

A chemical regulators perspective on screening of contaminants

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Responsibilities:

- Competent authority (CA) for REACH
- CA for other directives aimed at chemicals (cosmetics, toys, ROHS directives)
- CA for international chemical conventions (Stockholm, Mercury, Montreal etc.)
- Expert-support to other units in the ministry of the Environment (e.g., the water framework directive, waste directive, aquaculture)
- Arctic collaboration
- Not responsible for pesticides, pharmaceuticals, food and food products etc.

Main activities:

- Ministry services (media-handling, EU-negotiation, parliament services)
- Chemicals in consumer products
- Environmental and health assessments of chemicals
- Endocrine disruptors, nanomaterials, allergy

Screening activities in DK

- The national monitoring program, NOVANA
- Consumer projects in the Danish EPA,
- DANCEA (Danish Cooperation for Environment in the Arctic)
- Policy driven actions (e.g. endocrine disruptors in the environment).

Two perspectives on screening

Relevance for chemical regulation

- Regulations where monitoring is demanded
- Regulations substances are evaluated
- Regulations under development

Relevance for chemical regulators

- Scientific developments
- Support to decision making / policy

Regulations with monitoring

EU

- Water framework directive (WFD)
- Sewage Sludge Directive 86/278/EEC (heavy metals)
- Nitrates directive 91/676/EEC
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United Nations

- Stockholm convention

Arctic Council

- DANCEA/AMAP

OSPAR

- The Co-ordinated Environmental Monitoring Programme (CEMP)
- The Comprehensive Atmospheric Monitoring Programme (CAMP)
- Riverine Inputs and Direct Discharges (RID),

Helcom

.. and several others

The water framework directive (2000/60/EC)

- Goal of achieving good chemical status before 2015
- Priority substances must occur at concentrations below EQS
- Priority substances:
 - Occurrence in EU-water
 - EU-wide distribution (generic problems, not local pollution)
 - Environmental quality standards (EQS) exceeded in EU (based on monitoring data)
 - Conclusions of risk under EU-risk assessment programs (includes risk on humans due to substances in water)
- Main driver for national monitoring programs
- Regular revisions of the list of priority substances
- Historical data over-emphasized due to weight on monitoring data
- Need of new screenings to assess new needs for monitoring

Existing 33 Priority substances in WFD

| | | |
|---|---|-------------------------------|
| Alachlor | Isoproturon | Polyaromatic hydrocarbons |
| Anthracene | Lead and its compounds | (Benzo(a)pyrene) |
| Atrazine | Mercury and its compounds | (Benzo(b)fluoranthene) |
| Benzene | Naphthalene | (Benzo(g,h,i)perylene) |
| Brominated diphenylether (*) | Nickel and its compounds | (Benzo(k)fluoranthene) |
| Pentabromodiphenylether (congener numbers 28, 47, 99, 100, 153 and 154) | Nonylphenol | (Indeno(1,2,3-cd)pyrene) |
| Cadmium and its compounds | (4-nonylphenol) | Simazine |
| Chloroalkanes, C ₁₀₋₁₃ (*) | Octylphenol | Tributyltin compounds |
| Chlorfenvinphos | (4-(1,1',3,3'-tetramethylbutyl)-phenol) | (Tributyltin-cation) |
| Chlorpyrifos (Chlorpyrifos-ethyl) | Pentachlorobenzene | Trichlorobenzenes |
| 1,2-dichloroethane | Pentachlorophenol | Trichloromethane (chloroform) |
| Dichloromethane | | Trifluralin |
| Di(2-ethylhexyl)phthalate (DEHP) | | |
| Diuron | | |
| Endosulfan | | |
| Fluoranthene (*) | | |
| Hexachlorobenzene | | |
| Hexachlorobutadiene | | |
| Hexachlorocyclohexane | | |

New candidate priority substances in WFD

- Ibuprofen
- Diclofenac
- Alpha-ethinyl estradiol
- 17-Beta estradiol
- PFOS
- HBCDD
- Dioxin
- PCBs
- Cyanides
- Zinc
- Heptachlor/Heptachlor epoxide
- Cypermethrin
- Terbutryn
- Cybutryne
- Aclonifen
- Bifenox
- Dichlorvos
- Dicofol
- Quinoxifen

The Stockholm-convention

- 12 initial POPs and 9 new POPs
- Some of the POPs are historical pollutants and not more relevant
- Members must either eliminate, restrict or avoid unintentional production
- Focus on emissions (releases from the source) [noteworthy in screening projects!]
- For the new POPs, some exceptions might be critical for the release to the environment (PFOS, polybromerede diphenylethers (flame retardants), tetra- and pentaBDE, hexa- og hepta-BDE) [!]
- New substances under evaluation (short chained chloroparafins (SCCS), HBCD and endosulfan)

Global monitoring plan (GMP) under Stockholm

- Co-operative Program for Monitoring and Evaluation of the Long-Range Transmission of Air Pollutants in Europe (LRTAP)
- Arctic Monitoring and Assessment Program (AMAP)
- Background Air Monitoring of Persistent Organic Pollutants in East Asian Countries
- Global Atmospheric Passive Sampling Survey (GAPS)
- Integrated Atmospheric Deposition Network (IADN)
- World Health Organization human milk survey WHO
- and others...

Long-Range Transmission of Air Pollutants in Europe (LRTAP)

- One of 8 protocols is on Persistent organic pollutants (POPs)
- Less members => More restrictive than the Stockholm-convention
- Substances not on Stockholm
 - Dicofol (byproduct or /intermediate in DDT production)
 - Endosulfan (pesticide)
 - Hexabromocyclododecan (HBCD(D)) (flame retardant)
 - Pentachlorophenol (biocide)
 - Trifluralin (pesticide)

AMAP (Arctic Monitoring and Assessment program)

Levels, trends and effects of:

- Persistent Organic Pollutants (POPs)
- Heavy metals (Hg, Pb, Cd)
- Radionuclides
- Petroleum hydrocarbons
- Climate Change and UV
- Short lived climate forcers (black carbon, CH₄, ozone precursors),

Samples are collected from:

- Air, Water, Snow, Ice & Sediments
- Plankton, Invertebrates & Fish
- Mammals & Birds
- Humans



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Regulations where substances are evaluated

- REACH and CLP
 - Biocides directive
 - Pesticides directive
 - OECD HPV-program
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- Screening data can be important information for the assessments
 - Timing is difficult

Two perspectives on screening

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Regulations under development

- EU-sludge directive.
- Limit values for cadmium, copper, nickel, lead, zinc, mercury, chromium (86/278/EEC)
- In the revision, PCB, PAH, PCB , LAS, NPE, DEPH and dioxins is under consideration.
- The revision process takes several years

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Scientific developments relevant for regulators

- Sampling methods (passive samplers)
- Analytical methods (Monitoring of estrogenicity)
- Pollution of surface waters from groundwater
- Bioavailability corrections for metals (e.g. Ni and Cu).
 - Need for measurement of parameters with influence on metal speciation (DOC, pH, Ca, Mg..)
 - The distribution of the concentrations of these parameters are needed in many countries

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Conclusions

- Focus on the relevant regulatory processes is important
- Orientation in national monitoring (and screening) could be more towards other regulations than the WFD
- Focus on historical pollutants is often irrelevant
- New substances on Stockholm with exceptions
- Substances from LRTAP
- Scientific developments must be integrated in regulation