

## Environmental report 2005

The Kemira Group continued to show solid progress in environmental affairs in 2005. Releases into the environment decreased substantially and the environmental business grew. The safety development, however, was below expectations.

The Kemira Group continued to show solid progress in environmental affairs in 2005. Substantial reductions in the reported environmental releases were mainly associated with changes in the Group's business portfolio.

Capital expenditure on environmental protection was 28% lower than in the previous year at EUR 7.4 million with no major projects pending. Environmental operating costs totaled EUR 33.3 million, 18% lower than in the previous year. Provisions for environmental remediation increased slightly to EUR 22.9 million.

Two major accidents occurred in Sweden and Finland, resulting in significant property damage but no significant health or environmental effects. One contractor employee died in a regrettable accident at the Pori plant in Finland.

Sales of environment-related products and services were up by 14% compared to the previous year and totaled some EUR 742 million, 37% of the Group's net sales. Growth – both organic and through acquisitions – continued, especially within the Kemwater business area.

Product safety work focused on intensive preparations for REACH, the EU's proposed new chemical legislation. The Group set up a REACH Competence Centre in Finland and continued the development of global IT systems.

The Kemira Group's 12th environmental report deals with Group companies in line with financial reporting. It has been prepared, where applicable, in accordance with:

- Recommendations by the Finnish Accountancy Standards Board on the recognition, measurement and

disclosure of environmental issues in the annual accounts and annual reports of companies, 2003

- CEFIC (European Chemical Industry Council): Health, Safety and Environment Reporting Guidelines, 1998.

### EHS Policy and Management Systems

The Kemira Group launched a sharpened Environmental Health and Safety (EHS) policy, with the main emphasis on improving safety culture.



Helsinki-Vantaa Airport, Finland.



The Group also initiated an integrated EHS and quality certification and auditing process at all its sites in Finland. An agreement was made with Det Norske Veritas (DNV) concerning Group certification and audits. The agreement also covers the transition to OHSAS 18000-certified safety management systems.

### Highlights of activities at the sites

In Helsingborg (Sweden), a large sulphuric acid tank suddenly collapsed in the harbor area of the Kemira site on February 4, 2005. As a consequence, approximately 16,300 tons of 96% sulphuric acid was discharged into the plant area and partly into the harbor basin and the sea. Due to presumed risk of acidic fume development the emergency authorities closed certain residential areas located near the site for a couple of days as a preventive measure. The accident did not cause any significant harm to Group employees, public health or the environment. Follow-up investigations have shown that the impact on

flora and fauna was essentially restricted to the harbor basin, and that recovery is taking place. Damage to plant property was significant, including soil and ground water acidification close to the harbor area. Decontamination and neutralization work is ongoing. A new sulphuric acid and liquid sulphur tank farm is also under construction. An extensive investigation of the accident by experts and the authorities has been conducted. The cause was a sudden rupture of a sub-surface cooling waterpipe near the tank farm. This led to a substantial weakening of the ground supporting the acid tank. The new pipelines have been constructed above-ground and the pipeline risks have been evaluated.

The Helsingborg site made improvements to reduce emissions of nitrogen oxides from the sulphuric acid plant, and modified the absorption unit of the hydrochloric acid plant to prevent releases of wastewater into the sea.



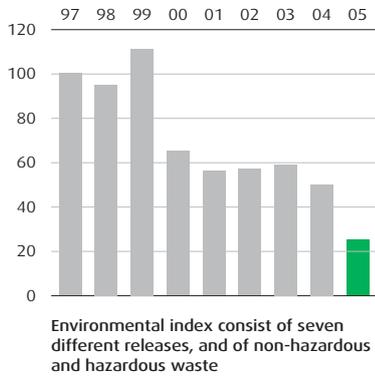
Elina Engman, Kemira's Vice President, Energy, flies to Brussels to meet with other EU energy experts.



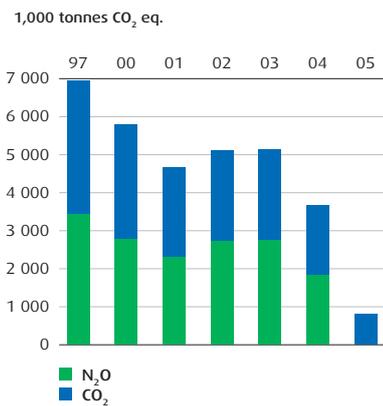
Return flight home for the evening.

# Environmental report

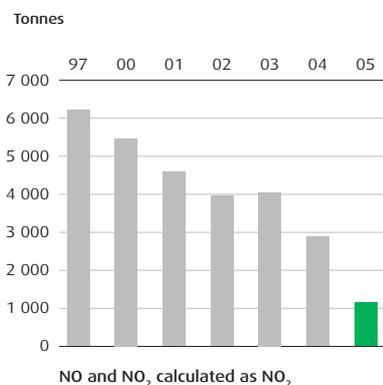
**Environmental index**



**Greenhouse gas emissions**



**NO<sub>x</sub> emissions**



## Pulp & Paper Chemicals

In Columbus (Georgia, USA), a new wastewater permit was issued to the plant with somewhat tighter effluent limits. At the Fortville plant (Indiana, USA), a minor spill of sodium silicate into a nearby ditch was cleaned up. The Washougal plant (Washington, USA) evaluated alternatives for upgrading cooling-water management. The sodium chlorate plant at Eastover (South Carolina, USA) improved the unloading of raw salt to prevent soil impacts. The Prince George plant (Canada) celebrated 1,000 days without any lost-time accidents. The Ulsan site (South Korea) improved energy efficiency and water recycling.

A new environmental permit was issued to the Vaasa plant (Finland). The project for remediation of sediment in the small lake adjacent to the plant continued, with main remedial work pending final approval by the authorities. The calcium sulphate pigment business based at Siilinjärvi (Finland) received ISO 14001 certification.

The Äetsä site (Finland) took a new washing-water system at its sodium chlorate plants into full use and continued the closing of water systems. Some soil contaminated with mercury and waste of historic origin was sent for external treatment. The fine chemicals plant improved its distillation and sewage systems. An explosion occurred in the dryer of the fine chemicals plant on October, 31. The accident caused substantial property damage at one plant unit, but no harm to the environment or human health. A thorough expert investigation of the accident is pending.

The Joutseno site (Finland) improved energy efficiency by replacing membrane cells in its chlor alkali

plant. Reverse osmosis equipment was installed for the production of demineralized water. An investment was made in the recovery of hydrochloric acid fumes resulting from the loading of tank lorries. These measures also reduce the level of neutralized salt effluents into Lake Saimaa.

At Kokkola (Finland), a newly established service company OnePoint Oy offers EHS services to companies located in the industrial zone. Plans for the isolation and expansion of waste disposal basins were finalized. Construction work will start in April 2006.

## Kemwater

ISO 14001 certification was obtained by the Europoort plant in The Netherlands and the Goole plant in the United Kingdom. The Europoort plant also initiated a program for minimizing filtrate waste. At the Cremona plant (Italy), a reverse osmosis plant was installed for the treatment of condensate water. In Kolin & Zelivka (Czech Republic), new double-wall storage tanks for sulphuric acid were installed together with upgraded safety basins.

In Harjavalta (Finland), a new gas scrubbing system was installed in the aluminium sulphate reactor line to reduce acidic emissions. New dust collectors were also installed. Kemira Iberica (Spain) improved water management at its Tarragona and Sevilla plants and started using recycled raw materials at Flix.

In North America, supported by corporate audits, Kemiron made significant advances in harmonizing the EHS and quality functions at all Kemiron and Eaglebrook plants. Additional NSF certifications were also obtained. One small plant was

closed, partly as a result of damage caused by Hurricane Katrina. The Brantford plant in Ontario (Canada) is in the process of obtaining a new permit dealing with the prevention of hydrochloric acid discharges.

### Performance Chemicals

The major environmental permit process for the Pori plants (Finland) continued with public hearings. A new permit for using river water was obtained. A EUR 1.6 million investment in expansion of the off-site gypsum landfill was completed. Carbon dioxide emissions were below the allowances granted to the site's power plant. The number of workplace incidents increased. Occasional acidic emissions from the sulphuric acid plant resulted in damage to paintwork on cars in the car park.

The Tiel plant (The Netherlands) evaluated options for reducing noise and expanding the extent of liquid-tight flooring. The site is certified in accordance with ISO 9001, ISO 14001 and OHSAS 18001, as well as with food and feed quality management requirements. The Barcelona site (Spain) is upgrading dust reduction measures at its phosphate plant.

In Finland, the Oulu plants completed the construction of a new oil storage area with improved safety arrangements. Some water pipes were relocated to avoid the occurrence of an accident similar to the one in Helsingborg.

### Paints & Coatings

Tikkurila continued to optimize environmental safety by centralizing the production of solvent-based paints in Russia – production in Estonia has ceased. Internal EHS audits were continued in order to roll out best prac-

tices within units. Soil investigations continued at Debica (Poland) and Stockholm (Sweden).

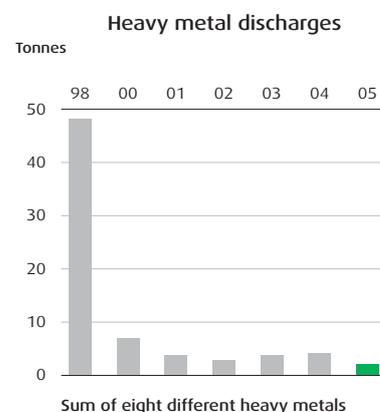
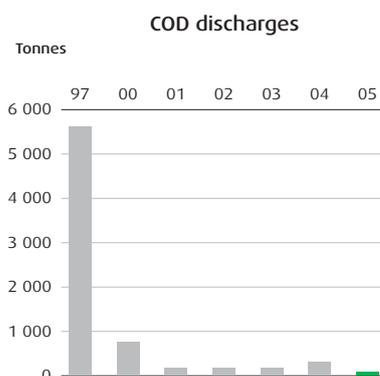
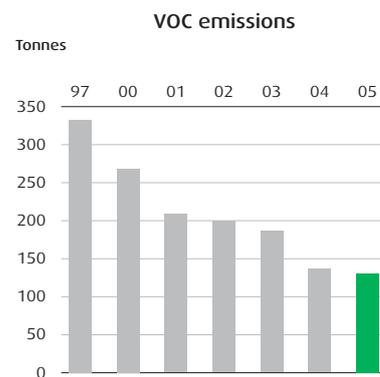
### Environmental statistics

The environmental data presented here is based on reports from 85 production plants. As a result of acquisitions, eleven plants were reporting for the first time. These include five sites that mainly produce sodium chlorate (BA Pulp and Paper), two organic acid/salt plants (BA Performance Chemicals), and four plants in North America producing water treatment chemicals (BA Kemwater). Three minor units were closed during the year.

Divestments that took place in the previous year were not accounted for in 2005, and were the cause of most of the reductions in the corporate level environmental statistics.

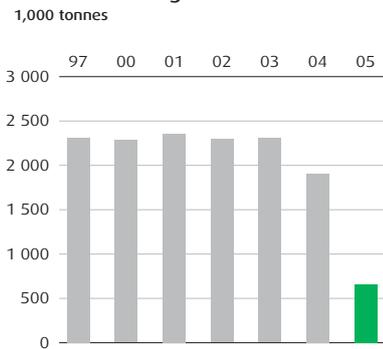
While overall production volume dropped by approximately 50% from the previous year as a result of divestments, the total production of continuing and acquired sites increased by approximately 21%. The acquisition of Finnish Chemicals, a company whose main product is sodium chlorate, more than doubled the Group's use of electricity. This increase is a result of the electrochemical nature of the production process, even when the best available technologies are applied.

The Group's overall environmental index shows a reduction of 50% from the previous year, while net sales declined by 21%. Improvement has been continual since reporting began in the early 1990s. The composition of the index was changed this year by replacing a common nutrient discharge phosphorus with COD (chemical oxygen demand), and

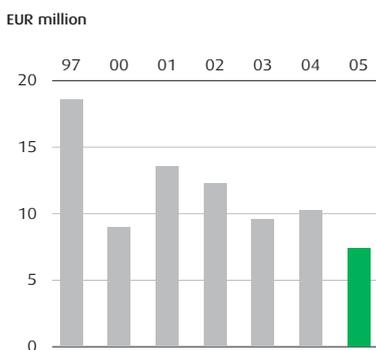


# Environmental report

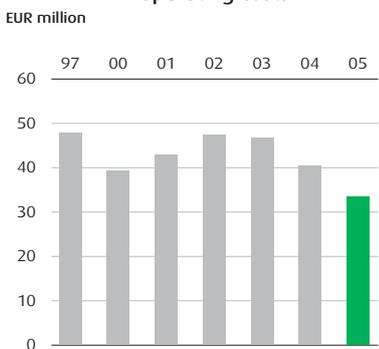
**Non-hazardous waste generation**



**Environmental capital spending**



**Environmental operating costs**



by adding hazardous waste into the index calculation. These changes improve the way that the index reflects the Group's current environmental footprint. Corresponding index values have been recalculated for past years.

The Group's reported carbon dioxide emissions fell by approximately one million tons (56%) as a result of divestments. A further reduction in emissions is expected as the Group has sold two power plants in Finland which represented a major component in the remaining sources of CO<sub>2</sub>. The direct impact of Kemira's operations on climate change will therefore be limited. Emissions of inorganic gases such as sulphur dioxide and nitrogen oxide also fell substantially for the reasons explained above. Emissions of volatile organic compounds (VOC) remained unchanged even when the associated business operations expanded.

All reported wastewater components showed a clear downward trend. The changes were once again due to the Group's divestment of businesses and also a result of the low figures reported by acquired plants.

The Group's generation of non-hazardous waste fell by more than one million tons as a result of the divestment of fertilizer operations. Currently, the by-products of titanium-dioxide pigment production at Pori (Finland) represent the only significant volumes of waste produced by the Group. Recycling efforts in 2005 were successful, and the prospects for increasing co-product sales are good.

Compared to the previous year, hazardous waste generation fell by 50%, primarily as a result of the divestment of certain fine chemical operations.

## Environmental costs

Capital expenditure on environmental protection measures in 2005 declined to EUR 7.4 million. Significant investments in environmental projects are currently planned only at Pori (Finland), and are waiting for approval of a permit application by the authorities. Environmental operating costs in 2005 totaled EUR 33.3 million, 18% less than in the previous year. The reduction was primarily the result of divestments by the Group.

In overall terms, environmental costs represented 1.7% of the Group's net sales. This is the lowest observed figure since the beginning of the reporting in the early 1990s.

## Environmental business

Sales of environment-related products and services totaled approximately EUR 742 million, 14% higher than in the previous year. Sales by BA Kemwater increased more than 20% in global terms, with particular expansion in North America. BA Performance Chemicals achieved growth in the environmental applications of organic salts, as well as in the sales of products based on co-products and waste. Within BA Pulp & Paper, sales of both hydrogen peroxide and specialty chemicals for environmental applications increased slightly. See pages 24-27 of this report for developments in BA Paints and Coatings.

## Product safety and REACH

Kemira continued to develop and roll out a global SAP-based product safety IT system. This improves MSDS management, and helps in meeting the challenges presented by REACH.

Kemira contributed actively to the development of tools for REACH, as well as to the extensive stakeholder dialogue concerning this subject.

(REACH deals with the registration, evaluation, testing and risk assessment of substances manufactured or marketed in the EU, as well as with authorization of the most harmful substances).

Kemira established a REACH Competence Center in Finland to manage the forthcoming REACH registration and authorization procedures with help from all the Group's business units.

Acquisitions expanded Kemira's product range and increased the number of substances that may have to be registered under REACH. The Group's inventory of substances manufactured in or imported into the EU was updated during 2005. At the time when this report was written, the Group manufactured or imported more than 100 such substances, about a quarter of which are currently covered by voluntary industry consortia in the so called ICCA HPV program. It will be possible to utilize the results of this work in the REACH registration process at a later date. Kemira is acting as a lead company in one such consortium. The number of substances produced by the Group that are subject to the authorization procedures proposed in REACH is limited. Pending or future business acquisitions or divestments could change these figures to a considerable extent.

Significant product liability cases, accidents or unforeseen limitations connected with the use of Group products were not encountered during the year.

### Safety

The frequency of occupational incidents (LTA 1) increased to 8.4 (6.7 in 2004) after several consecutive years

of improvement. The main cause for the upturn was Group's acquisition and divestment activity, with most of the newly-acquired sites having higher figures and divested sites being among the best safety performers. The number of incidents at particular main sites in Finland was also relatively high in 2005.

A fatal accident occurred at Kemira Pigments (Pori, Finland) on November, 15. A contractor's employee died when cleaning equipment with high pressure water jet during maintenance work. The largest accidents at Group sites are described above.

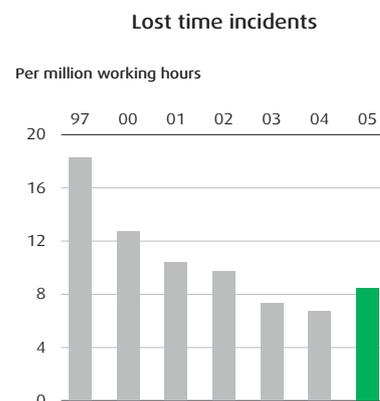
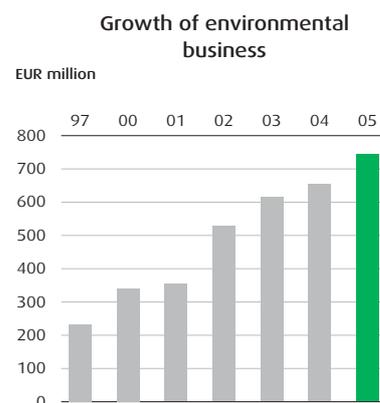
Kemira continued to develop the Group's harmonized safety reporting, incident management and training. As a response to the accidents reported above, the Group also decided to initiate regular process safety evaluations in all its business units.

### Environmental risks, liabilities and legal cases

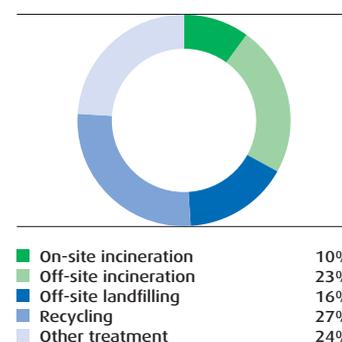
See Notes to the Consolidated Financial Statements, page 98.

### Corporate responsibility (CSR)

Social responsibility issues that concern Group personnel are discussed on page 18–21. A separate review of corporate responsibility in BA Paints & Coatings can be found on pages 24–27.



### Hazardous waste treatment in 2005



# Environmental report

## Environmental and safety management systems at production sites in 2005

| Site                                    | Environment                  | Safety                   |
|---|------------------------------|--------------------------|
| Krems, Austria                          | ISO 14001 <sup>1</sup>       |                          |
| Sao Paulo/Sao Bernardo do Campo, Brazil | ISO 14001                    |                          |
| Telêmaco Borba, Brazil                  | ISO 14001                    | OHSAS 18001 <sup>2</sup> |
| Kolin and Zelivka, Czech Republic       | ISO 14001                    |                          |
| Prerov, Czech Republic                  | ISO 14001                    | OHSAS 18001              |
| Esbjerg, Denmark                        | ISO 14001                    | OHSAS 18001              |
| Tallinn Vivacolor, Estonia              | ISO 14001                    |                          |
| Harjavalta, Finland                     | ISO 14001                    |                          |
| Joutseno, Finland                       | ISO 14001                    | OHSAS 18001              |
| Kokkola, Finland                        | ISO 14001                    | DNV ISRS <sup>3</sup>    |
| Kuusankoski, Finland                    | ISO 14001                    | OHSAS 18001              |
| Oulu, Finland                           | ISO 14001                    | DNV ISRS                 |
| Pori, Finland                           | ISO 14001                    | DNV ISRS                 |
| Siilinjärvi, Finland                    | ISO 14001                    |                          |
| Vaasa, Finland                          | ISO 14001                    | DNV ISRS                 |
| Vantaa, Finland                         | ISO 14001, EMAS <sup>4</sup> |                          |
| Äetsä, Finland                          | ISO 14001                    | OHSAS 18001              |
| Lauterbourg, France                     | ISO 14001                    |                          |
| Pigrol Farben GmbH/Ansbach, Germany     | EMAS                         |                          |
| Rheinberg, Germany                      | ISO 14001                    |                          |
| Ube city, Japan                         | ISO 14001                    |                          |
| Ulsan, Korea                            | ISO 14001                    |                          |
| Rozenburg, Netherlands                  | ISO 14001                    |                          |
| Tiel, Netherlands                       | ISO 14001                    | OHSAS 18001              |
| Fredrikstad, Norway                     | ISO 14001                    |                          |
| Police, Poland                          | ISO 14001                    |                          |
| Swiecie, Poland                         | ISO 14001                    | OHSAS 18001              |
| Wroclaw, Poland                         | ISO 14001                    |                          |
| Estarreja, Portugal                     | ISO 14001                    |                          |
| Bistrita, Rumania                       | ISO 14001                    |                          |
| Fundulea, Rumania                       | ISO 14001                    |                          |
| Barcelona, Spain                        | ISO 14001                    |                          |
| Flix, Spain                             | ISO 14001, EMAS              |                          |
| Santander, Spain                        | ISO 14001, EMAS              |                          |
| Sevilla, Spain                          | ISO 14001, EMAS              |                          |
| Tarragona, Spain                        | ISO 14001, EMAS              |                          |
| Helsingborg, Sweden                     | ISO 14001                    |                          |
| Kvarntorp, Sweden                       | ISO 14001                    |                          |
| Stockholm, Sweden                       | ISO 14000                    |                          |
| Goole, United Kingdom                   | ISO 14001                    |                          |

1) International Organization for Standardization, Environmental management system standard.

2) Occupational Health and Safety, management system standard.

3) Det Norske Veritas, International Safety Rating System.

4) European Union, Eco-Management and Audit Scheme.

## Environmental data for the Kemira group

|  | 2000  | 2002  | 2003  | 2004   | 2005  |
|--|-------|-------|-------|--------|-------|
| <b>Releases into water, tonnes</b>                         |       |       |       |        |       |
| Chemical Oxygen Demand (COD) <sup>1</sup>                  | 749   | 159   | 173   | 309    | 79    |
| Nitrogen (N)   | 948   | 753   | 686   | 542    | 96    |
| Phosphorus (P)   | 1,176 | 16    | 19    | 15     | 7     |
| Suspended solids, 1,000 tonnes                             | 403   | 0.9   | 1.1   | 1.3    | 0.9   |
| Metals (Hg+Cd+Pb+Cr+As+Cu+Ni+Zn)                           | 6.8   | 2.8   | 3.6   | 4.0    | 2.0   |
| <b>Releases into air, tonnes</b>                           |       |       |       |        |       |
| Particulates   | 895   | 850   | 801   | 257    | 128   |
| Sulphur dioxide (SO <sub>2</sub> ) <sup>2</sup>            | 4,359 | 4,580 | 4,436 | 4,330  | 3,036 |
| Nitrogen oxides (NO <sub>x</sub> ) <sup>3</sup>            | 5,455 | 3,950 | 4,038 | 2,864  | 1,152 |
| Carbon dioxide (CO <sub>2</sub> ), 1,000 tonnes            | 2,992 | 2,369 | 2,364 | 1,828  | 805   |
| Volatile organic compounds (VOC) <sup>4</sup>              | 268   | 199   | 186   | 136    | 130   |
| Volatile inorganic compounds (VIC) <sup>5</sup>            | 2,663 | 2,581 | 2,627 | 1,310  | 24    |
| <b>Waste<sup>6</sup>, tonnes</b>                           |       |       |       |        |       |
| Hazardous wastes, total                                    | 5,719 | 5,858 | 8,473 | 10,310 | 5,290 |
| — Off-site landfill  | 518   | 1,038 | 1,356 | 3,621  | 1,316 |
| — Off-site incineration                                    | 4,292 | 3,752 | 5,390 | 4,892  | 1,933 |
| — On-site landfill   | -     | 29    | 64    | 94     | 35    |
| — Other treatment  | 909   | 1,040 | 1,663 | 1,704  | 2,006 |
| Non-hazardous wastes, 1,000 tonnes                         | 2,277 | 2,289 | 2,299 | 1,903  | 653   |
| <b>Natural resources</b>                                   |       |       |       |        |       |
| Fuel consumption, ktoe <sup>7</sup>                        | 1,571 | 523   | 533   | 427    | 292   |
| Fuel consumption as raw material, ktoe                     | -     | 740   | 757   | 560    | 81    |
| Purchased electricity, TJ                                  | 5,300 | 4,654 | 4,633 | 4,137  | 9,594 |
| Purchased heat, TJ   | -     | 794   | 982   | 907    | 1,177 |
| Cooling water volume, million m <sup>3</sup> , approx.     | 387   | 336   | 349   | 239    | 202   |
| Waste water volume, million m <sup>3</sup> , approx.       | 34    | 15    | 15    | 13     | 5.4   |
| <b>Safety</b>  |       |       |       |        |       |
| Number of accidents <sup>8</sup> per million working hours | 12.7  | 9.7   | 7.3   | 6.7    | 8.4   |
| <b>Reference data, EUR million</b>                         |       |       |       |        |       |
| Group net sales  | 2,486 | 2,612 | 2,738 | 2,533  | 1,994 |
| Environmental capital expenditure                          | 8.9   | 12.3  | 9.5   | 10.3   | 7.4   |
| Environmental operating costs                              | 39.3  | 47.3  | 46.7  | 40.4   | 33.3  |
| Total environmental costs, % of net sales                  | 1.9   | 2.3   | 2.1   | 1.8    | 1.7   |

1) Estimate. In this case, partly caused by inorganic discharges.

2) All sulphur compounds calculated as SO<sub>2</sub>.

3) Nitric oxide and nitrogen dioxide calculated as NO<sub>x</sub>.

4) VOC is a sum of volatile organic compounds. Does not include VOC sources in ammonia production.

5) Sum of ammonia, hydrogen chloride and six other simple inorganic compounds.

6) Reported figures do not include mining by-products, on-site incineration, waste which is further processed into products at the sites, or sold as a co-product to external recycling. Figures are on wet basis.

7) 1,000 tonnes of oil equivalent.

8) Accidents causing an employee absence at least one day (LTA1). Includes only figures for production sites in 2000.

# Environmental report

## Assurance statement

At the request of Kemira Oyj, we have reviewed the information, systems and methodologies behind the data and statements presented in the Environmental Report 2005 of Kemira Oyj. The report is the responsibility of and has been approved by the Board of Directors of Kemira Oyj. The inherent limitations of completeness and reliability of the data are set out in the report. Kemira Oyj complies in its environmental reporting, where appropriate, with the Finnish Accountancy Standards Board's recommendation on the recognition, measurement and disclosure of environmental issues in the annual accounts and annual reports of companies (14.01.2003) and the CEFIC Health, Safety and Environmental Reporting Guidelines (1998).

The assurance work was undertaken in accordance with the International Standard on Assurance Engagements (ISAE) 3000 principles. We planned and carried out our work to provide moderate assurance on the reliability of presented data that was subject to assurance.

Our review has consisted of the following procedures:

- enquiries of management responsible for compiling the report;
- an examination of relevant supporting information for data and statements presented;
- a review in more detail of the systems for collection and processing environmental data at operating level at one site in Finland and at one in the Netherlands, selected by us.

Based on our activities undertaken, nothing has come to our attention that causes us to believe that the presented data and statements in the Environmental Report 2005 of Kemira Oyj would not appropriately describe the condition and development of the issues presented in the Environmental Report of Kemira Oyj.

Helsinki, February 7, 2006

KPMG OY AB

Hannu Niilekselä  
Authorized Public Accountant

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