Report from
Workshop on environmental screening and risk assessment

Experiences and challenges

Conference facilities: Landskrona castle (http://www.citadellet.com)
Lodging: Hotel Øresund (http://www.hoteloresund.se)

24th to 25th of September 2007

Participation
The workshop will gather Nordic key persons in screening activities, hazardous substances monitoring, risk assessment and international chemicals work. A list of participants is attached to this report.

Goals for the meeting

1. Present results and impacts of the project "Joint Nordic Screening of Organic Chemicals in use".
2. Examine the state of art for screening of chemicals in the Nordic environment and discuss how far we have reached since the Sigtuna workshop in 2001
3. Discuss how we can make the best use of monitoring in chemicals risk assesment work.
4. Discuss focus and approaches to future collaborations in screening, and identify areas of particular interest.

Information from the presentations at the workshop is not included in this report, but they can be downloaded from the net site of the Nordic cooperation: http://www.ust.is/ness/

1. Welcome and opening

- Miljöchef **Högni Hansson** from Landskrona municipality wished the participants welcome to Landskrona and the workshop.
- **Ola Glesne**, member of the Joint Nordic Screening Group gave a brief introduction to the workshop.

2. Presentation of the current status for environmental screening in risk assessment.

- **Gabriele Scøning** from Europe Environment Agency (EEA) gave a presentation on "Applications of environmental screening monitoring data in European environmental assessments".
- **Jukka Mehtonen** from HELCOM gave a presentation on "Future plans for HELCOM as a response to European processes"

3. Presentation of results and achievements in the Joint Nordic Screening Project.

- **Britta Hedlund** from Swedish Environmental Protection Agency, member of the Joint Nordic Screening Group, gave a presentation on "Approach, main findings and use of the results in the Joint Nordic Screening Project".
- **Ola Glesne** from Norwegian Pollution Control Authority, member of the Joint Nordic Screening Project gave a presentation on "Experiences gained from the project work"

4. Potentials of environmental screening.

- **Martin Schlabach** from Norwegian Institute of Air Research presented a case study on "Siloxanes in the Nordic environment"

5. The use of screening/monitoring results in risk assessment, regulations and control.

As a background for group discussions, this part of the workshop was opened by four presentations in plenum:

- **Fredrik Andreasson** from the County Administration in Skåne presented "What do the people working with risk assessment need from environmental screening, and how can input from the Nordic chemicals group or other international forums help us pick the right substances?"
- **Patrik Fauser** from National Environmental Research Institute of Denmark presented "How can theory and modelling help making the right choice of substances for screening, and what are the limitations of the approaches?"
- **Stellan Fischer** from Swedish Chemicals Inspectorate presented "How can products information help us pick the right substances and sampling points? Are there any need for improving this information?"
- **Gudrun Bremle** from the County Administration in Jönköping presented "Information on screening results: Approaches, channels and recommendations"

After the presentations the participants were divided in three groups to discuss the themes presented:

Group 1: "What do the people working with risk assessment need from environmental screening, and how can input from the Nordic chemicals group or other international forums help us pick the right substances?"

Discussion group leader: Lotta Lewin-Pihlblad
Referee: Matti Verta
Other participants: Lærke Thorling, Maria Dam, Bengt Melsäter, Jukka Mehtonen, Susanne Bontup, Bård Nordbø, Eirik Fjeld, Ola Glesne, Linda Rosqvist, Fredrik Andreasson, Henna Piha.

No person in the group was working specifically with risk assessment of chemicals. The views of the group therefore mostly represents the monitoring side.
The main focus of the discussions were screening of the "new" and used chemicals, for which there are limited information of measured levels in the environment.

New chemicals that are under the REACH procedure, but are not in use yet, can not be screened in the environment.

The group identifies the following issues to be considered in the screening work:

- Do risk assessment people in different countries use the screening data? The anwer to this is ”YES”!
  - This is also an EU level need. Questionares on data (at least from substances that are on the waiting list) have been sent to countries
  - This is also needed at the local level (access to data?)
  - Likewise in companies: In Sweden companies are very interested in changing to substitutes if problems occur, e.g. through screening
  - Likewise at international/global level and convention preparations. (E.g. Arctic findings are very important.)
  - Groundwater data are mostly missing
  - Do we need different approaches to substances that have or have not ecotoxicological data?
  - Usually screening has been done mostly for substances with toxicological data
  - In a screening study there may be ”free riders” with lower priority, which are added at a low cost. (Can be analysed in the same prepared sample)

- Where to compare? What do the concentrations mean?
  - PEC comparison (usually worst case scenario in PEC)
  - PNEC comparison
  - New info frequently coming from toxicity studies. Whose responsibility is the dating of PNECs and LOELs? EU work in WFD/Priority substances
  - Is there a need for NMR cooperation in PNEC and EQS work?

- Where to focus
  - Look at substances that are on the waiting list of agreements and directives or in the EU/OSPAR/HELCOM/Stockholm RA procedure
  - Get info from national authorities
  - Communication with groups importantant (screeneers, research groups, authorities)
  - The Swedish KEMI system kind approach Seemed interesting
  - NoMiracle Multi Criteria Ranking Model approach to the environment? Problem: Lack of data!
  - Have to accept ad hoc type work
  - Site focus on remote or industrial/urban regions? Both needed
  - Degradation products, metabolized products and precursors of chemicals should also be considered

- General
  - Information and access to data must be made available to different end users better and in an understandable way
    - Also to other screening and research groups
    - Improve NMR Screening web site, links to national web sites
  - Screening data can be used by companies and authorities to better cope with the problems

- A problem: In many cases companies do not know what substances they are using
- We have to remember that screening is only a small piece of info and maby a starting point

Group 2 & 3 (theme two and three merged): How can products information, theory and modelling help us pick the right substances and sampling points?- Are there a need for improving this information?

Group leaders: Flemming Ingerslev & Tuomas Mattila
Referees: Jakob Strand & Christel Benestad
Other participants: Stellan Fischer, Britta Hedlund, Anne Karin Johanson, Ingunn Myhre, Patrick Fauser, Sami Huhtala, Eva Brorström Lundén, Kati Suomalainen.

1. Can product information help us for the right selections ?

It depends very much on the data availability from product registers and databases.

Strengths:

- The SPIN database based on the Nordic product registers are very comprehensive and solid, and a good basis for selection of relevant substances. It is also relevant and useful for other EU countries, and also for countries outside EU as well.
- The Nordic product registers consists time series on the use of substances. The REACH database will not. Time series are very useful for informing public, industry and authorities.
- Inclusion of data from the product register in models like KEMI-stat or the multi-criteria model can assist us to focus on the kind of products where candidate substances are used. This is important for the exposure assessments.

Limitations:

- Negative results on prioritisation of candidate substances do not necessarily mean that the substances are not relevant. Not all substances are included. Here are some examples:
  - Pharmaceuticals are not included by product registers and SPIN.
  - Siloxanes in Finland where no product information existed although they were used in products and found in the environment.
  - Some types of perflourinated compounds was not included in product register in Norway, because they were not classified, although relevant for ERA.
  - Some types of brominated flame retardants are not in the product registers.
  - Also relevant for nanoparticles.
- It is also a problem that some product data are confidential.
- Substances in imported articles are not included in Nordic product registers.
- Secondary substances i.e. transformed/degraded substances during manufacture or in the environment (and also impurities) are not included in the product registers and can also be highly relevant for environmental and human risk assessments.
- Limited information on the environmental fate and toxicity of the substances. It should be more integrated with the exposure assessment.
- We have a static view on the risks, but this is wrong. It will be refreshed. Risk assessment will improve/change over time.

2) Are there alternatives/supplements to the Nordic databases?

- It is possible to get more detailed data from the Nordic procuct registers than what is available in the SPIN database.
- Dialog with industry (but not always easy, e.g. for imported products).
- Patent registers available at the internet is also a possible data sources on the use of substances.
- The REACH data base
- Specialised reports on specific substances and products are valuable background information.

3) Is there a gap between modellers and end users?

- Prioritisation criteria for selection of candidate substances can be presented in a more easy and focussed way. They are not fully applicable for discussions on selection/prioritisation of screening candidates by all relevant authorities.
- Sweden will try and use the exposure index (presented by S. Fisher) as a basis for selection of candidate substances. The exposure index is used as a starting point for a first selection of candidate substances, but the candidate list has afterwards to be evaluated by expert judgements, before the final prioritisation of substances relevant for screening studies.
- Current status is that a “pilot-study” is started in Sweden. Similar action should/might be taken on Nordic level.

4) Other important criteria that can drive the substance selection.

- It was mentioned that the selection of candidate substances also is dependent on the focus of the selection criteria. It can focus on risk for humans or the environment. For the environment P, B & T can be the starting criteria like in EU ERA.
- Characterization of a source (e.g. fish farm, a landfill) can drive the substance selection.
- The availability of reliable analytical-chemical methods for environmental matrices can drive the substance selection.

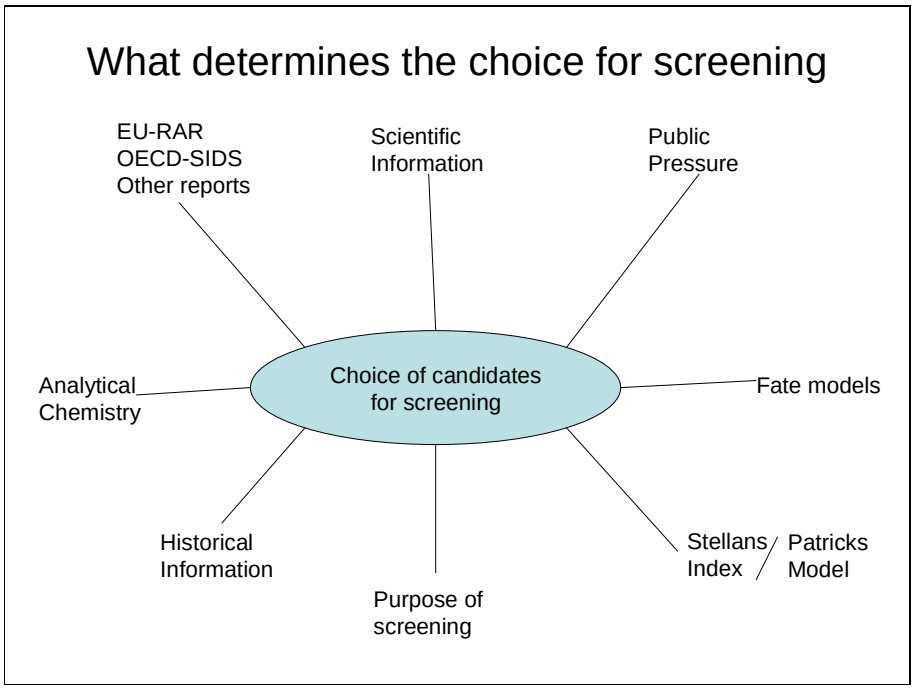
5) Important issues in planning screening studies.

- Selection of relevant environmental matrices should be based on exposure assessment, physical-chemical properties, fate models like EUSES and good sound portion of expert judgement.
- Whole effluent screening studies could be an new approach in screening of outlets. However at the moment it is more applicable for testing biological effects, like estrogenic or dioxin-like effects. It is much more difficult (and expensive) to identify all relevant substances by analytical-chemical methods, although some fractionation studies have been performed.
- Information on background levels are also necessary to explain the significance of screening results.
- Sample banks can be useful for future screening of unidentified substances.
- Methods developments and Quality assurance in analytical laboratories on a Nordic basis are important.

6) How can we improve? Modelling?

- More information on the environmental fate and toxicity of the substances. It can be better integrated with the exposure assessment.
- There is a need for more engineering knowledge in risk assessment (eg. exposure pathways, toxic mechanisms).
- Some guidance document for using models in general.
- Models can be regarded as an important supplementary tool to selection of screening substances and monitoring. But models are not reality!
- Models for how substances are distributed in the environment to describe the impact, e.g. in surface waters or in groundwater.

Below follows a figure showing information input that can determine the choice of substances for screening:



Group 4: "Information on screening results: Approaches, channels and recommendations"

Discussion group leader: Gudrun Bremle
Referee: Sigurdur B. Finsson
Other participants: Betty Mogensen, Martin Schlabach, Katrin Hoydal, Jaakko Mannio, Geir Wing Gabrielsen, Axel Hulberg, Jon Fuglestad, Gabrielle Schöning.

The group recommended the following actions:

Nordic level:

- Sharing information
  - Public (contact via the media)

- Authorities (meetings, webpages)
- Other researchers (international publications)

- Continue the Nordic cooperation
  - Share information on results, ongoing screening/monitoring and planned projects
  - Develop webpage for sharing information
- Review papers of Nordic screening activities

EU level

- EU networks for sharing information
  - be part of the SEIS network
- NORMAN
  - network on reference laboratories

National level

- Contact persons in each country
  - distribute information to their own national networks
  - countries develop their own methods of sharing information
- Information strategy
  - Who to contact when publishing results?
  - Norway is a good example for building media relations
- Involve a person who can "translate" the scientific language for the public and put it in perspective
  - Write theme sheets for schools
  - See Denmark's "miljöbiblioteket"

6. The costs of using environmental screening in risk assessment is a challenge. How can we cope with it?

Eva Brorstrøm Lundén from Swedish Environmental Research Institute gave a presentation on "Can research help reducing the costs or increasing the efficiency of environmental screening studies?"

Two comments were given after the presentations:

- On biomarkers: It was commented that it would probably be hard to choose which biomarker to use. Eva agreed. She had tried hormone test but this was very expensive
- On development of methods: To test and develop methods is a major cost. One way to solve the cost problem is to let each country do the testing of one substance and later share the knowledge within the Nordic countries.

7. Focus and approaches for future cooperation in screening. Identify areas of particular interest.

Maria Dam from Food, Veterinary and Environmental agency of the Faroes islands, and member of the Joint Nordic Screening Group gave a presentation on **"Future cooperation on environmental screening, possibilities and challenges".**

She referred to the presentation of the Nordic screening cooperation activities presented earlier in the workshop and highlighted that the economic support for the chemical analysis from the Nordic Council of Ministers (NCM) has been crucial to perform the joint studies. NCM has signalled that they will probably not finance such studies further becaust it should be a national responsibility to run long time activities within the states' budgets.
Maria then elaborated the possibilities for having cash for the analysis costs provided by the participating countries. The status is as follows:

- Norway and Sweden: Yes, we can hand over money!
- Denmark and Finland. No cash, but maybe in-kind contribution.
- Iceland and the Faroes islands: No, we have no cash nor resources for in-kind contribution.

Thus, 4 out of 6 can not provide cash. Then, how to continue with Nordic cooperation on new contaminants? Three alternatives were presented:

A: Choose a common substance/ substance group from the countries' screening plans
Method: Coordinate the sampling process and analyse nationally. Separate or joint reporting.
Problems:

- Requires national screening, which is not (yet) in Iceland and the Faroes islands.
- Requires a much earlier substance identification and a longer planning period, then the Joint Nordic Screening
- May require "overruling" of national sample selection to achieve Nordic comparability and supplementing samples, which is not likely to be possible.
- Does not give the reduced uncertanties of using one laboratory.

B: Prepare common reports/data analyses on substances analysed in national screening
Method: Put together data from national screening into a common data analysis and report.
Problems:

- Requires national screening, which is not in ICE and FAR.
- Requires the existence of new and comparable data on a substance/substance group.
- Will probably not add much to older reports (because reveiwing available data is standard procedure).
- Does not give the reduced uncertanties of using one laboratory.

C: Find (an other) cash source.
Method: Equivelent to the one already utilized in the Joint Nordic Screening. Will allow an efficient and as quick as possible data aquisition, while utilizing- but will not be limited by- the national resources for screening!
Problems:

- Requires to find a cash source

From her perspective Maria summed up:

- Alternative A: Even in a setting with national screening, this may prove to be too slow, too biased by national preferences, and perhaps still consider this form of cooperation to be too slow, and the drivers to put man-hours into the Nordic perspective may be small compared to the necessary input.
- Alternative B: This may work only for a few countries at a time, and the news value would be low!

- Alternative C: The only viable solution for a common aquisition, assessment and reporting of possible new contaminants.

She ended her presentation by asking: Have I overlooked alternatives?

The presentation was followed by a plenary discussion**.**
Discussion leader: Ola Glesne.
Referees: Bengt Melsäter and Bård Nordbø.

The following advises and recommendations were given:

If there are no money available for funding the analysis part of further joint Nordic screening:

- Reduce focus on substances and do more cooperation on analytical methods and general guidelines
- Cooperate on analysis. One institute may analyse samples from all the Nordic countries.
- Choose substances that are easy to harmonise between the countries' plans.
- Cooperate bilaterally or multilaterally on joint screening if not all countries can join in.
- Make the screening projects more tempting for the funding authorities.
- The cooperation needs planning, this will be hard to finance.
- The 2006 screening project's costs were 600.000 kr. The joint screening work does not require a large amount of money if divided on several countries. It is important to try contacting the right people in the Nordic countries and lobby for finance.

Other advises:

- Cooperate on the use of models in the planning of environmental screening studies.
- Concentrate on method development: Take more care in harmonizing sampling, this may reduce costs. What are the right matrices for the substance? How is the sampling coordinated in order to compare results?
- Keep a working information network going. Use the web page of the Nordic screening cooperation actively to make the information available.
- Exchange information on projects that are going to analyse a lot of samples for new chemicals. Joining such projects should have much lower analysis costs than a limited national study.

Some examples on other international cooperation:

- AMAP: One country analyse all the samples delivered from participating countries, this makes sure that the same methods are used during analysis.
- EU: The Commission is financing a project where JRC where is analysing samples from countries that volunteer to send samples, most in the same way as the approach used in AMAP. This will give a snapshot of a number of hazardous substances in European large rivers. Most all member countries have joined in.

- It is important to look to other joint projects that are working with “new” substances.

8. Summing up conclusions from the meeting

There are very good reasons to continue the Nordic screening cooperation, even if there will not be a joint budget for financing analysis costs. All countries gain from this.
The environmental screening data are important for the end users. It is also important to have a good dialog between screening people and risk assessors.
Models and product registers can be good tools in environmental screening, but there are also limitations.
Sharing information is essential in environmental screening cooperation. This information should also be made available for people outside the cooperation.

The steering group of the Nordic screening cooperation thanked the participants for their contribution and informed that they would use the advices from the workshop in the group’s meeting the next day where planning of the specific activities in 2008 is on the agenda.

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- It is important to look to other joint projects that are working with "new" substances.

Workshop on Environmental Screening and Risk assessment
Landskrona the 24th to 25th of September 2007.
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