

Für Mensch & Umwelt

Umwelt
Bundesamt

Trends and advancements in sampling and preservation
of samples for the identification of emerging concern

What are the challenges for environmental specimen banks?

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German Environment Agency



Structure

1. WHAT ARE ENVIRONMENTAL SPECIMEN BANKS?
2. ENVIRONMENTAL SPECIMEN BANKS IN A CHANGING WORLD
3. JOINING FORCES AND VISIBILITY
4. ICESB 2017

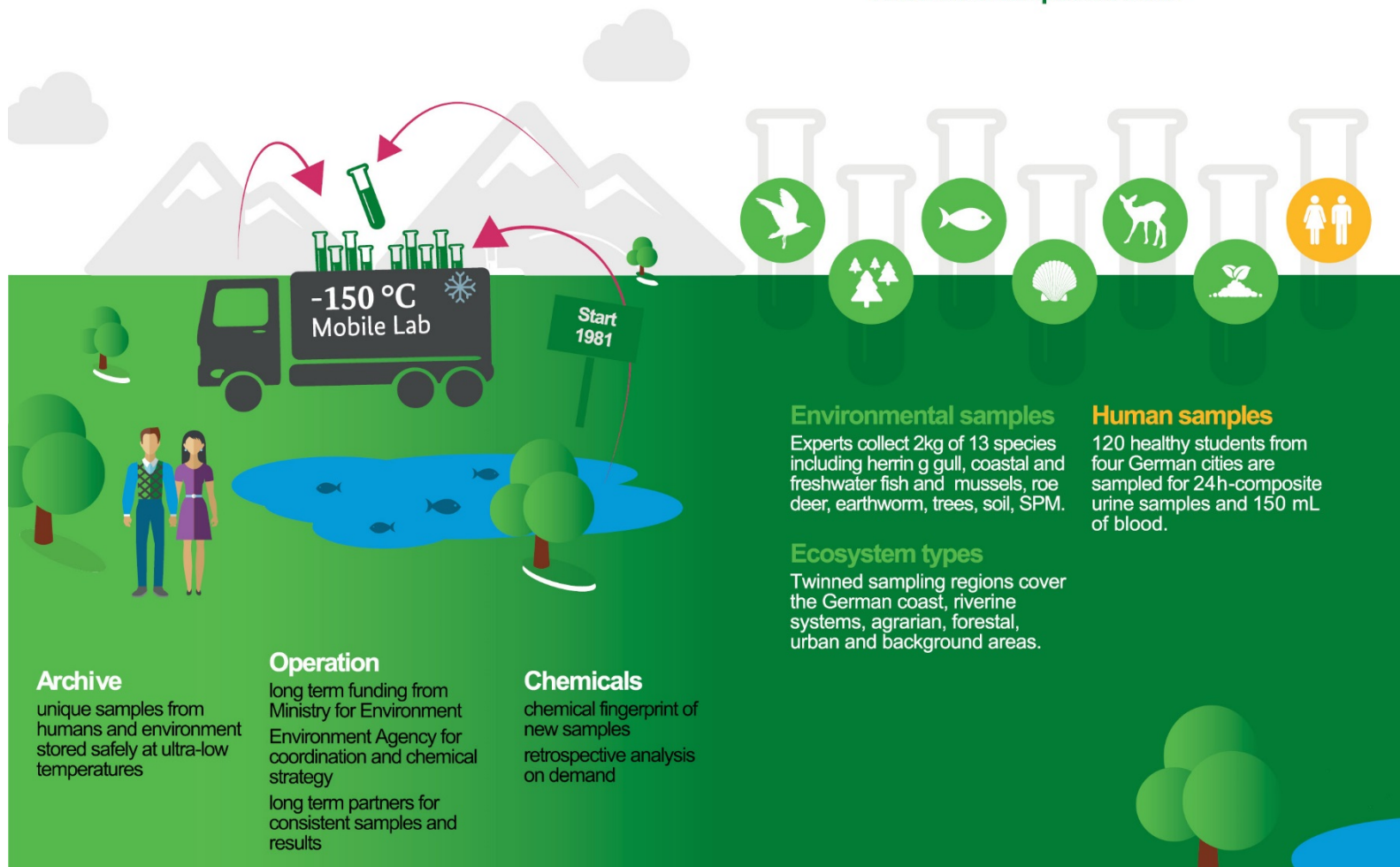


What are the challenges for environmental specimen banks?

WHAT IS AN ENVIRONMENTAL SPECIMEN BANK?

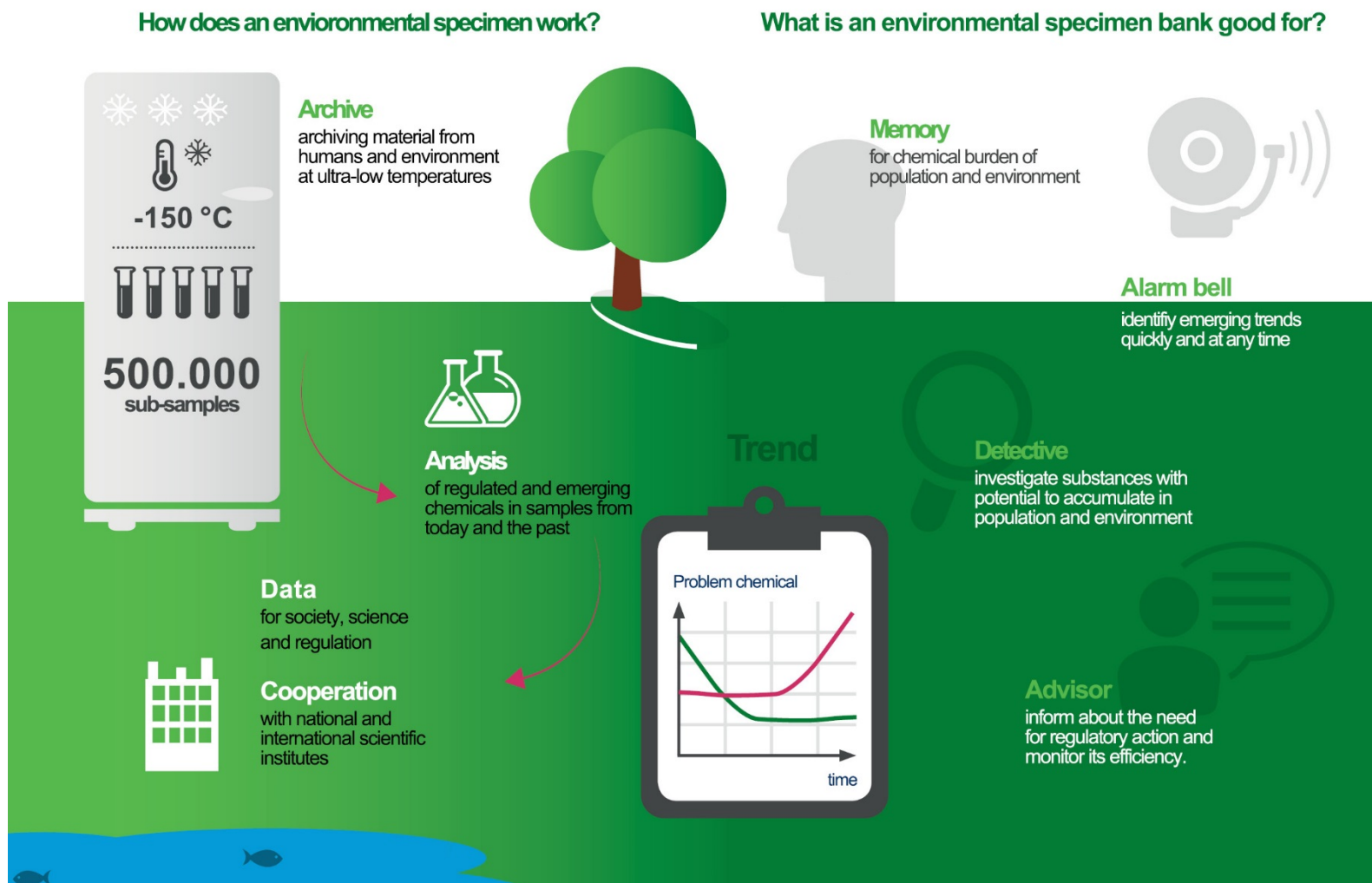
What is an environmental specimen bank?

What kind of samples are there?



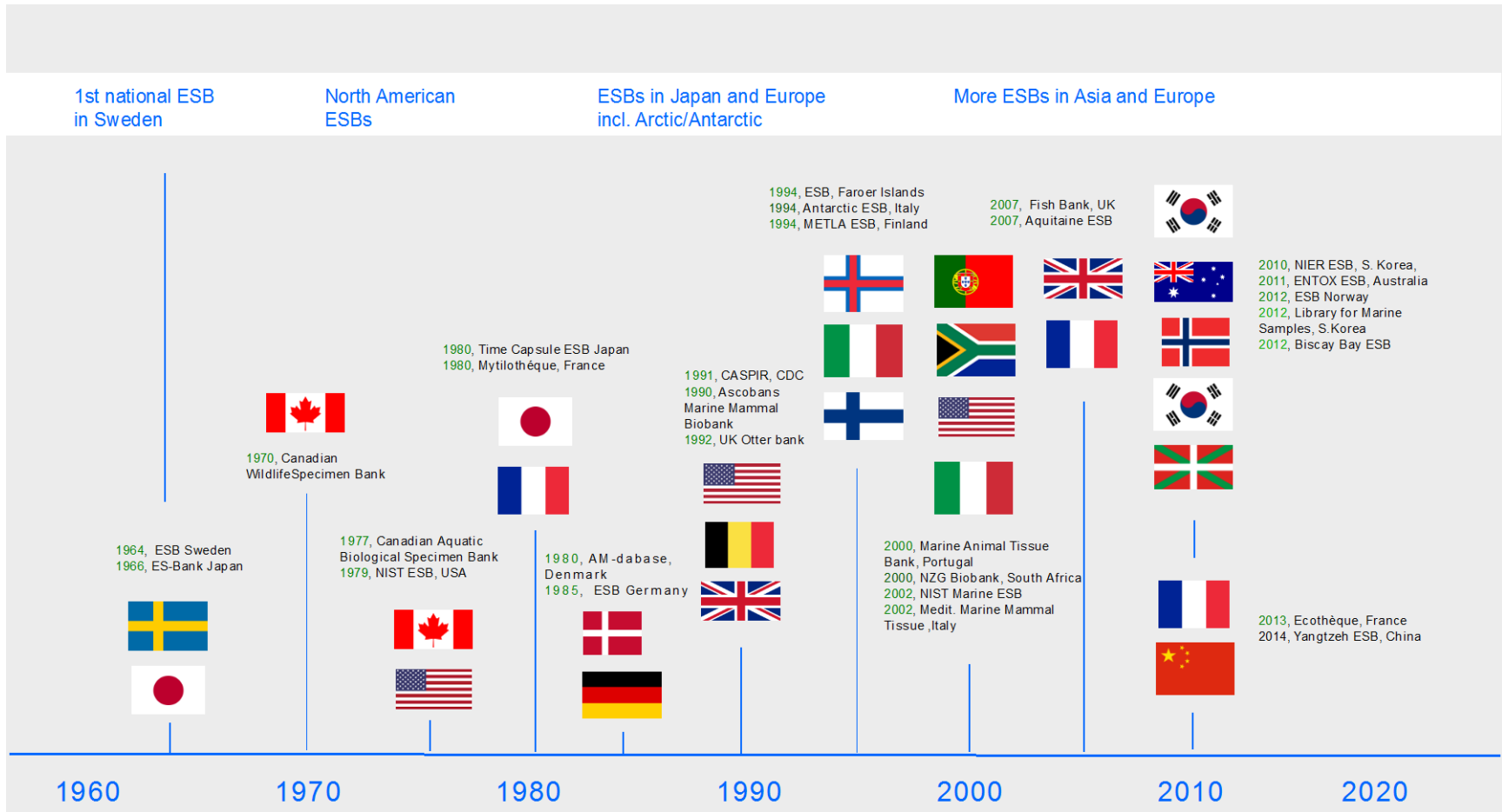
What are the challenges for environmental specimen banks?

WHAT IS AN ENVIRONMENTAL SPECIMEN BANK?



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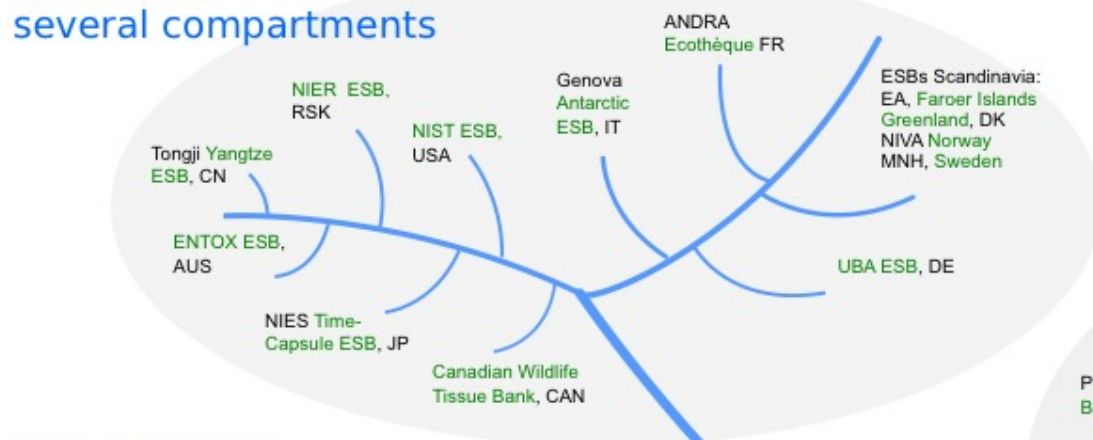
ENVIRONMENTAL SPECIMEN BANKS - EVOLUTION



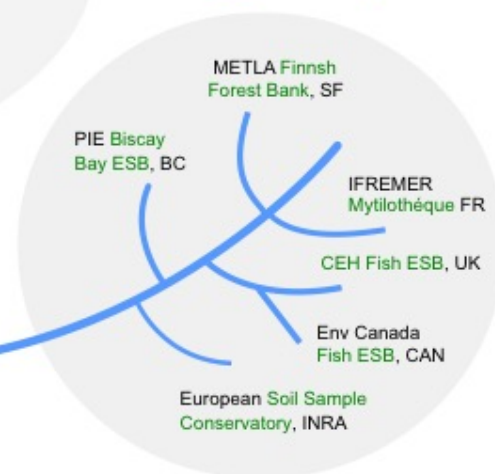
What are the challenges for environmental specimen banks?

ENVIRONMENTAL SPECIMEN BANK – A STATEMENT FOR DIVERSITY

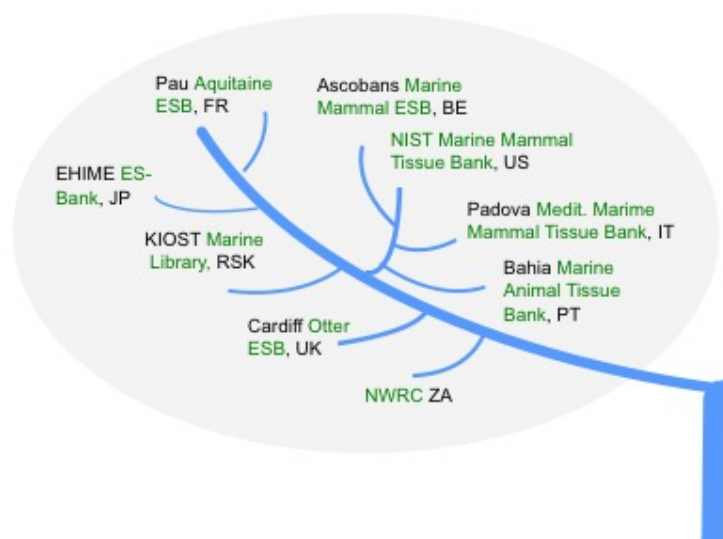
systematic -
several compartments



systematic -
single compartment



opportunistic



What are the challenges for environmental specimen banks?

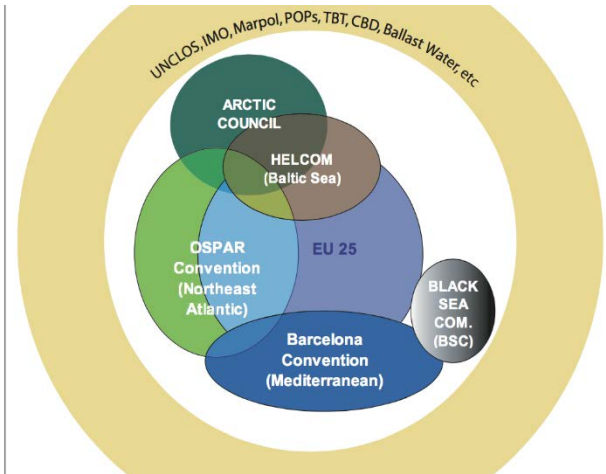
ENVIRONMENTAL SPECIMEN BANKS – THE GLOBAL VIEW



ANDRA, 2015

What are the challenges for environmental specimen banks?

ENVIRONMENTAL SPECIMEN BANKS – OLD AND NEW OBJECTIVES



The example of the ANDRA Ecothèque shows that the concept of specimen banking can be applied to special needs, e.g. long term surveillance of a nuclear waste repository.

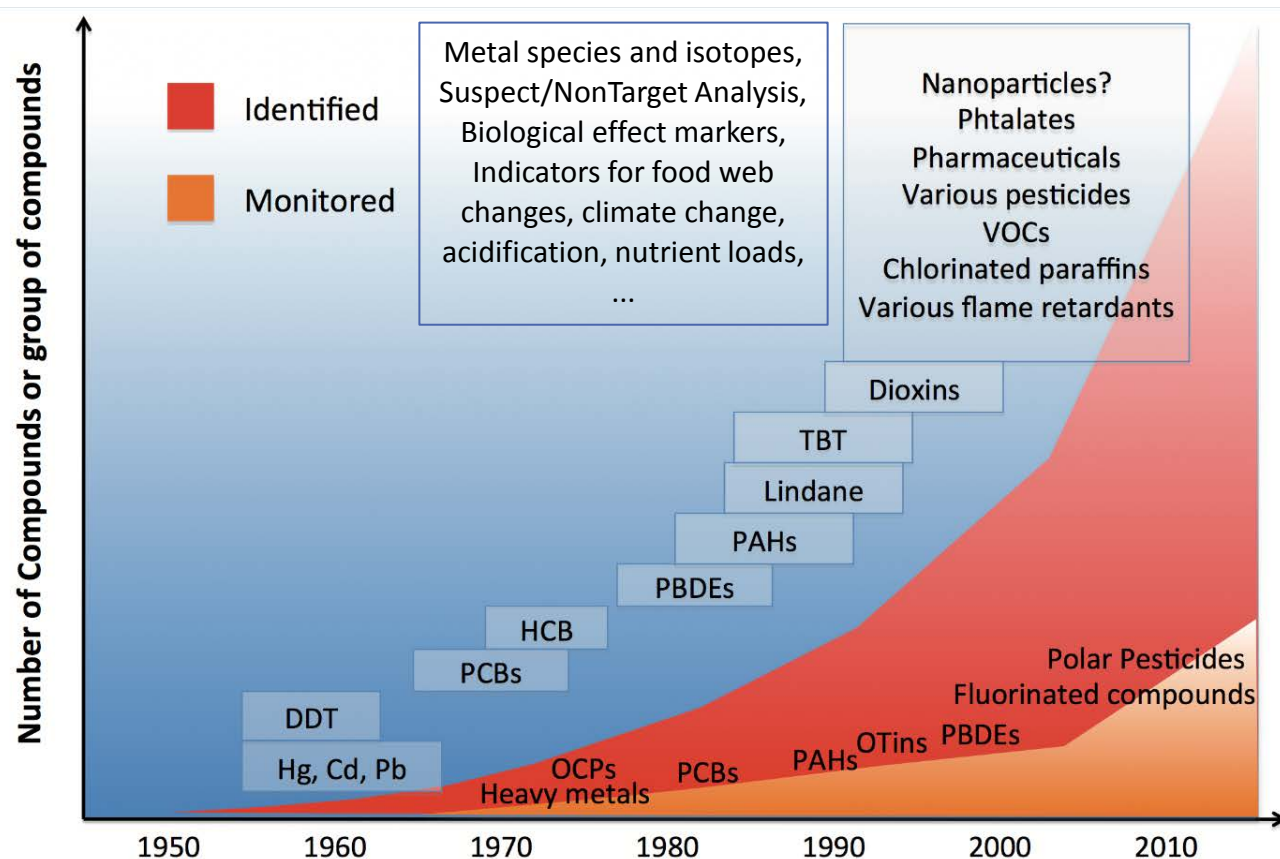


The common denominator are cold archives where samples are stored for environmental problems that we are not aware of, yet.

Pictures: EC (2006), ANDRA (2015), Wikipedia (2015), Fraunhofer IBMT (2013)

What are the challenges for environmental specimen banks?

ENVIRONMENTAL SPECIMEN BANKING IN A CHANGING WORLD



Chemical analysis is developing with tremendous speed.

Many of these techniques can be applied to archived samples

Some techniques may open the door for new samples, e.g. water, air

Figure adapted from: EC (2011), Position paper 16, Monitoring Chemical Pollution In Europe's Seas

ENVIRONMENTAL SPECIMEN BANKING IN A CHANGING WORLD

WHAT WE WILL BE MONITORING IN 2050? AND WHAT TOOLS WILL WE BE USING in 2050?

- **Biological effects assessment** is improving rapidly
- New idea of **complementary virtual ESBs** based on Non Target Spectra
- Integrative exposure assessment of **human and environmental monitoring data** are high on the political agenda
- ESBs are testing **new environmental matrices**, e.g. sewage sludge, suspended particulate matter and passive samplers for water and air
- New monitoring compartments, e.g. **urban environments**/megacities
- **Big data** will allow for a more integrative analysis of the chemical and biological parameters

What are the challenges for environmental specimen banks?

JOINING FORCES

SHARING DATA

There are a lot of ESB data on certain compounds, e.g. old and new POPs, metals but also non-regulated compounds. These data may support

- Prioritisation and effectiveness evaluation under [Stockholm Convention](#)
- P and B-assessment under e.g. [REACH](#) legislation
- Global [Minamata Convention](#) on the restriction of Mercury pollution
- EU Information Platform for Chemical Monitoring ([IPCHEM](#))
- Norman databases

Most ESB data are currently not readily accessible including data on novel and emerging chemicals

ESBs can provide chemical monitoring information of defined quality and traceability to chemical management and other policy fields



What are the challenges for environmental specimen banks?

JOINING FORCES

PROJECTS & FUNDING OPPORTUNITIES

- European Territorial Cooperation ([INTERREG](#)): From 2014 to 2020, the EU provides 1.4 billion euros for infrastructure programmes.
- [Horizon 2020](#) with nearly €80 billion of funding available from 2014-2020,
 - e.g. [Marie Skłodowska-Curie actions](#) on Innovative Training Networks for research training/doctoral programmes incl. Non-European partners
- Metrological community is interested in environmental specimen banking, e.g. [EURAMET](#) programme
- Ongoing applications, e.g. COST, BONUS, EURAMET
- National ESB projects including samples from other ESBs?
- Potential for Norman project including ESB samples?

Most ESB data are currently not readily accessible including data on novel and emerging chemicals

ESBs can provide chemical monitoring information of defined quality and traceability to chemical management and other policy fields

ESB project proposals have good funding perspectives. Monitoring data as well as temporal trends are becoming increasingly important.

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VISIBILITY AND INTER-ESB

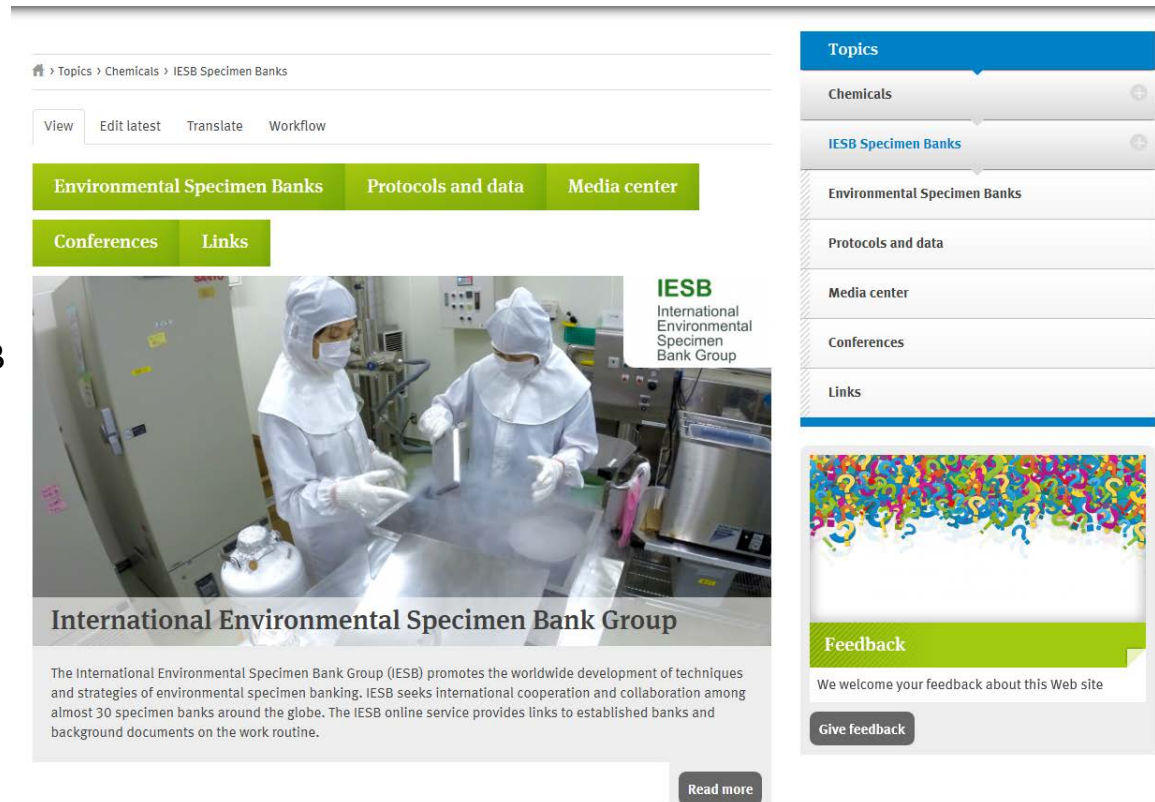
INTER-ESB group

The international environmental specimen bank group promotes the worldwide development of technologies and strategies of environmental specimen banking. IESB seeks the cooperation and collaboration among almost 30 specimen banks around the globe.

WEBSITE

IESB Website will move under the umbrella of the UBA website.

We need your ideas and your pictures, protocols, movies, etc., ...



Quelle: UBA, NIES (2015)

What are the challenges for environmental specimen banks?

International Environmental Specimen Bank Conference, 2017

Research center for experimental marine biology and biotechnology



Vielen Dank für Ihre Aufmerksamkeit

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