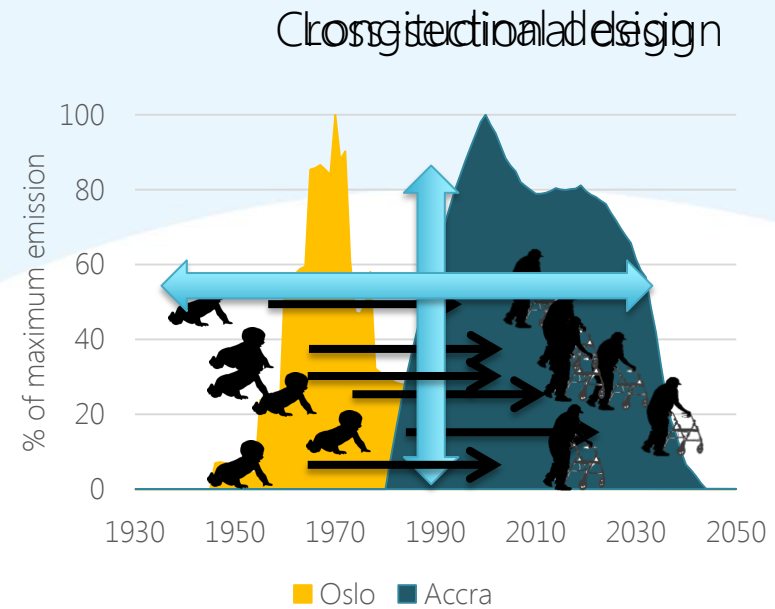


Breast milk, Ghana:

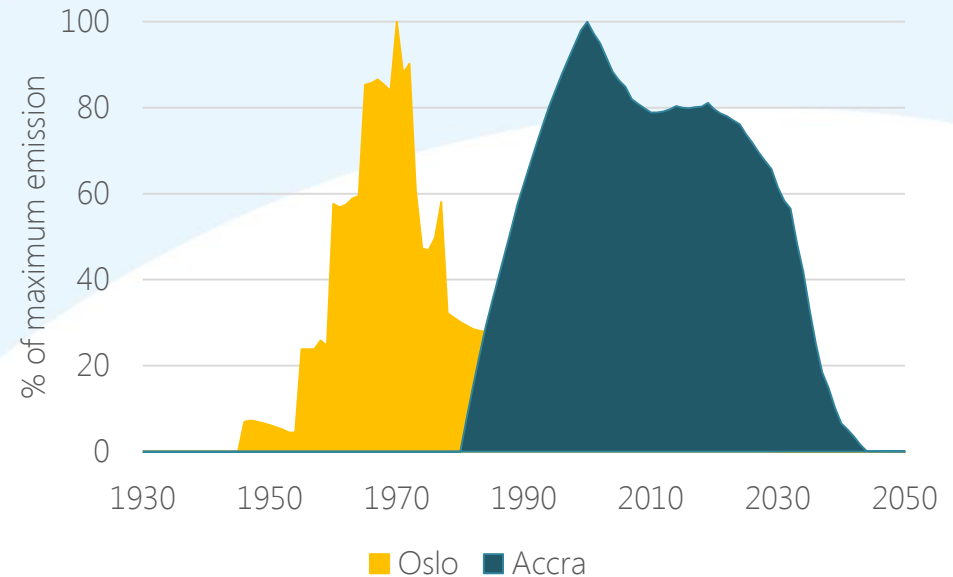


Spatially and temporally divergent monitoring trends

- Time trends: sampling year, birth cohorts, age, emissions
- Spatial trends
- Study designs
- Other factors
(e.g. dietary habits and their changes)



Thank you for your attention!



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