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**REPDAB as a practical tool for QA/QC in  
national inventories  
submitted to LRTAP AND NEC**

**by Vigdis Vestreng AND PARTICIPANTS**

QA/QC WS, Ispra 21. Oct. 2004



# OUTLINE

- Short overview of REPDAB
- Hands on
- Feedback **FROM YOU** on further development



<http://webdab.emep.int/repdab.html>

- QA/QC for **REPORTING** of emission data in accordance with adopted Guidelines
- **Completeness** and **consistency** checks
- **Complete** = All "most aggregated" sectors are estimated or possible to estimate from sub-sectors (not NE, C)
- **Consistent** = All sub-sectors sums up to aggregated levels (IE=0)



## What does REPDAB require and how does it work?

- Data files in **EXCEL** templates
- **Web application** - enter file -  
output to requested e-mail  
adresse.
- Notation key definitions in REPDAB:  
**NO, NA, IE = 0 NE, C = Not complete**







# Example of template, Table IV 1A











| <i>NFR sectors to be reported to CLRTAP</i> |     |  | Allowable aggregation | <i>Yearly minimum reporting</i> |    |       |                    |                 |                    |                  |                   |  |
|---|-----|--|-----------------------|---------------------------------|----|-------|--------------------|-----------------|--------------------|------------------|-------------------|--|
|   |     |  |                       | Main Pollutants                 |    |       |                    |                 | Particulate matter |                  |                   |  |
|   |     |  |                       | NO <sub>x</sub>                 | CO | NMVOC | SO <sub>x</sub>    | NH <sub>3</sub> | TSP                | PM <sub>10</sub> | PM <sub>2.5</sub> |  |
|   |     |  |                       | Gg NO <sub>2</sub>              | Gg | Gg    | Gg SO <sub>2</sub> | Gg              | Mg                 | Mg               | Mg                |  |
| 1 A 1 a                                     | (a) | 1 A 1 a Public Electricity and Heat Production                 |                       |                                 |    |       |                    |                 |                    |                  |                   |  |
| 1 A 1 b                                     | (a) | 1 A 1 b Petroleum refining                                     |                       |                                 |    |       |                    |                 |                    |                  |                   |  |
| 1 A 1 c                                     | (a) | 1 A 1 c Manufacture of Solid Fuels and Other Energy Industries |                       |                                 |    |       |                    |                 |                    |                  |                   |  |
| 1 A 2                                       | (a) | <b>1 A 2 Manufacturing Industries and Construction</b>         | A                     |                                 |    |       |                    |                 |                    |                  |                   |  |
| 1 A 2 a                                     | (a) | 1 A 2 a Iron and Steel   |                       |                                 |    |       |                    |                 |                    |                  |                   |  |
| 1 A 2 b                                     | (a) | 1 A 2 b Non-ferrous Metals                                     |                       |                                 |    |       |                    |                 |                    |                  |                   |  |
| 1 A 2 c                                     | (a) | 1 A 2 c Chemicals  |                       |                                 |    |       |                    |                 |                    |                  |                   |  |
| 1 A 2 d                                     | (a) | 1 A 2 d Pulp, Paper and Print                                  |                       |                                 |    |       |                    |                 |                    |                  |                   |  |
| 1 A 2 e                                     | (a) | 1 A 2 e Food Processing, Beverages and Tobacco                 |                       |                                 |    |       |                    |                 |                    |                  |                   |  |
| 1 A 2 f                                     | (a) | 1 A 2 f Other (Please specify in a covering note)              |                       |                                 |    |       |                    |                 |                    |                  |                   |  |



# REPDA B overview

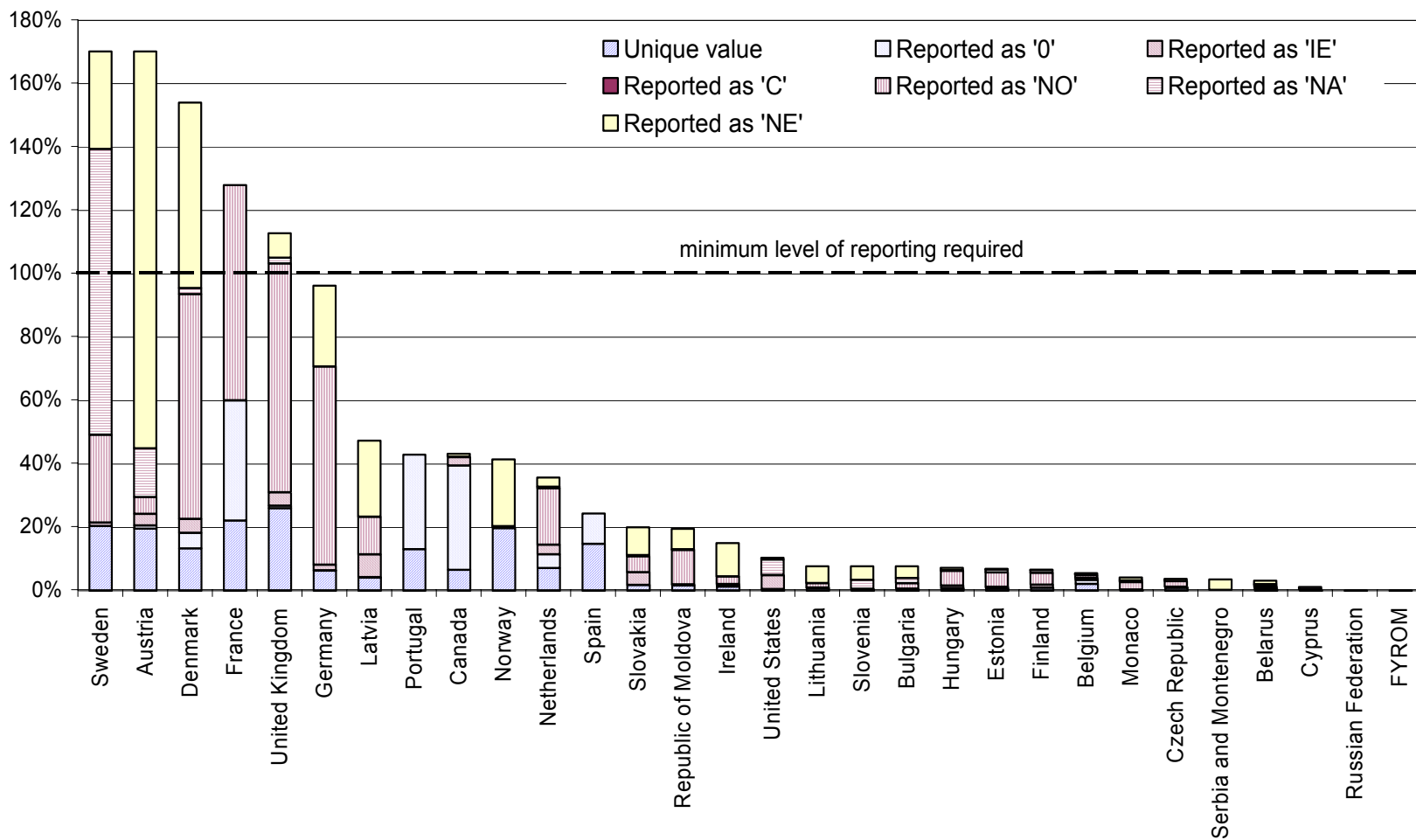
## Colour Codes

|   |                                    |
|---|------------------------------------|
|  | Table passed all RepDab tests      |
|  | Table is incomplete                |
|  | Table contains inconsistent data   |
|  | Table is not in the correct format |

|           | 1993  | 1995   | 1998  | 1999  | 2000  | 2001  | 2002  |
|-----------|---|--|---|---|---|---|---|
| Table 1 A |   |  |   |   |  |   |   |
| Table 1 B |   |  |   |    |   |   |   |
| Table 2 A |   |  |   |   |   |   |  |
| Table 2 B |  |  |   |   |   |   |   |
| Table 2 C |   |  |   |   |   |   |   |
| Table 2 D |   |  |   |   |   |  |   |
| Table 2 E |   |  |   |  |   |   |   |
| Table 3 A |   |  |   |   |   |  |   |
| Table 3 B |   |  |  |   |   |   |   |
| Table 3 C |   |  |  |   |   |   |   |

# Completeness of submissions

## *Timeseries 1980- 2002 reporting in 2004*





## Internal consistency

*30% of the Parties submitted internally inconsistent data*

*However, this does not imply that 70% of submissions reported fully consistent data, since consistency checking in REPDAB is linked to the completeness and cannot be performed if an incomplete dataset is reported.*

*- Submissions should be tested for internal consistency (the task can be facilitated by REPDAB)*





## Hands on

<http://webdab.emep.int/repdab.html>

<http://www.emep.int/> (go to "facts")

- Example from Slovakia (Table 1A)



# Proposed REPDAB updates - notation keys

| 1: REPDAB developments:<br>Tests per table | Format errors by table  |           |    |           |    |   |  |  |      |           |        |    |    |   |   |      |     |   |   |   |    |   |     |   |   |   |   |   |    |   |   |   |   |   |     |  |  |  |  |  |      |     |   |   |   |    |   |     |   |   |   |   |   |    |   |   |   |   |   |     |  |  |  |  |  |
|--|---|-----------|----|-----------|----|---|--|--|------|-----------|--------|----|----|---|---|------|-----|---|---|---|----|---|-----|---|---|---|---|---|----|---|---|---|---|---|-----|--|--|--|--|--|------|-----|---|---|---|----|---|-----|---|---|---|---|---|----|---|---|---|---|---|-----|--|--|--|--|--|
|  | <p>Completeness Test: Done on Minimum reporting requirements. Table of years (down) and pollutants (Across) by notation keys + blanks + values and number of occurrences for each. Include detail in scrolling box underneath.</p> <table border="1"> <thead> <tr> <th colspan="2"></th> <th colspan="5">Notation*</th> </tr> <tr> <th>Year</th> <th>Pollutant</th> <th>blanks</th> <th>NE</th> <th>IE</th> <th>0</th> <th>C</th> </tr> </thead> <tbody> <tr> <td rowspan="4">1990</td> <td>Nox</td> <td>7</td> <td>0</td> <td>0</td> <td>60</td> <td>0</td> </tr> <tr> <td>SO2</td> <td>8</td> <td>0</td> <td>0</td> <td>9</td> <td>5</td> </tr> <tr> <td>CO</td> <td>0</td> <td>3</td> <td>4</td> <td>0</td> <td>0</td> </tr> <tr> <td>...</td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td rowspan="4">1991</td> <td>Nox</td> <td>7</td> <td>0</td> <td>0</td> <td>60</td> <td>0</td> </tr> <tr> <td>SO2</td> <td>8</td> <td>0</td> <td>0</td> <td>9</td> <td>5</td> </tr> <tr> <td>CO</td> <td>0</td> <td>3</td> <td>4</td> <td>0</td> <td>0</td> </tr> <tr> <td>...</td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table> <p>Values represent completeness problems with the dataset against the minimum reporting requirements.</p> |           |    | Notation* |    |   |  |  | Year | Pollutant | blanks | NE | IE | 0 | C | 1990 | Nox | 7 | 0 | 0 | 60 | 0 | SO2 | 8 | 0 | 0 | 9 | 5 | CO | 0 | 3 | 4 | 0 | 0 | ... |  |  |  |  |  | 1991 | Nox | 7 | 0 | 0 | 60 | 0 | SO2 | 8 | 0 | 0 | 9 | 5 | CO | 0 | 3 | 4 | 0 | 0 | ... |  |  |  |  |  |
|  |   | Notation* |    |           |    |   |  |  |      |           |        |    |    |   |   |      |     |   |   |   |    |   |     |   |   |   |   |   |    |   |   |   |   |   |     |  |  |  |  |  |      |     |   |   |   |    |   |     |   |   |   |   |   |    |   |   |   |   |   |     |  |  |  |  |  |
| Year                                       | Pollutant   | blanks    | NE | IE        | 0  | C |  |  |      |           |        |    |    |   |   |      |     |   |   |   |    |   |     |   |   |   |   |   |    |   |   |   |   |   |     |  |  |  |  |  |      |     |   |   |   |    |   |     |   |   |   |   |   |    |   |   |   |   |   |     |  |  |  |  |  |
| 1990                                       | Nox   | 7         | 0  | 0         | 60 | 0 |  |  |      |           |        |    |    |   |   |      |     |   |   |   |    |   |     |   |   |   |   |   |    |   |   |   |   |   |     |  |  |  |  |  |      |     |   |   |   |    |   |     |   |   |   |   |   |    |   |   |   |   |   |     |  |  |  |  |  |
|  | SO2   | 8         | 0  | 0         | 9  | 5 |  |  |      |           |        |    |    |   |   |      |     |   |   |   |    |   |     |   |   |   |   |   |    |   |   |   |   |   |     |  |  |  |  |  |      |     |   |   |   |    |   |     |   |   |   |   |   |    |   |   |   |   |   |     |  |  |  |  |  |
|  | CO  | 0         | 3  | 4         | 0  | 0 |  |  |      |           |        |    |    |   |   |      |     |   |   |   |    |   |     |   |   |   |   |   |    |   |   |   |   |   |     |  |  |  |  |  |      |     |   |   |   |    |   |     |   |   |   |   |   |    |   |   |   |   |   |     |  |  |  |  |  |
|  | ...   |           |    |           |    |   |  |  |      |           |        |    |    |   |   |      |     |   |   |   |    |   |     |   |   |   |   |   |    |   |   |   |   |   |     |  |  |  |  |  |      |     |   |   |   |    |   |     |   |   |   |   |   |    |   |   |   |   |   |     |  |  |  |  |  |
| 1991                                       | Nox   | 7         | 0  | 0         | 60 | 0 |  |  |      |           |        |    |    |   |   |      |     |   |   |   |    |   |     |   |   |   |   |   |    |   |   |   |   |   |     |  |  |  |  |  |      |     |   |   |   |    |   |     |   |   |   |   |   |    |   |   |   |   |   |     |  |  |  |  |  |
|  | SO2   | 8         | 0  | 0         | 9  | 5 |  |  |      |           |        |    |    |   |   |      |     |   |   |   |    |   |     |   |   |   |   |   |    |   |   |   |   |   |     |  |  |  |  |  |      |     |   |   |   |    |   |     |   |   |   |   |   |    |   |   |   |   |   |     |  |  |  |  |  |
|  | CO  | 0         | 3  | 4         | 0  | 0 |  |  |      |           |        |    |    |   |   |      |     |   |   |   |    |   |     |   |   |   |   |   |    |   |   |   |   |   |     |  |  |  |  |  |      |     |   |   |   |    |   |     |   |   |   |   |   |    |   |   |   |   |   |     |  |  |  |  |  |
|  | ...   |           |    |           |    |   |  |  |      |           |        |    |    |   |   |      |     |   |   |   |    |   |     |   |   |   |   |   |    |   |   |   |   |   |     |  |  |  |  |  |      |     |   |   |   |    |   |     |   |   |   |   |   |    |   |   |   |   |   |     |  |  |  |  |  |



# Proposed REPDAB updates - consistency

Consistency Test: Flag sectors/pollutants that do not match the sum of the sub-sectors or the national total (see existing REPDAB tests).  
Analysed with all notation keys set to 0.

Overview: table. Sub sectors for the following do not add up to the sector/national total.

| Year | Pollutant |         |    |     |
|------|-----------|---------|----|-----|
|      | Nox       | SO2     | CO | ... |
| 1990 | NT, 1A2   | -       | -  |     |
| 1999 |           | NT, 1A4 |    |     |
| 2001 |           |         |    |     |

Key:

NT Problem with National Total and Sum of all sectors

1A4... Problem with Sector total and sum of subsectors

Detailed data listed under in scrolling box as in REPDAB now.



# Feedback from participants

- NE
- NR
- Reporting yrs
- Remove REBDAB response "Noise"
- Useful for some countries, does not provide new information to other countries
- Most useful is the format check



## Minimum reporting

- Minimum reporting is defined as all sectors marked “A” and sectors not possible to aggregate and ALL MEMO items.
- All pollutants except: SCCP and PCP and As, Cr, Cu, Ni, Se and Zn are minimum.
- Aggregated levels should be reported, even though the submission is complete with respect to sub-sectors. This is because MSV-W does not load Derived data to the UNECE database.