

# Uncertainty in Sampling

Nordtest Workshop 12-13 April 2007, Pharmakon Conference Center, Hillerød, Denmark

## PROGRAMME

### DAY 1

09.30	Registration	14.45	Groundwater monitoring example featuring:
10.00	Introduction to measurement, sampling and analytical uncertainty Mike Ramsey, University of Sussex		• Quality objectives and quality control Christian Grøn, DHI
10.30	Why estimate sampling uncertainty? An example from the food industry Bertil Magnusson, SP	15.30	Coffee
11.00	The Nordtest guide on sampling uncertainty - an introduction Christian Grøn, DHI	16.00	Industrial production of iron ore example featuring: • Range statistics for control of random error Bertil Magnusson, SP
11.15	Design of sampling programmes • Sampling purpose - why do we measure • Sampling target - what shall we measure • Quality objectives - demands on uncertainty Christian Grøn, DHI	16.45	Food sector - baby porridge example featuring: • ANOVA • Control of systematic error Astrid Nordbotten, Mattilsynet
11.45	Break	17.30	Questions, answers & discussion
12.00	Error and uncertainty in measurement • Sources of uncertainty - heterogeneity, sampling and analytical uncertainty • Systematic and random errors • Uncertainty - u and U Astrid Nordbotten, Mattilsynet	18.00	Poster Session
12.30	Principles of QA in sampling • Competence requirements • Method validation • Quality control • Documentation Ulla Lund, Eurofins	19.00	Dinner
13.00	Lunch		
14.15	Sampling uncertainty of industrial emission measurements • Principles of variography • Uncertainty vs. sampling frequency • Application to wastewater discharge and gaseous emissions Pentti Minkkinen, Lappeenranta University of Technology		

### DAY 2

09.00	Wastewater discharge example featuring: • Variography Ulla Lund, Eurofins
09.45	Contaminated soil example featuring: • Robust ANOVA (ROBAN) Katy Boon, University of Sussex
10.30	Break
10.45	Introduction to group work Bertil Magnusson, SP
11.00	Group work on own data or data from the examples
12.00	Lunch
13.15	Group work, continued.
15.00	Coffee and discussions - future perspectives on sampling uncertainty Christian Grøn, DHI
16.00	End of workshop

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## WORKSHOP INFORMATION

The participants are expected to bring their own laptops, but power supply will be available (Scandinavian sockets).

The Nordtest Handbook on Uncertainty from Sampling will be sent in advance of the workshop to the participants including a CD with selected calculation tools.

Data for the group work that the participants may wish to use as calculation examples should be brought along but can preferentially be e-mailed to [aob@dhigroup.com](mailto:aob@dhigroup.com) one week in advance of the workshop.

### Dates

12-13 April 2007

### Place

Pharmakon Conference Center, situated in Hillerød north of Copenhagen, Denmark, see [www.pharmakon.com](http://www.pharmakon.com).

### Language

The workshop language will be English.

### Registration

Submit the registration form before 1 February 2007. If you have not registered yet, please use the form to the right.

### Fee

Registration and payment before 1 February 2007: 500 EURO. Later registration and payment: 620 EURO. The workshop fee covers workshop, textbook, lunch, coffees and conference dinner, but not travelling and hotel.

### Poster session

There will be a small poster session for those attending the conference and who want to present research in the field of uncertainty in sampling.

If you wish to present a poster (110 cm x 110 cm), please include its title on the registration form. A summary of the proposed poster should

be sent to [aob@dhigroup.com](mailto:aob@dhigroup.com) before 1st March 2007 and the final poster in low resolution in PDF-format before 1st April 2007.

### Further information

For the latest information, flyer and registration details see [www.samplersguide.com](http://www.samplersguide.com).

Specific questions can be directed to Anke Oberender, DHI, [aob@dhigroup.com](mailto:aob@dhigroup.com), +45 4516 9469

## Registration Form

Yes, I wish to participate:

Name:.....

Company:.....

Address:.....

.....

Mail:.....

City:.....

Country:.....

Signature:.....

Yes, I wish to present a poster:

Title:.....

.....

Post, fax or e-mail this page to:

DHI Water & Environment,

Att.: Anke Oberender

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DK-2970 Hørsholm

Denmark

Fax: +45 4516 9292

Mail: [aob@dhigroup.com](mailto:aob@dhigroup.com)

Last registration date:

1 February 2007