Nano Exposure & Contextual Information Database (NECID)

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Beginnings:
Spin-Off of the NANOSH project

- Within the EU funded **NANOSH** project (11/2006 – 11/2009):
  - FIOH, IFA, TNO, CIOP, HSL, …
  - An agreed measurement strategy and an approach to report (e.g. contextual information) and analyze data (e.g. background distinction) was developed.
  - Workplace aerosol data have been collected for ~150 exposure situations.
  - The NANOSH dataset constitutes a nucleus of a database for exposure to MNM.
NECID – Motivation and aims

- IFA/ TNO initiative under the umbrella of PEROSH
  - Currently, actively supported by 7 institutes (IFA, TNO, HSL, FIOH, CIOP, NRCWE, INRS)
  - Objectives
    - Systematic and uniform documentation of workplace exposure and contextual data
    - EU (Global, with respect to the “Global Measurement Harmonization Workgroup”) wide harmonization and improvement of exposure measurements of MNM
    - Multifunctional use of NECID for research e.g.:
      - Exposure modelling, Scenario building
      - Epidemiological studies, Source of information for risk management
      - Data basis for job exposure matrix
NECID

- NECID needs to be flexible
  - Different types of exposure data (number, surface,…,material specific)
  - Different measurement strategies
  - Etc.

- This flexibility results in a complex data structure

- Vital for the success of NECID to have a process of *consensus building* on exposure and *database issues* within PEROSH and beyond
Data flow – status of work

Local Client
- data input
- local database
- plausibility check
  - calculation tool
  - comparison tool

Institute Client
- institute database
  - controlled by NECID officer of the institute
- data collection
- plausibility check
- data merge for all institute data

Central server (IFA) NECID database
- data collection for all PPs and CPs

Only for PEROSH group (planned)

Download to all authorized clients

To all clients

Confidentiality check

Upload

Möhlmann, US-EU workshop 2 Dec 2013
**Nano Exposure & Contextual Information Database**

- **Measurement**
- **Protocol (PDF)**
- **Data Exchange**
- **Basic data Update**

By clicking on “Measurement” and you will open the NECID database. By clicking on “Protocol” you can upload your measurement protocols as pdf. By clicking on “Data exchange” you can load up your data to a central server of the NECID project. By clicking on “Basic database update” you can update your version of the databank manually.

On the left of the ribbon you find a tab “Extra” where you can check if an update is needed, by choosing “Check Update”. By doing so you will also see which version you actually are using.

You either will find in the tab a help function and the option to switch off the introduction that normally will pop up after opening the database by clicking on “Measurement”.

Möhlmann, US-EU workshop 2 Dec 2013
NECID Structure

- main timeline: activities
- parallel timelines:
  - RMM
  - worker
  - sample
- all timelines linked to the activity
## Activity

### Activity

**Time start:** 09:30

**Time stop:** 12:00

**Description:**
- **Location:** Production hall
- **Ventilation:** Mechanical ventilation - incoming and outgoing air
- **Efficiency of room ventilation:** Average
- **Air changes per hour:** 1
- **Filter:** No
- **Recirculating air:** No
- **Segregation:** Partial segregation without ventilation

### List of RMM

<table>
<thead>
<tr>
<th>Index</th>
<th>Premise</th>
<th>Location</th>
<th>Ventilation</th>
<th>Start</th>
<th>Stop</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>TitanWhite</td>
<td>Production hall</td>
<td>Mechanical ventilation - incoming and outgoing air</td>
<td>09:30:00</td>
<td>12:00:00</td>
</tr>
<tr>
<td>2</td>
<td>TitanWhite</td>
<td>Production hall</td>
<td>None ventilation</td>
<td>11:30:00</td>
<td>12:00:00</td>
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</tbody>
</table>
### Import raw data

#### Measurements ID

**ID:** 130020001

<table>
<thead>
<tr>
<th>Sample / Point</th>
<th>Used device</th>
<th>Raw data file</th>
</tr>
</thead>
<tbody>
<tr>
<td>SMPS 001</td>
<td>20015-06</td>
<td>130020001</td>
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| TSI SMPS 3936NL | 00000024    | TSI_SMPS_lab

#### Sample File:

- **M:191/F5\n/item/aerosol/Labormessungen/test_21.560**

#### Material:

- **DME Model:** 3936L
- **DME Inner Radius:** 0.00037
- **DME Outer Radius:** 0.00061
- **DME Characteristic Length:** 0.44360

#### CPC Model:

- **DME:** 7726
- **Reference Gas Viscosity (Ppa):** 1.822e-006
- **Reference Mean Free Path (m):** 6.642e-006
- **Reference Gas Temperature (K):** 293.15
- **Reference Gas Pressure (Pa):** 101.3
- **Reference Temperature (K):**

#### Import raw data:

<table>
<thead>
<tr>
<th>Sample #</th>
<th>Date</th>
<th>Start Time</th>
<th>Sample Temp</th>
<th>Mean Free Path</th>
<th>Gas Viscosity</th>
<th>Diameter Mid 7.37</th>
<th>7.64</th>
<th>7.91</th>
<th>8.26</th>
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<td>12:01:04</td>
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<td>Sample Press</td>
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<td>Gas Viscosity</td>
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<td>7.64</td>
<td>7.91</td>
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<tr>
<td>3</td>
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<td>Sample Temp</td>
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<td>Gas Viscosity</td>
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#### Import raw data:

- **Quit**
Status of development

• Test version of data collection module is ready
• Data import of direct reading devices possible (for some devices)
• Reporting in PDF-file (currently)

Planned:
• Software for external partners (test phase starts this year, e.g. SCAFFOLD, MARINA))
• Flexible export in ASCII-format
• enable the central server (for PEROSH)
• Data import for most devices

Outlook
• multifunctional calculation and comparison tool