

THE KEMIRA GROUP ENVIRONMENTAL REPORT 2003

The Kemira Group continued to show solid improvement in environmental affairs and safety. Sales of environmental products increased substantially as a result of acquisitions and organic growth. The environmental releases of the production plants were practically unchanged, notwithstanding the increase in the Group's net sales. Environmental costs diminished slightly. A significant reduction of workplace incidents was achieved. Active preparations continued for the major legislative changes within the EU, such as the proposed new chemicals legislation (REACH) and the greenhouse gas trading directive.

Kemira's tenth environmental report deals with the Group companies in line with financial reporting. Whilst every effort has been made to ensure that the information is neither incomplete nor misleading, it cannot be considered as reliable as the financial data of the Annual Report. The report has been prepared, where applicable, in accordance with:

- CEFIC (European Chemical Industry Council): Health, Safety and Environment Reporting Guidelines, November 1998.
- Finnish Accountancy Standards Board's recommendation on the recognition, measurement and disclosure of environmental issues in the annual accounts and annual reports of companies, 2003.

Highlights of activities at the sites

Pulp & Paper Chemicals. The reporting covers, for the first time, two paper chemical plants that were included in the Vulcan acquisition, or a total of 10 sites in North America. Kemira Chemicals Inc. is in the process of putting the RC 14001 management system in place at these sites. RC 14001 covers environment, safety and security as-

pects. The Washougal site obtained an environmental permit, mainly for the dust emissions of the new AKD sizing plant. Limited environmental remediation efforts were continued at Fortville and Prince George.

In Finland, the Vaasa plant submitted an amended application for the remediation of the sediment of the adjacent Lake Infjärden. The site continued extensive field work on the feasibility of the chosen technology. At the Krems plant in Austria, exhaust gases of the new polymer plant are collected and burned in the hot oil boiler plant at the site.

In Canada, the Maitland hydrogen peroxide plant again improved energy efficiency. A leak of 35 m³ of working liquor occurred into the containment basins in October, with a minor release into the environment. The Ulsan and Ube plants in South Korea and Japan improved gas cooling systems and solvent recovery. The Ube plant also obtained ISO 14001 certification in December.

Kemwater plants made several environmental and safety improvements on their sites worldwide. ISO 14001 certificates were granted to the Kemira Ibérica sites in Tarragona, Sevilla and Santander in Spain, as well as in Bistrita, Romania. Some sites installed safer chlorine handling systems, while others increased the use of recycled raw materials. Revamping of the Cremona plant in Italy included a safety assessment. The Police plant in Poland put into operation a more effective hydrochloric acid scrubber and a closed cooling system. In China, the Yixing plant improved occupational safety and rehabilitated a minor piling area.

Industrial Chemicals. The closing of the dicalcium phosphate production at the plant in Helsingborg, Sweden, resulted in a substantial reduction of releases into air and water as well as minimized waste that is sent to the external landfill.

Kemira Pigments, Pori, Finland, initiated a major environmental impact assessment (EIA) project. It deals with four development alternatives and covers capacity expansion, piling and treatment of co-products and waste, and energy production. A permit for expanding the off-site Ahlainen landfill was also obtained.

The Oulu, Finland, plants launched an investment project of EUR 3.2 million for the treatment of oil soot. The separation process replaces the present lagoon system and provides for a direct feeding of soot into the site's power plant. Record production of formic acid and hydrogen peroxide increased energy consumption and related emissions of sulphur and nitrogen oxides and carbon dioxide. A new formic acid storage tank was erected at Vihreäsaari, necessitating a specific environmental permit.

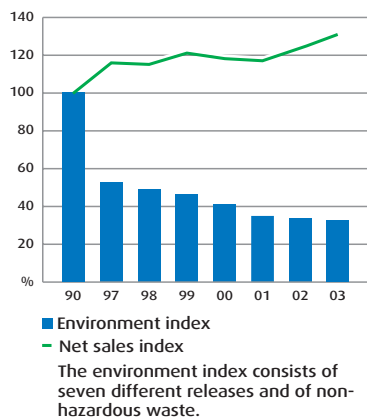
The Kokkola, Finland, plant made successful field trials of the utilization of filtrate sludge. Plans were outlined for closing the on-site waste areas, and ground water monitoring was expanded. Kemira Fine Chemicals' plant investigated recycling of waste water containing bromine.

Paints & Coatings launched a programme for improving health and safety performance. The production of solvent-based products at Lövhölm, in the city area of Stockholm, was moved to Tikkurila, Finland. The Vantaa site continued with development of a washing system to eliminate occasional releases of zinc into sewage.

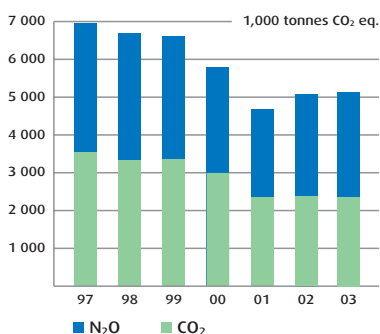
The Dordrecht site was closed in the Netherlands, and the production of the Bury plant in the UK was moved to West Bromwich. The Debica plant in Poland started soil remediation in line with the regulatory requirements.

Kemira GrowHow. The nitric acid plant which was relocated from Ireland to Uusikaupunki, Finland, represents state-of-the-art technology also with respect to environment, safety and

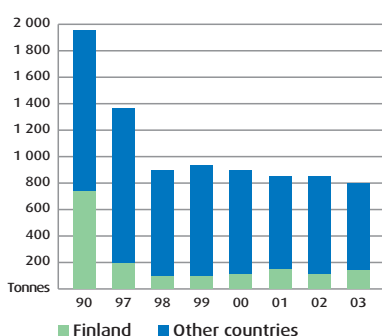
Environmental load and net sales



Greenhouse gas emissions



Dust emissions



energy efficiency. A permit application was submitted for renewing the nitric acid production, and the permit for the operations of the whole site will be pending in 2004. Releases of nutrients into the sea diminished further. Notably, the nitrogen load was reduced by one third from the previous year. A continuous monitoring instrument for measuring nitrogen oxides was installed at the fertilizer plant.

Expansion of the gypsum piling area at Siilinjärvi, Finland, is being completed and an operating permit was obtained for part of the new area. Sulphur dioxide emissions increased somewhat due to a failure of the contact apparatus of the sulphuric acid plant. The Harjavalta, Finland, plant upgraded safety at storage and loading/unloading areas. The fire brigades and first aid groups operating within the Harjavalta industrial park increased their collaboration.

A new, tighter environmental permit was issued to the Ince plant in Chester, UK. The Hull plant became ISO 14001 certified in June. The Tertre plant in Belgium reduced emissions of nitrogen oxides to some extent even when production increased substantially. At the Basècles site, more extensive-than-estimated soil contamination caused by previous operations was observed. Kemira SA/NV is also committed to the energy efficiency programme of the national chemical industry.

In Denmark, the Fredericia plant continued with the noise abatement project and improved dust monitoring. Some overshoots of the permitted air and water limits were noted. The Unbogintwini plant in South Africa cut dust emissions and initiated a soil survey.

Environmental statistics

The environmental data presented here is based on reports from 77 production plants globally. Six new sites were reporting for the first time, while three sites were closed or sold. Comparability with the figures from the previous year is thus good.

Mergers and acquisitions did not change the environmental statistics significantly in 2003. Kemiron Companies Inc., now a majority owned company of Kemira, operates 13 production and distribution units in the United States. These are not included in the figures for 2003. Similarly, the acquired Sausheim paper chemical plant in France will be incorporated in 2004.

The overall production volume increased by about 5%. Total energy consumption grew by 2%, dominated by a similar increase in fuel consumption. A parallel increase could be observed in the amount of process and cooling water consumed in production. The total environmental index of the Group was practically unchanged compared with the previous year, and is 67% lower than in the reference year 1990.

Of greenhouse gas emissions, a minor reduction in carbon dioxide took place, but nitrous oxide from nitric acid plants was slightly up due to production increases. According to present information, five Kemira sites are obliged to take part in the carbon dioxide trading scheme of the EU. The trading is assumed to start in 2005, with Pori and Oulu as the most relevant sites within Kemira. Administrative preparation of greenhouse gas trading progressed towards plant-level quota allocations in the member states.

Emissions of sulphur compounds and dust showed minor reductions. The VOC emissions typical of paints and organic specialty chemistry were down 7% due to production changes in the paint and coatings business. Releases into water changed in both directions depending on the compound. A trend-like reduction of nearly 10% was observed in nitrogen, which mainly comes from fertilizer production.

Generation of non-hazardous waste was on a gently ascending curve. Growth of pigment production in Pori was accompanied by increases in the net piling of co-products and waste. On the other hand, less waste was reported



by Siilinjärvi and Helsingborg, the two other important Kemira sites in this respect. Hazardous waste generation was up 7%, mainly in the form of increased amounts of waste sent for off-site incineration.

Environmental costs

Capital expenditures on environmental protection diminished slightly from the previous year, to about EUR 10 million. Big environmental projects were not pending. A soot treatment project at the Oulu plant was the most important investment, and moderate improvements also took place at the Pori, Siilinjärvi and Uusikaupunki plants. Apart from the alternatives included in the environmental impact assessment projects in Pori and Siilinjärvi, no significant environmental projects are planned.

Environmental operating costs totalled about EUR 47 million and were practically unchanged compared with the previous year. Minor increases were caused by the plants reporting for the first time, and by increased production at a few other units. Environmental compensation totalled less than EUR 1 million and consisted mainly of specific water protection compensation at the Uusikaupunki plant in Finland.

Environmental business

Kemira’s environmental business grew substantially as a result of both acquisitions and organic growth. Sales of environment-related products and services totalled EUR 614 million, or 22% of the Group’s net sales. About one half of these products are used directly in environmental applications. The biggest growth came in sales of water treatment chemicals, certain paper chemicals and catalytic equipment.

Kemira Kemwater’s sales increased by one quarter. The strategic business unit improved its position significantly in the United States by acquiring a majority holding in Kemiron Companies Inc. In Russia, the aluminium sulphate business of Pigment Corporation in

St Petersburg became a wholly owned subsidiary of Kemira. Kemira also took over the water treatment chemical business of Ageco in Italy. Kemwater Services Oy, now fully owned by Kemira, expanded its operations, notably, in Finland and northwestern Russia.

In sludge treatment Kemira has developed the Kemicond technology to the commercialization stage. This method minimizes the amount of municipal waste water sludge and improves its quality. In addition to cost savings, the method provides more efficient sludge disinfection and odour control.

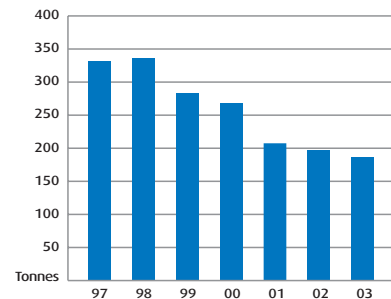
Sales of hydrogen peroxide, an alternative to chlorine, were stable, while Pulp & Paper Chemicals’ deliveries of solutions for improving water treatment in the forest industry increased substantially. A separate description of corporate sustainability in this business can be found on page 25. Sales of sodium percarbonate, which is replacing boron compounds in detergents, were up by one quarter.

Ecocat boosted sales by more than a half, to EUR 51.6 million. The company has developed new catalytic converter products and production methods. Ecocat presently has canning units in Italy, India and Romania, and production in Finland and the United States.

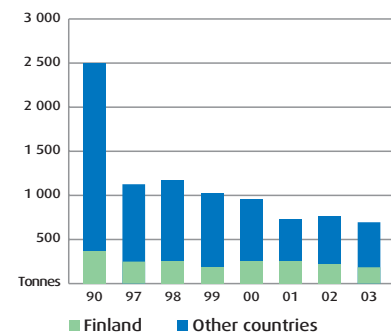
Sales of products based on waste and co-products increased by about 7%. At Siilinjärvi, the annual production capacity of calcium sulphate pigment now amounts to 100,000 tonnes, and sales were up about 30%. Use of filtrate sludge from the Kokkola industrial salt plants for the final closing of landfills and road construction showed promising results in extensive field trials. The alkaline etching business acquired by GrowHow in Finland increases the use of ammonia and copper as recycled raw material.

Sales of environmentally sound paint and coating products remained stable. Product development efforts concentrated on water-borne alternatives for demanding applications, such

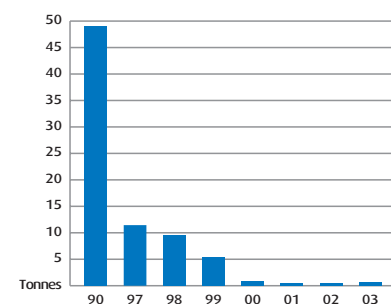
VOC emissions



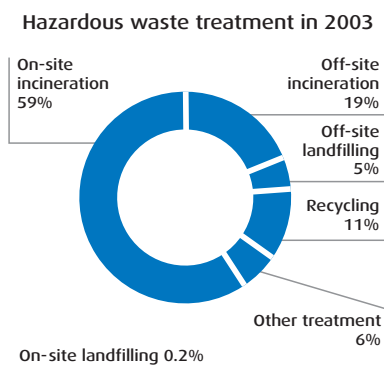
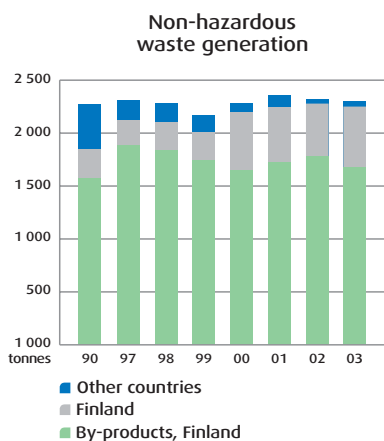
Nitrogen discharges



Heavy metal discharges



Sum of five different heavy metals, mostly chromium.



as furniture paints. Development of industrial coatings continued to focus on environmentally beneficial products, including water-borne, solvent-free and high solid applications. In these businesses, substantial efforts will go into replacing harmful raw materials with safer alternatives. Examples of such groups of substances are APEO compounds such as dispersion additives, phthalates as softeners and certain preservative agents.

Product safety

The intensive public debate on REACH dominated the year in product safety. This coincided with proactive work on preparations for legislative changes within the Group. The functionality of the new regulations as well as their impact on international trade and competitiveness remain the main concerns of the European chemical industry. Prioritization is also needed to concentrate on substances which cause the biggest risks.

The proposal for the REACH regulation, issued by the EU Commission in October, is an extensive 1,200 page legal package. It deals with registration, evaluation, testing, and risk assessment of substances which are manufactured or put on the market in the EU as well as with the authorization of the most harmful substances. REACH would cover substances as such, in preparations or even in equipment. Responsibility for producing the very extensive amount of information would be placed on the manufacturers and importers of the substances. Obligatory registration would be company and substance specific, but companies are also encouraged to form consortia. Distributors and end-users of chemicals would be obliged to take part in information exchange along the supply chain as well as in the safety assessment of chemicals in different uses.

At present, Kemira manufactures or imports approximately 120 substances

which would be covered by the REACH registration procedures. The number of harmful substances subject to authorization procedures is very limited.

Kemira increased its participation in the voluntary testing and risk assessment programmes, which now cover 45 substances in nine programmes. Kemira experts contributed actively to REACH follow-up within different bodies in chemical industry. An assessment of the business impacts of the proposed legislative changes was made together with the Management Board and the business units. Training and communication on this topic was active.

The Group's product safety network was enlarged. An evaluation of the development needs of the Group's chemical registers was conducted. A Group-wide application for a product safety information exchange was placed in use.

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

Safety

The number of occupational incidents has shown a positive development in the Group for several years. The LTA1 level was 7.3 in 2003, dropping by 25% from the previous year's figure. The best results were achieved by Pulp & Paper Chemicals and GrowHow.

There were no fatal accidents, but incidents leading to a serious injury of one employee occurred at the Oulu, Kokkola and Krems plants. The roof fire at the Pori pigments plant in February caused limited damage to property and interrupted production.

Kemira started implementing Pride Synergi safety software at its main sites. With the help of the joint application, the root causes of incidents and close-call situations will be analyzed and reported. Special software was also placed in use for managing the transport safety cards in Europe.

An investment project for improving access control and site security was continued. New corporate networks were formed in specific areas of technical safety. Additional training was given concerning behavioural safety, work safety cards and fire prevention. Site safety audits continued at the business units. At the main sites, these were based on the ISRS rating system.

Environmental risks, liabilities and legal cases

See Notes to the Consolidated Financial Statements, page 87.

Corporate responsibility

Social responsibility issues concerning the personnel are discussed on page 23.

Kemira GrowHow committed itself to the core values formulated by EFMA, the European Fertilizer Manufacturers' Association. The value commitment includes high ethics, sustainable development, and achieving the highest possible level of safety, health and environmental compliance. Progress of the member companies will be monitored and commitment to the values will also become a condition for membership.

Kemira Chemicals Brasil Ltda obtained a unified certificate for its integrated management system, including quality, the environment, safety and social responsibility. The social part of certification was based on the SA 8000 standard.

The Oulu and Fredericia plants won a regional award for their good environmental contribution to society. Of the main sites, for example, the Tertre site in Belgium holds regular advisory meetings with the local public, the authorities and industry representatives.

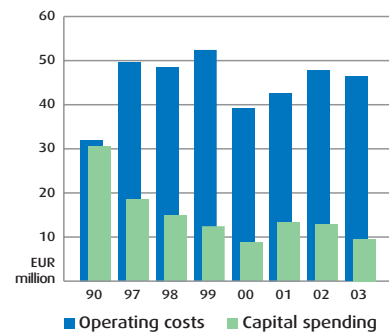
In Finland, a Kemira research team received a chemical industry award for an innovation that they came up with. The team developed new environmentally beneficial chemicals for binding the manganese and iron contained in the pulp. The innovation reduces nitro-

gen discharges in particular, and it aids in the use of oxygen chemicals in pulp bleaching.

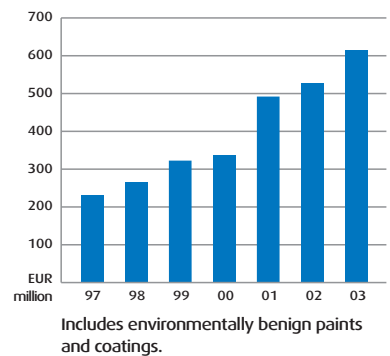
Tikkurila decided to build a training centre in Vantaa, Finland, especially for the purpose of supporting the training of professional customers in the use of paint and coating applications. The centre is a natural continuation of long-term course activities and a response to the expectations of customers and the personnel.

Kemira's Chemistry class in Espoo, Finland, participated in the Science03 project of the Finnish Academy of Sciences, which present natural sciences and technology as a part of everyday life. Kemira also continued as the main sponsor of the traditional big bird-watching event in Finland called 'Battle of the Towers'.

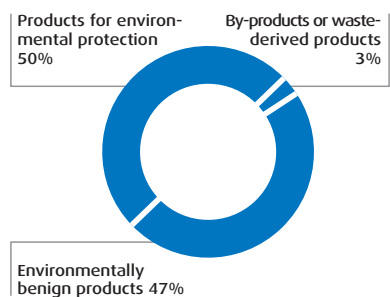
Environmental capital spending and operating costs



Growth of environmental business



Environment-related business 2003



Environmental data for the Kemira Group

	1990	2000	2001	2002	2003
Releases into water, tonnes					
Chemical Oxygen Demand (COD) ¹	-	749	168	159	173
Nitrogen (N)	2,500	948	718	753	686
Phosphorus (P)	4,952	1,176	17	16	19
Suspended solids, 1,000 tonnes	934	403	1.2	0.9	1.1
Metals (Hg+Cd+Pb+Cr+As)	49	0.9	0.6	0.4	0.7
Metals (Hg+Cd+Pb+Cr+As+Cu+Ni+Zn)	-	6.8	3.7	2.8	3.6
Releases into air, tonnes					
Particulates	1,950	895	854	850	801
Sulphur dioxide (SO ₂) ²	23,138	4,359	4,272	4,580	4,436
Nitrogen oxides (NO _x) ³	8,546	5,455	4,583	3,950	4,038
Carbon dioxide (CO ₂), 1,000 tonnes	-	2,992	2,343	2,369	2,364
Volatile organics (VOC) ⁴	-	268	208	199	186
Volatile inorganics (VIC) ⁵	-	2,663	2,671	2,581	2,627
Waste⁶, tonnes					
Hazardous wastes, total	8,669	5,719	4,737	5,858	8,473
- Off-site landfill	-	518	1,103	1,038	1,356
- Off-site incineration	-	4,292	2,829	3,752	5,390
- On-site landfill	-	-	2	29	64
- Other treatment	-	909	803	1,040	1,663
Non-hazardous wastes, 1,000 tonnes	2,254	2,277	2,352	2,289	2,299
Natural resources					
Fuel consumption, ktoe ⁷	-	1,571	1,160	523	533
Fuel consumption as raw material, ktoe	-	-	-	740	757
Purchased electricity, TJ	-	5,300	4,400	4,654	4,633
Purchased heat	-	-	-	794	982
Cooling water volume, million m ³ , approx.	-	387	377	336	349
Waste water volume, million m ³ , approx.	-	34	16	15	15
Safety					
Number of accidents ⁸ per million working hours	-	12.7	10.4	9.7	7.3
Reference data, EUR million					
Group net sales	2,087	2,486	2,454	2,612	2,738
Environmental capital expenditure	31.1	8.9	13.5	12.3	9.5
Environmental operating costs	32.3	39.3	42.8	47.3	46.7
Total environmental costs, % of net sales	3.0	1.9	2.3	2.3	2.1

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

2) All sulphur compounds calculated as SO₂.

3) Nitric oxide and nitrogen dioxide calculated as NO_x.

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, mostly ammonia in this case.

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. Includes fuel as a raw material in 2000-2001.

8) Accidents causing an employee absence at least one day (LTA1). Includes only figures for production sites 2000-2001.

Environmental and safety management systems at production sites in 2003

Site	Environment	Safety
Chemicals		
Oulu, Finland	ISO 14001 ¹	DNV ISRS ²
Kokkola, Finland	ISO 14001	DNV ISRS
Pori, Finland	ISO 14001	DNV ISRS
Vaasa, Finland	ISO 14001	
Harjavalta, Finland	ISO 14001	
Helsingborg, Sweden	ISO 14001	
Lauterbourg, France	ISO 14001	
Fredrikstad, Norway	ISO 14001	
Flix, Spain	ISO 14001, EMAS ³	
Kvarntorp, Sweden	ISO 14001	
Krems, Austria	ISO 14001	
Swiecie, Poland	ISO 14001	Other
Ulsan, Korea	ISO 14001	
Esbjerg, Denmark	ISO 14001	
Prerov, Czech Republic	ISO 14001	Other
Police, Poland	ISO 14001	
Fine Chemicals, Kokkola, Finland	ISO 14001	DNV ISRS
Rheinberg, Germany	ISO 14001	
Santander, Spain	ISO 14001, EMAS	
Sevilla, Spain	ISO 14001, EMAS	
Tarragona, Spain	ISO 14001, EMAS	
Bistrita, Rumania	ISO 14001	
Fundulea, Rumania	ISO 14001	
Telémaco Borba, Brazil	ISO 14001	Other
Ube city, Japan	ISO 14001	
Paints & Coatings		
Vantaa, Finland	ISO 14001, EMAS	
Tallinn, Estonia	ISO 14001	
Riga, Latvia	ISO 14001	
Stockholm, Sweden	ISO 14001	
Ansbach, Germany	EMAS	
GrowHow		
Uusikaupunki, Finland	ISO 14001	DNV ISRS
Harjavalta, Finland	ISO 14001	DNV ISRS
Siilinjärvi, Finland	ISO 14001	DNV ISRS
Ince, UK		DNV ISRS
Hull, UK	ISO 14001	
Tertre, Belgium	ISO 14001	DNV ISRS
Fredericia, Denmark	ISO 14001	DNV ISRS
Helsingborg, Sweden	ISO 14001	
Metalkat (Ecocat)		
Laukaa, Finland	ISO 14001	

1) International Organization for Standardization, Environmental management systems.

2) Det Norske Veritas, International Safety Rating System.

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

Assurance statement

At the request of Kemira Oyj, we have reviewed the information, systems and methodologies behind the environmental, health, safety and corporate responsibility data and statements presented in the Environmental Report 2003 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 accuracy of the data are set out in the report.

Our review has consisted of the following procedures:

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

Kemira Oyj complies, 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). The report has been prepared, where appropriate, in line with the CEFIC Health, Safety and Environmental Reporting Guidelines (1998).

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 2003 of Kemira Oyj would not provide a fair and balanced view on the group's environmental, health, safety and corporate responsibility performance.

Helsinki, 10 February 2004

KPMG WIDERI OY AB

Hannu Niilekselä
Authorized Public Accountant

Tuomas Suurpää
Assistant Manager, Sustainability Assurance

