Netherlands Environmental Assessment Agency

National inventory for NMVOC-emissions from solvent use in the Netherlands

Kees Peek
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Netherlands Pollutant Release & Transfer Register

- Since 1974 in use
- It contains:
  - Emissions of 800 pointsources
  - The national emissions to air, water and soil of 350 pollutants (incl. NMVOC)
  - 1200 source categories with national totals and activity levels
Monitoring process

During the monitoring process, the Netherlands often applies country-specific methods,

Instead of

Using the EMEP/CORINAIR Emission Inventory Guidebook.
Overview NMVOC Emissions in the Netherlands - 1

NMVOC Emissions in the Netherlands

<table>
<thead>
<tr>
<th>Year</th>
<th>Total</th>
<th>Solvent and product use</th>
</tr>
</thead>
<tbody>
<tr>
<td>1990</td>
<td>450 Gg</td>
<td>100 Gg</td>
</tr>
<tr>
<td>1995</td>
<td>350 Gg</td>
<td>80 Gg</td>
</tr>
<tr>
<td>2000</td>
<td>250 Gg</td>
<td>50 Gg</td>
</tr>
<tr>
<td>2005</td>
<td>200 Gg</td>
<td>40 Gg</td>
</tr>
<tr>
<td>2007</td>
<td>150 Gg</td>
<td>30 Gg</td>
</tr>
</tbody>
</table>

NMVOC-emissions from Solvent use: Kees Peek, 17-02-2010
Decrease of NMVOC emissions is mainly caused by:

- introduction of catalyst and cleaner engines in the transport sector;
- reduction of NMVOC content in consumer products and paints;
- installation of reduction techniques (e.a. afterburners) in the industry-sector.
The most important sources

- *Paint application (3A)*:
- *Domestic solvent use [3D2]*
- *Printing [3D1]*
- *Degreasing (3B)*
Paint application (3A) - VOC emissions - 1

- Input:
  - Annual statistics with national paint sales and VOC-contents provided by VVVF;
  - The VVVF covers 95% of the Dutch market;
  - Paint imports, distribution among the different sectors and paint-related thinner use: estimated by VVVF
  - Effect afterburners in the industry-sector:
**Paint application (3A) – VOC emissions – 2**

Table 2. NMVOC emissions in 2007 from the PAINT source category according to sub-source

<table>
<thead>
<tr>
<th>Sub-source</th>
<th>NMVOC Emission from National sales</th>
<th>NMVOC Emission from Import</th>
<th>NMVOC Emission from Dilution</th>
<th>NMVOC Emission reduction</th>
<th>NMVOC Emission afterburner</th>
<th>NMVOC Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shipbuilding</td>
<td>3.9</td>
<td>0.0</td>
<td>0.0</td>
<td>3.9</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Construction</td>
<td>7.3</td>
<td>0.5</td>
<td>0.1</td>
<td>7.9</td>
<td></td>
<td></td>
</tr>
<tr>
<td>DIY</td>
<td>3.6</td>
<td>0.0</td>
<td>0.0</td>
<td>3.6</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Car repair</td>
<td>2.1</td>
<td>0.3</td>
<td>0.1</td>
<td>2.4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Industry</td>
<td>4.3</td>
<td>1.4</td>
<td>0.7</td>
<td>2.2</td>
<td></td>
<td>4.2</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td>21.7</td>
<td>2.2</td>
<td>8.6</td>
<td>22.5</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
NMVOC emissions from solvent and product use - 4

**Domestic solvent use [3D2] en Other product use [3D3]**

**Most important sources:**
- Cosmetics (and personal care): 11.4 Gg
- Cleaning agents: 5.6 Gg
- Car products: 4.2 Gg

**Emissions**
- NMVOC-emission per product is calculated by multiplying the fraction of the NMVOC-content that is emitted to the air with the NMVOC content of the product.
- Total NMVOC-emissions are calculated by multiplying the NMVOC-emissions per product with the number of sold products.

**Input data:**
- Sales data are obtained from annual reports of branche organisations.
- NMVOC-content of the products and the fraction of the NMVOC-content that is emitted to the air comes from studies.

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NMVOC-emissions from Solvent use: Kees Peek, 17-02-2010
To reduce NMVOC emissions an environmental agreement between the authorities and the branch of the printing industry has entered in 1993.

To follow the implementation of this agreement a number of evaluations has been performed. The last one was in 2008, over the year 2007.

The results of these evaluations are the input for the monitoring.

Years without evaluations will be estimated by using the Volume Developments (growth) figures of the branche.
**Printing [3D1] - 2**

Emission estimates **of individual companies:**

- Without measures the loss (evaporation) of solvents during the process is equal to the VOC emissions from the company.
- With measures the loss of solvents can be reduced
- Measures: via recirculation a part of the solvent can be re-used and when using an afterburner a part of the emission is burned.
Printing [3D1] - 3

Calculation:

Evaporation can be calculated via the VOC-content and the input of ink, IPA or detergents.

Emission =
Evaporation -/- Re-use -/- result afterburner
NMVOC emissions from solvent and product use - 8

- **Degreasing (3B):** 2,9 Gg

Up-to-date information on the use of cleaning and degreasing products in the metal industry is not available. As a result the NMVOC emissions from this source have not changed during the period 2000-2007.
Questions

Contact

- Kees.peek@pbl.nl