New developments in the Emission Inventory of the Netherlands

Portland, 3rd June 2008

TNO | Knowledge for business
Content

• Introduction

• Short History of the Dutch Inventory

• Annual Inventory Process

• Future Challenges and new Developments

• Closing remarks
Introducti
Brief history of the inventory (I)

• Inventory started in 1974 commissioned by Ministries of VROM and Transport, Public Works and Water management.

• Team of TNO experts visited individual companies and determined the emissions to air and water.

• Estimation methods for non industrial sources were developed in cooperation partners in the inventory.

• Additional data from Netherlands Statistics, competent authorities (permits) and water authorities
Brief history of the inventory (II)

• 1974 – 1991 (5 inventory rounds)
  • Emissions to the air
  • Emissions to surface water
  • 6300 (in 7 years) → → 700 companies/year
  • Other non-industrial sources
  • Emissions to soil (agriculture)

• Estimates based on Emission factors from literature and/or determined by actual measurements
Brief history of the inventory (III)

- Since 1982 annual inventory

- From 1998 onwards mandatory environmental reports from individual companies (approx. 470 for air and 500 water) increasingly important

- These reports have replaced traditional inventory methods for individual companies (optimizing data process)

- Thanks to IT technology companies can upload their emission data to the inventory

- They are now responsible for data quality
Proces

- Environmental Assessment Agency (EAA) is responsible for the inventory process.
  - distinction between environmental policy <-> monitoring of policy implementation/ effectiveness;
  - improved efficiency (objective)

- > 50 people involved (~20 at EAA);

- Annual budget: ~ €2,5 Mio at EAA, activities of others are financed “in kind” (work for data);

- About 170 gases/ substances in the inventory; most of them because of international reporting obligations;
Responsibilities in the inventory:

- **Steeringbody (Representatives of Ministries)**
  - Provide financial means
  - Decide upon priorities
  - New/improved methodologies
  - How and what to report

- **Project manager EAA**

- **Working group Emission Monitoring**

- **Task forces**

- **Task:**
  - Coordination
  - Fixation of the database

- **Task:**
  - Data collection
  - Emission calculation
  - Input to database

- **Recommendations**
  - Coordination
  - Fixation of the database

- **Task:**
  - Annual data set
  - Scientific sound (TCCCA)
  - Consistent time series
  - Effective and Efficient

*Peter Coenen*

*Portland, 2008*
The task forces

• **Industry & Energy**
  ✓ All Dutch combustion Emissions from stationary Sources
  ✓ Process Emissions from Industry
  ✓ Incorporation of AER’s in database
  ✓ Emissions from Land-fills and Waste treatment

• **Traffic & Transport**
  ✓ All emissions from mobile sources
    (cars, motorbikes, trains, airplanes and ships)

• **Agriculture**
  ✓ All emissions from Agriculture, Land Use Change and natural Sources
• Consumers & Services
  ✓ Emissions from non-industrial product-use

• Water
  ✓ All direct and indirect emissions to water
  ✓ Load of pollutants to waterways, rivers and lakes
  ✓ Load to the North Sea
General principles of the inventory:

Large Point Sources

Emission from mandatory annual environmental reports (AER)

• Reporting by companies via WEB application
• Validation of figures by competent authority
• Data stored in a separate database

Data are used to calculate activity specific emission factors for the completing estimates
Completing estimates

Specific industrial sector:

- National activity rate
- Activity rates from AER
- Emission from AER
- EF (for each compound)

Completing estimate
General principles of the inventory:

- Large point sources
- Non-industrial sources
- Completing estimates Industry

Estimates from other task forces

Database
Database structure

Task force

- Emissions from landfills
- Emissions from refineries
- Emissions from road transport

Sources

Compounds

Taskforce Database

WEB interface

National Emission Database

Table:

<table>
<thead>
<tr>
<th>Compounds</th>
<th>Emission (ton/year)</th>
<th>Fuel or activity code</th>
<th>Fuel use or activity rate</th>
</tr>
</thead>
</table>

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Working process (I)

• **In the year t:**
  - Final emission data for t-2
  - Estimates for t-1

• In the year 2008:
  - Final data for 2006
  - Estimates for 2007

• Each of the taskforces downloads a part of the database for updating
  - Starts October / November of the year t-1
  - Taskforces estimate emissions for t-2 and t-1.

• If recalculation is necessary also 1990, 1995, 2000 and t-3 and for GHG total time series
Working process (III)

• Upload of data (t-2) to national database before 1st of February

• Data can be checked by all inventory participants (download facility)

• In March a joined meeting is organized (all taskforces attend) to perform a final trend analysis of the data (t-2) in the database.

• Additional QA/QC actions to improve data set:
  • Error corrections;
  • Explanations of trends

• Result:

• From March to July similar process for the t-1 data (not for water emissions)
Reporting procedures

Reporting requirements:
- National
- IPCC (CRF)
- UNECE (LRTAP)
- LCP
- IPPC (EPER / PRTR)

Allocation tables:

Reporting codes per Source/compound/activity

Sources/compounds

Query

(Inter)national Reports

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Informing the public

National Emission Database

EMISSIONS per:
- 5 X 5 km
- Municipalities
- Provinces
- Catchments area

MAPS

Graphs / Tables
SO$_2$ (5x5 km)
Future Challenges and planned New Developments

• Principal dilemma:

Decrease in funding ↔ demand for improved data quality

€

Volkswagen → Ferrari
Decreased funding

- Past decade the primary process is slimmed down;
  - Automation
  - Restructuring work processes
  - Prioritizing

- Threats for coping with budget cuts;
  - New and changing reporting obligations
  - New “players” (ETS, local authorities, the public)

- Challenge:
  - Financier must redefine involvement and task for each “stakeholder” in the inventory
  - Limit/prioritize
    - Less detail (compounds, subcategories)
    - What is really obligatory
    - Frequency of updating inventory data
Demand for improved quality

- Change reporting obligations
  - Need for additional classifications of emission data;
  - New methodologies

- Spatial planning linked to air quality
  - Need for emission data on local scale

- Due to budget cuts no longer technical abatement information available in the database
  - How to monitor emission reduction policy ??
  - How to assess background air quality on detailed level
New developments

• Development of instruments for local inventories to be incorporated in the national inventory

• Improvement of AER data (simple to use validation tool)

• Budget for new methodologies:
  • PAH speciation
  • Abatement technology inventory
  • Top down methodologies for “missing components”

• Improvement data on dispersion characteristics of LPS

• Improvement of PRTR website
Closing remarks

• The data process in the last decade optimized with the help of IT technology

• During the process we lost useful data and methodological working methods. These have to be repaired by additional research

• *Lessons learned:*

  *Keep methodological issues always in mind, IT doesn’t.*
Thanks for your attention