

# RAISIO GROUP EHS REPORT 2002

## Contents

Scope of the report

EHS, General information

Chief executive's review

Raisio Group in brief

EHS policy

EHS objectives

Social responsibility

EHS management

EHS indicators

Products

Consumption of raw materials and resources

Safety

Compliance with legislation and environmental incidents

Environmental costs and investments

Risk management

Work accidents

Emissions and waste

Emissions into water

Emissions into air

Waste

Personnel

EHS and employees

EHS reviews

Raisio Chemicals

EHS targets

EHS management

Development

EHS events

Raisio Nutrition

EHS targets

EHS management

Development

EHS events

Raisio Life Sciences

EHS targets

EHS management

Development

EHS events

Contacts

Glossary

## **Scope of the report**

The reporting covers associated companies and subsidiaries with production in which Raisio Group had a stake of more than 50% during the year in review. Of the Latexia S.A. production sites, Latexia Suomi Oy, Latexia SB Oy, Latexia Sverige Ab and Latexia Österreich GmbH are included. However, the reporting does not yet cover PT Latexia Indonesia, Latexia France SAS, Latexia Iberia S.L., or Latexia Brasil Ltda., which were all incorporated into Raisio Chemicals as of August 1, 2002.

EHS reporting is limited to the environmental, health and safety aspects of the Group's own business operations. Emissions caused by the generation of bought-in energy are not included.

## **EHS, GENERAL INFORMATION**

### **Chief executive's review**

During 2002, a number of steps forward were made in many areas. Yet the market situation continued to be difficult, especially in the chemical sector. This hampered strategic progress and dampened the growth and profitability below our expectations. Our greatest challenges for 2003 lie in getting Raisio Chemicals back onto a growth track and improving profitability in all business sectors.

We have expanded our environmental policy to clearly cover also health and safety matters. One of the EHS objectives is to develop and manufacture safe, healthy and environmentally friendly products favouring renewable natural resources and using non-renewable resources prudently. Promotion of open debate and interaction on environmental, health and safety matters between our customers, authorities, personnel and other stakeholders is our objective as well. In addition, each business sector has set its own EHS targets, which are incorporated in their management systems.

The primary targets adopted by the Group are profitability and customer satisfaction. These are best achieved with the support of openmindedness, responsibility, expertise, and enjoyment in working together, our key values. We aim at the best possible results in everything we do, and continuous improvement is an essential principle in our EHS activities as well.

Environmental, health and safety matters are an important part of Raisio Group's day-to-day operations. We plan to publish our first social responsibility report in 2006 and have already taken steps to launch the related reporting systems.

### **Raisio Group in brief**

Raisio Group is a growing international industrial group whose operations are divided into three business sectors: Raisio Chemicals, Raisio Nutrition and Raisio Life Sciences.

Raisio Chemicals serves the paper industry globally, supplying it with functional paper chemicals and chemical concepts. It is one of the world's leading manufacturers of starch binders, latex binders and specialty chemicals. Raisio Nutrition comprises of Food, Animal Feeds and Malt business areas and the Grain Starch business. Well-known brand names in Finland include Elovena, Sunnuntai and Keiju. The main product of the Raisio Life Sciences business sector is the Benecol ingredient, stanol ester, which helps to reduce cholesterol.

Raisio Group employs some 2,800 people, 45 per cent of them abroad. It has production units in 29 locations in 14 countries. The Group's head office is in the town of Raisio near Turku in southwest Finland, but there are also production plants in eight locations elsewhere in Finland. The Group has sales offices all over the world.

Consolidated turnover in 2002 amounted to EUR 843 million. Turnover from international operations represented 53 per cent of total turnover. The result before taxes was EUR 9.3 million. Earnings per share came to EUR 0.03.

The free shares of the parent company, Raisio Group plc, are quoted on the Helsinki Exchanges Main List under the food industry and its restricted shares on the I list. The company has almost 50,000 shareholders.

## **EHS policy**

The Raisio Group is a growing international industrial group. It develops, produces and markets paper chemicals, foods and functional food ingredients, animal feeds and malts. We are expanding our product range by putting competitive, innovative and safe products onto the market.

We want to be a reliable and preferred partner for our customers and other stakeholders, taking full responsibility for our actions in society and in the use of natural resources. We use renewable natural resources as raw material whenever possible.

Our aim is to be a successful company at the forefront of our sector and to be known for our first-class environmental and quality work. To achieve our targets, our business sectors define annual objectives for environmental, health and safety issues and monitor their fulfilment.

We comply with all local, national and international laws and regulations that concern our operations. We are committed to the principles of sustainable development laid down by the International Chamber of Commerce. Moreover, Raisio Chemicals is committed to the international Responsible Care programme.

By acting safely and investing in better safety we promote the quality and economy of our operations. We are constantly improving the environmental friendliness and safety of our operating processes, utilizing the know-how of our international resources and partners. Environmental, health and safety issues are part of our management policy.

Raisio personnel receive regular training in environmental, health and safety matters and apply the principles involved in their daily work. We provide our various stakeholders with open and honest information about our operations.

Raisio Group Board of Directors  
December 19, 2002

## **EHS objectives**

Both the environment and society at large are prime considerations for Raisio Group in everything it does. At group level the main environmental, health and safety objectives are:

- Development and manufacture of safe, healthy and environmentally friendly products favouring renewable natural resources and using non-renewable resources prudently.
- Prevention of operational hazards and accidents and their consequences.
- Reductions in the amount and harmfulness of emissions and discharges, and an increase in waste and side products recovery.
- Promotion of open debate and interaction on environmental, health and safety matters between our customers, authorities, personnel and other stakeholders.

## **Social responsibility**

Social responsibility comprises economic and environmental responsibility, and consideration for social matters. By acting in a responsible way and by ensuring the high quality of its operations, Raisio Group can safeguard long-term profitability and provide its owners and other stakeholders with added value. We have undertaken to observe the Business Charter for Sustainable Development of the International Chamber of Commerce (ICC). Raisio Chemicals has also joined the chemical industry's international Responsible Care programme.

Reporting the environmental, health and safety issues and matters of social concern is an essential part of the work to develop social responsibility reporting launched by Raisio Group in autumn 2002, and the strategy and values already adopted by the Group provide a sound basis for this work. We aim gradually to incorporate matters pertaining to social responsibility into our annual reports as we make progress in putting them into practice.

## **Cooperation with stakeholders and support for non-profit activities**

The units of Raisio Group and their staff members already contribute significantly to the development of different communities. Cooperation with local cultural, youth and sports organizations has been going on for many years and has become an established part of cooperation between Raisio Group and its stakeholders. One example is the high-quality Naantali Music Festival, which Raisio Group has been supporting for many years. We have also done cooperation for several years with the Tahvio primary school close to our head office and plants in Raisio.

During 2002, Raisio Group took part in a UNICEF international girls' education campaign, and supported the children's clinic of the Turku University Hospital.

Raisio Group cooperated closely with local and international scientific communities in research and development. The Group also has its own research foundation which enables development of methods for cultivating oil plants, grain and potato, and supports scientific research aimed at improving the quality of foods, animal feeds and chemical industry products and the development of new production methods.

Raisio Group is a member of the Water Protection Association of Southwest Finland as well as a contributing member of the Finnish Association for Nature Conservation. To promote the recycling of packaging materials in Finland, Raisio Group has registered itself on the Environmental Register of Packaging, and is a partner in Suomen Uusiomuovi Oy, Suomen Teollisuuskuuti Oy, and Suomen Kuluttajakuitu ry. Carlshamn Mejeri in Sweden is listed on Reparegistret AB.

## **EHS management**

In 2002, Raisio Group decided to extend the scope of environmental reporting to health and safety matters as well. Environmental objectives are now called EHS objectives, which have been handled and approved by the Group's executive committee. Each business sector and business area incorporates its own EHS targets in its management system and monitors their achievement.

Group-level EHS matters are the responsibility of Antti Salminen, CFO; the coordinator for Group-level environmental affairs is Maritta Punta, head of Energy and Environmental Services.

All Raisio Group business sectors have solid expertise in EHS matters related to their respective businesses. Environmental management complies mainly with the ISO 14001 standard. Most management systems adopted by business sectors and business areas have been certified.

## Raisio Group's quality and environmental management systems in 2002

	Environmental system	Quality system	Products
<b>RAISIO CHEMICALS</b>			
<b>Finland</b>			
Raisio Chemicals Oy (Raisio, Mietoinen, Anjalankoski)	ISO 14001	ISO 9001	Cationic polymers, starches, hydrophobic sizes, cationising agents, specialty chemicals
Oy Kationi Ab (Lapua)	ISO 14001	ISO 9001	Starches
Latexia Suomi Oy, Latexia SB Oy (Anjalankoski)	ISO 14001	ISO 9001	Latexes
Finnamyl Oy (Kokemäki)	ISO 14001	ISO 9001	Potato starch
Lapuan Peruna Oy (Lapua)	ISO 14001	ISO 9001	Potato starch
<b>Europe</b>			
Raisio Echeveste S.A. (Tolosa, Spain)	Under preparation	ISO 9002	Hydrophobic sizes
Raisio France S.A. (Toulouse, France)	ISO 14001	ISO 9002	Hydrophobic sizes
Raisio Chemicals Paperion S.A. (Gron, France)	Under preparation	ISO 9002	Hydrophobic sizes
Raisio Belgium N.V. (Veurne, Belgium)	Under preparation	ISO 9002	Starches and cationic polymers
Raisio Chemicals Deutschland GmbH (Mainz-Laubenheim, Germany)	-	-	Hydrophobic sizes
Raisio Chemicals UK Ltd. (Blackburn, UK)	ISO 14001	ISO 9002	Hydrophobic sizes
Latexia Sverige AB (Vallvik, Sweden)	ISO 14001	ISO 9002	Latexes
Latexia Österreich GmbH (Pischelsdorf, Austria)	Under preparation	ISO 9001:2000	Latexes
Latexia France SAS (Ribecourt, France)	-	ISO 9002	Latexes
Latexia Iberia S.L. (Guturribay, Spain)	Under preparation	ISO 9001	Latexes
<b>Americas</b>			
Raisio Chemicals Canada Inc. (Squamish, Canada)	ISO 14001	ISO 9002	Hydrophobic sizes, specialty chemicals, poly-aluminium chlorides
Raisio Chemicals US Inc. (Berwick, USA)	Under preparation	ISO 9002	Starches, cationic polymers
Raisio Quimica Andina S.A. (Itagüi-Antioquia, Colombia)	Under preparation	Under preparation	Hydrophobic sizes
Latexia Brasil Ltda (Paulinia, Brazil)	Under preparation	Under preparation	Latexes

<b>Asia</b>			
P.T. Intercipta Kimia Pratama (Serang, Indonesia)	-	ISO 9002	Hydrophobic sizes
Raisio Chemicals Korea Inc. (Cheonan, Korea)	ISO 14001	ISO 9001:2000	Specialty chemicals, hydrophobic sizes
PT Latexia Indonesia (Merak, Indonesia)	-	ISO 9002	Latexes
<b>RAISIO NUTRITION</b>			
<b>Food business area</b>			
Margarine business: Raisio Margariini (Raisio)	Under preparation	ISO 9001	Margarines, spreads and cream cheeses, frozen pastry doughs
Margarine business: Carlshamn Mejeri AB (Karlshamn, Sweden)	ISO 14001	-	Margarines, spreads, ice creams, soy or oat- based vegetable oil products, almond paste
Margarine business: Raisio Polska Foods Sp. z o.o. (Karczew, Poland)	-	-	Margarines, spreads
Milling business: Melia Oy (Nokia, Raisio)	Under preparation	ISO 9001	Flours, flakes, pastas, rices
Potato Processing business (Vihanti)	Under preparation	Under preparation	Potato products
<b>Animal Feeds business area</b>			
Raisio Feed Ltd (Raisio, Oulu, Anjalankoski)	ISO 14001	ISO 9001	Feeds for cattle, pigs, poultry and fish
Monäs Feed Oy Ab (Uusikaarlepyy)	-	-	Fur animal feeds
Oil Milling business (Raisio)	Under preparation	ISO 9002	Seed meals and soy meals, rapeseed oils and soybean oil
<b>Malt business area</b> Raisio Malt (Raisio)	ISO 14001	ISO 9002	Malts
<b>Grain Starch business</b> Raisio Grain Starch Oy (Raisio)	ISO 14001	ISO 9001	Grain starch
<b>RAISIO LIFE SCIENCES</b>			
Raisio Benecol Oy (Raisio, Summerville, USA)	-	Under preparation	Sterol-based ingredients
<b>SERVICE FUNCTIONS</b>			
Purchase and Logistics	ISO 14001	ISO 9001:2000	Purchase of grains and oil plants, orders for packaging materials

## EHS INDICATORS

### PRODUCTS

*Raisio Group objective: Development and manufacture of safe, healthy and environmentally friendly products favouring renewable natural resources and using non-renewable resources prudently.*

More than 90% of the raw materials used by Raisio Group come from renewable natural resources, mostly grain. Material transfers between business areas mean that the raw material volumes presented in this report may overlap.

The operation of the Raisio Group production plants generate only small amounts of environmental pollution at local level. One of the most important eco-efficiency indicators is energy consumption.

For production processes, Raisio Group uses electricity and heat energy. We buy all our electricity and most of the heat energy (which is mainly generated from coal or oil) from outside suppliers. Electricity is purchased without any certified knowledge of its origin.

#### Production volumes

	1998	1999	2000	2001	2002
Production volumes, 1,000 tonnes	1,672	1,704	1,556	1,686	2,138

All references to 'tonnes' in this report are metric tonnes.

#### Consumption of raw materials and resources

	1998	1999	2000	2001	2002
Raw materials, 1,000 tonnes	1,900	1,940	2,360	2,045	1,913
Raw materials, tonnes/output in tonnes	1.14	1.14	1.52	1.21	0.89

	1998	1999	2000	2001	2002
Additives, 1, 000 tonnes	1.13	2.40	2.81	3.43	2.64
Packaging materials, 1,000 tonnes	21.34	16.43	16.52	13.82	13.93

	1998	1999	2000	2001	2002
Water, 1,000 m <sup>3</sup>	3,062	2,862	3,012	4,323	3,985
Water, m <sup>3</sup> /output in tonnes	1.83	1.68	1.94	2.56	1.86

	1998	1999	2000	2001	2002
Heat, GJ	1,400,000	1,465,000	1,615,000	1,627,000	1,961,000
Heat, GJ/output in tonnes	0.84	0.86	1.04	0.97	0.92

	1998	1999	2000	2001	2002
Electricity, MWh	225,000	228,000	205,000	223,000	222,000
Electricity, MWh/output in tonnes	0.13	0.13	0.13	0.13	0.10

## **SAFETY**

*Raisio Group objective: Prevention of operational hazards and accidents and their consequences.*

### **Compliance with legislation and environmental incidents**

Application for new environmental permits for the Raisio Group production plants will take place mainly in 2003. Oil Milling business has already applied for an environmental permits, and the process concerning the maximum discharge allowed under the permit conditions is still pending. Raisio Group is not involved in any legal proceedings concerning environmental matters.

In September 2002, there was an explosion in the acrylonitrile tank at the Latexia SB plant in Kaipiainen, which belongs to Raisio Chemicals. The blast did not cause any injuries or chemical leaks to the soil or groundwater, however.

As Raisio Group has no transport fleet of its own, all external transport is carried out in partnership with transport companies. So far, it has not been possible to assess the extent of the environmental load caused by third-party transportation.

Each Raisio unit dealing with road transport of hazardous substances has a designated safety advisor, who has passed the relevant test to establish their competence.

There were eight transport accidents in 2002, causing injuries to two people. None of these accidents caused any environmental damage.

### **Environment costs and investments**

Raisio Group spent some EUR 6.8 million on environmental and safety investments (2001: EUR 2.6 million). The most important investments were a new starch production process at Lapua, which will reduce nutrient levels in the wastewater generated by the process, and construction of a new office building at Kaipiainen to eliminate mould problems.

Operating costs for waste treatment, air and water pollution control and occupational safety were around EUR 4.5 million (2001: EUR 4.2 million).

Environmental protection costs associated with waste arise from transport and treatment, with wastewater from pre-treatment and invoicing for treatment by others, and with prevention of air pollution from filter renewal and treatment of used filters.

Wastewater generated at the Raisio's production area is pre-treated and then led to the City of Raisio's municipal wastewater treatment plant. Because the operating permit for the municipal facility requires effective denitrification of wastewater, the municipality of Raisio is carrying out extensive renovations at the facility. The cost implications of these renovations for Raisio Group are still unclear.

Raisio Group has no significant quantities of waste in storage, nor is the company under any obligation to clean any contaminated sites.

## Risk management

In 2002, Raisio risk management involved preventing safety risks at production plants and raising the level of hedging. Most Raisio Group production units have used risk management experts to assess their operating conditions, practices and safety plans. One business area has started a pilot project aimed at developing and introducing systems to assess and measure the level of risk management.

## Work accidents

The frequency of work accidents is used as the safety indicator. The figure includes accidents resulting in sick leave exceeding three days but not injuries, deaths or invalidity incurred between home and workplace.

	1998	1999	2000	2001	2002
Accidents resulting in min. 3 days' sick leave	67	50	50	64	61
Lost working hours (min. 3 days)	5,709	5,231	3,907	7,414	6,680

## **EMISSIONS AND WASTE**

*Raisio Group objective: Reductions in the amount and harmfulness of emissions and discharges, and an increase in waste and side products recovery.*

The Group has facilities for treating wastewater, another important form of process waste, but also uses water treatment plants belonging to its partners. It is impossible, indeed impractical, to calculate or estimate the water pollution caused by outside suppliers. Thus, the volume of wastewater alone is used as an indicator.

No continuous quantitative measurements are made of noise, odorous or dust emissions, so no continuous indicator data is available. Sustained action during investments and repairs helps to reduce environmental hazards. Only few complaints are received on problems arising from noise, odours and dust.

## Emissions into water

	1998	1999	2000	2001	2002
Wastewater, 1,000 m <sup>3</sup>	2,316	1,971	2,044	2,016	1,899
Wastewater, m <sup>3</sup> /output in tonnes	0.72	0.86	0.76	0.84	1.13

Results of the pre-treatment of wastewater from Raisio's production area and treatment of the wastewater at City of Raisio's municipal wastewater treatment plant

	1998	1999	2000	2001	2002
Wastewater entering pre-treatment, COD, 1,000 kg/year	2,642	2,457	3,014	2,317	2,519
Outgoing wastewater to City of Raisio's municipal wastewater treatment plant, COD, 1,000 kg/year	246	375	601	208	655
Load on waterway from City of Raisio's municipal wastewater treatment plant (monthly average) BOD <sub>7</sub> , mg/l	3.4	4.9	4.3	4.4	4.9
Limit set in the operating permit for the City of Raisio's municipal wastewater treatment plant, mg/l	20	20	20	20	20

Loading on water from the Raisio Group's own wastewater treatment plants

	1999	2000	2001	2002
<b>Kokemäki (Finnamyl)</b>				
Volume, m <sup>3</sup>	101,500	132,540	107,091	101,775
COD, tonnes	12.60	35.10	11.00	10.45
P, tonnes	0.30	0.31	0.20	0.20
N, tonnes			1.33	0.61
<b>Lapua (Lapuan Peruna)</b>				
Volume, m <sup>3</sup>	77,820	111,099	68,222	104,161
COD, tonnes	13.20	20.00	6.90	12.70
P, tonnes	0.11	0.20	0.10	0.20
N, tonnes			2.06	5.50
<b>Hirvlax (Monäs Feed)</b>				
Volume, m <sup>3</sup>	1,280	1,500	1,850	1,790
COD, tonnes	1.50	1.50	1.60	1.30
P, tonnes	0.07	0.08	0.10	0.10
N, tonnes			0.92	0.87
<b>Vihanti (Raisio Nutrition, Potato processing business)</b>				
Volume, m <sup>3</sup>	311,512	319,912	328,887	288,277
COD, tonnes	28.00	31.10	37.20	47.10
P, tonnes	0.25	0.30	0.45	0.43
N, tonnes			2.06	2.16

## Emissions into air

Hexane emissions from the Raisio oil milling plant increased significantly on previous years; for rape seed, the emissions amounted to 0.884 kg per 1 tonne of raw material (maximum limit: 1.0 kg/tonne). Nevertheless, volumes of emissions were lower than the maximum limits set by the EU to be effective from 2007. Hexane emissions from soy amounted to 0.982 kg per 1 tonne of raw material and thus exceeded the maximum limit of 0.8 kg/tonne. The excess was due to a transfer into soy with a higher protein content. We are currently making changes in the production process to reduce the volume of hexane emissions.

Hexane emissions, kg per 1 tonne of raw material

Maximum emission limits set by the EU effective as of 2007:

Rape seed: 1.0 kg/tonne

Soy: 0.8 kg/tonne

	1996	1997	1998	1999	2000	2001	2002
Hexane emissions from rape seed	0.982	0.756	0.838	0.791	0.625	0.710	0.884
Hexane emissions from soy	0.786	0.605	0.670	0.633	0.500	0.568	0.982
Raw materials, total (average)	0.855	0.660	0.742	0.692	0.551	0.620	0.942

## Waste

Raw materials are used to the fullest possible extent at Raisio; in terms of raw materials, waste production does not constitute a significant environmental factor. Waste production is nevertheless an important indicator of eco-efficiency, and most environmental permits place an obligation on the company to monitor its waste levels. There are, moreover, certain statutory obligations concerning the reduction and recovery of waste which apply to all companies. It is therefore sensible for Raisio to use waste as an environmental indicator, specifying its recovery rate, the quantity of waste consigned for final disposal and the volume of hazardous waste transferred for special treatment.

Pre-packaged consumer products are primarily produced by Raisio Nutrition's Foods business area. The EU has laid down strict targets regarding the use and recycling of packaging materials. Monitoring the volume of packaging materials is a statutory requirement in all EU countries, and accordingly used by Raisio as an environmental indicator.

Increasing attention is being paid to waste sorting. Recycling is further encouraged by increasing recovery of waste board and plastics and by recovering energy-containing waste for fuel.

### Group level

	<b>1998</b>	<b>1999</b>	<b>2000</b>	<b>2001</b>	<b>2002</b>
Recycled or recovered waste, tonnes	37,306	45,896	51,873	60,268	62,296
Landfill waste and hazardous waste, tonnes	22,135	21,289	24,605	26,184	18,346
Total volume of waste, % of production	3.56	3.94	4.92	5.13	3.77

### Recycling packaging waste from Raisio's production area

	<b>1998</b>	<b>1999</b>	<b>2000</b>	<b>2001</b>	<b>2002</b>
Cardboards, tonnes	2.60	3.00	53.20	63.30	74.90
Glass, tonnes	7.50	7.70	16.60	8.30	8.30
Plastic waste, tonnes	23.00	24.20	56.10	89.00	122.00
Total	30.10	34.90	125.90	160.60	205.20

## **PERSONNEL**

*Raisio Group objective: Promotion of open debate and interaction on environmental, health and safety matters between our customers, authorities, personnel and other stakeholders.*

Finnish farmers are extremely important partners to us, both as raw material suppliers and buyers of animal feeds. Family farms play a key role in developing their own communities and maintaining the cultural values of the countryside. The Raisio Group thus makes a significant contribution to the preservation of rural heritage in Finland. The broad based education program for contract farmers, which started at the end of 1998 as part of the Quality Grain project, is still ongoing. The training assures that the grain's traceability, purity and ecologically sustainable production methods can be verified more easily than before.

The council of Europe has given an IPPC directive the purpose of which is to harmonize the environmental protection policies and stipulations of the EU member states. The Commission organizes information exchange between governments of member states and industry on the development and monitoring of the best available practices. Raisio Group is involved in this multinational cooperation through the European malt houses cooperative association Euromalt; European animal feeds producers cooperative association FEFAC and European oil milling industries cooperative association FEDIOL.

Raisio Chemicals has participated in risk assessment of chemical substances under the European chemical industry federations.

## Personnel and EHS affairs

### Promotion of well-being at work

In 2002 the targets for promoting well-being at work were defined more accurately to activate people even more. Long-term targets help in improve work motivation, utilize internal expertise systematically, reduce the number of day off work due to illness and prevent premature retirement.

### Work safety training and development

Work safety at the Raisio Group's subsidiaries in Finland has been organized so that each division has its own work safety committee. The committee consists of the work safety manager and employee representatives. Employees that have been elected to represent the workers and office staff in work safety issues as well as members of staff working in work-related health care are also invited to take part in meetings. There are 19 work safety managers working in a linear organization with 21 personnel-elected work safety representatives who serve for a term of two years.

Raisio Group provides both in-house and externally organized training for employees involved in promoting occupational safety. This training offers an opportunity to get up-to-date information on occupational safety and provides employees with appropriate skills for improving the working environment.

The basic internal safety at work course is organized at Raisio every two years. The objective has been to get all employees responsible for work safety, both supervisors and work safety representatives, to participate in the training. Others who have been interested in work safety have also been able to participate.

Raisio complies with local national legislation on occupational health and safety at all its plants worldwide and provides related training for local employees. In the initial training of new employees and in developing on-the-job training methods, the work safety aspect plays a key role.

### Initiatives

Employees' active interest in improving common issues continued as in previous years. Most suggestions made by employees related to improving occupational safety or reducing environmental damage.

	<b>1998</b>	<b>1999</b>	<b>2000</b>	<b>2001</b>	<b>2002</b>
Number of employee initiatives	79	124	103	132	194
Number of EHS initiatives	39	66	41	45	98
EHS initiatives, % of total number of employee initiatives	49	53	40	34	51

## Environmental training sessions

Raisio Group offers employees EHS training and encourages them to take responsibility for the environment in their work and to promote safety and health. EHS training also helps to improve and update employees' skills. To ensure that our personnel adopts environmentally friendly approaches we use a variety of incentive and sanction systems.

	<b>1999</b>	<b>2000</b>	<b>2001</b>	<b>2002</b>
Number of training sessions	246	202	242	264
Number of participants	1,741	1,761	2,151	2,009

Representatives of the personnel administration and personnel groups have formulated an HR equality policy for Raisio Group units in Finland on the basis of an employee survey on the current state of equality. The plan lays out measures for eliminating sexual discrimination, promoting equality, creating a better balance between work and family commitments and preventing sexual harassment. The plan's success will be monitored annually.

# **EHS REVIEWS**

## **RAISIO CHEMICALS**

### **Raisio Chemicals: EHS objectives**

Raisio Chemicals' EHS objectives for 2003 are to achieve a zero level of industrial accidents, prevent accidents by learning from near misses, for instance, and ensure that the volume of waste remains in the 2002 level. Particular attention will be paid to keeping the volume of landfill waste lower than 0.5% of the production volume in 2003, which will be achieved through efficient waste sorting and recycling.

In addition to this, Raisio Chemicals will focus on achieving the following objectives:

- The adoption of the identification process of significant environmental aspects throughout our global organisation,
- An analysis of the questionnaire on EHS matters sent out to our main suppliers; an increase in cooperation with suppliers on EHS matters,
- To extend our data collection with regard to setting our parameters of corporate responsibility,
- Improvements to risk management, with special emphasis on EHS matters,
- The adoption and expansion of the 3RHSE system in order to improve our management of EHS matters,
- Improvements to the processing of customer feedback.

### **Raisio Chemicals: EHS management**

Raisio Chemicals quality and environmental management systems are based on ISO 9001 and ISO 14001 standards and specific customer requirements. The aim is to ensure continuous operational improvements and to achieve maximum harmonization of operating approaches at different units.

Developing its quality and environmental management systems is one of main challenges for 2003 in Raisio Chemicals. The business sectors' aim is to implement quality management systems that meet the new ISO 9001:2000 standard by the end of 2003, and, in line with these new management systems, to adopt a more process-based approach to our operations.

On the basis of the results of the EHS survey among suppliers, the business group defined the following areas as key environmental aspects and determined the parts of the value chain most affected by each of these:

1. Exposure to substances which are carcinogenic, mutagenic, or toxic for reproduction (CMRs) - PRODUCT DEVELOPMENT
2. Awareness of the status of environmental management systems used by suppliers of less strategic importance – MATERIAL SUPPLIES
3. Exposure to chemicals/dust during handling or storage of chemicals – PRODUCTION
4. Accidents – PRODUCTION
5. Volume of waste – PRODUCTION
6. Emissions from transport (raw materials and finished products) - SALES

## **Raisio Chemicals: Development**

Raisio Chemicals pays special attention to environmental aspects of research and development. It favours renewable, environmentally friendly raw materials and process alternatives in its product development. Raisio Chemicals' R&D focuses especially on functional paper chemicals that improve paper and board quality and properties. The product range includes starches, latexes and specialty chemicals, such as hydrophobic sizes, specialty polymers, de-inking chemicals and coating additives.

### Starches

By combining the use of cationic wet end starch and polymers, we have managed to enhance strength values without increasing concentrations. By improving our starch's performance, we can reduce the starch load in the white water systems and wastewaters of our customer factories.

In 2002, our research on the surface treatment of paper focussed on increasing the solids content through the use of surface size and coatings with a high solids content. An increased solids content reduces the amount of water needed on the paper and coating machine, but, most importantly, it substantially reduces energy consumption at the after-drying section. The result is a more cost-effective process and improved paper quality.

During 2002, we made progress in the development of wastewater-free modifying processes for our major starch products. These improved processes allow us to modify starch without producing wastewater.

Owing to new equipment, there has been an improvement in the monitoring of starch modifying processes. By monitoring the cationic reaction, we have been able to identify factors that affect the reagent yield and to measure the amount of residual reagents in our finished products. In optimised conditions, it is possible to improve yield and reduce the amount of residues in wastewater.

### Latexes

During 2002, Raisio Chemicals invested heavily in R&D in latexes. In order to cut down the amount of waste generated in our latex production, we have strived to optimise the use of water and raw materials.

We are continuing our efforts to cut down the level of residual VOCs (volatile organic compounds) and to introduce more environmentally friendly additives into our manufacturing processes. The use of latexes with lower VOC concentrations not only improves yield but also makes the coating process safer for the operating staff. In addition, it helps to reduce taste and odour contamination caused by board packages.

## Development: Specialty Chemicals

Our research on hydrophobic sizes has focussed on improving the purity of our products so as to enable our customers to meet the tightening regulations. We are, among other things, striving to find alternative raw materials for our products and to develop new processes that would allow further reductions in the already low concentration levels of impurities of the products.

We have modified and improved our manufacturing processes for acrylamide-based polymers (used for improved drainage, strength and contaminant removal) and thus managed to achieve a very low level of low-molecular-weight impurities. This in turn has improved safety at work and decreased any environmental burden.

Our Raisapon de-inking chemicals are an important part in the recycling of paper. In this product group, we have introduced products with an increasingly higher solids content, thus enabling us to reduce, for example, any transport-related environmental burden.

## **Raisio Chemicals: EHS events**

During the year under review, Raisio Chemicals took part in the Safety 24h project initiated within the chemical and associated industries in Finland and implemented it in its organization worldwide. The aim of the project was to develop procedures to ensure that all the necessary lessons can be learned from near miss situations, to bring about a change in attitudes and to create a more positive atmosphere towards safety matters at workplaces.

In March 2002, the BioSafe lubricants were granted the permission to use the Nordic environmental label (known as the 'Swan label'). BioSafe products, which are based on vegetable oils, are the first lubricants to be granted the label.

The AKD wax plant in Toulouse, France, was restarted after the French authorities granted a permit for the plant to continue operations in July 2002. The plant had suspended production after an explosion at a nearby fertilizer plant in September 2001. The pressure wave resulting from the blast caused some damage at the Raisio France plant.

## **RAISIO NUTRITION**

### **Raisio Nutrition: EHS targets**

The various business areas under Raisio Nutrition each set their own EHS targets and monitor their implementation. In addition to quality and environmental indicators, we are increasingly using indicators related to health and safety.

The main EHS targets are:

#### Food business area:

- To increase personnel awareness of environmental matters

#### Margarine business:

- To reduce the volume of waste in proportion to production
- To publish a protection plan and distribute it to the personnel

#### Milling business:

- To reduce waste volumes
- To increase employees' first aid skills and rapid-response fire-extinguishing skills

#### Potato Processing business:

- To improve heat recovery in potato flakes production
- To improve the efficiency of sludge treatment at the wastewater treatment plant
- To landscape the old wastewater stabilization pond

#### Animal Feeds business area:

- To reduce phosphorus burden through product development
- To save energy in production and transport
- To reduce the environmental impact of raw materials

#### Malt business area:

- To reduce the specific consumption of water, electricity and steam in production processes
- To develop an environmental programme for purchase of raw materials
- To increase employees' environmental awareness

#### Grain Starch business:

- To reduce the COD load caused by wastewater to an average daily level of 1,800 kg
- To develop a reliable system for dust level measurement
- To maintain the overall consumption of energy at the same level as in 2001
- To reduce down time in processes and at plants

## **Raisio Nutrition: EHS management**

On the whole, the environmental load from Raisio Nutrition is low and local, thanks to extensive use of renewable raw material sources. Any agricultural raw material is practically always all used up and thus remarkably low waste streams are generated, if any. In our judgement, the state-of-the-art processes and the emission treatment technology employed by Raisio represent the best available technology.

The environmental impacts of the Food business area are caused largely by the use of energy in processes and transportation, but also in the form of packaging and other waste. The wastewater treatment is another important factor in the Malt business area, Potato Processing, Margarine, and Grain Starch businesses.

In Animal Feeds business area, the most important environmental aspect is the nutrition loading caused by cattle manure. Ensuring the right amounts of nutrient in feeds helps to reduce discharges per product kilogramme. The impact is greatest in fish feeds.

In purchases of the most important raw materials, grain and oil plants, the most important environmental considerations have to do with primary production and transportation. Advisory services and contract farming are used to promote best practices, and environmental impacts are considered at every stage of the raw material chain.

## **Raisio Nutrition: Development**

In 2002, Raisio Nutrition continued to participate in an extensive Foodchain research project coordinated by the Technical Research Centre of Finland (VTT) and MTT Agrifood Research Finland. The project studies the effects of different variables on the environmental impacts affecting food production during its life-cycle. Raisio is involved in all three studies carried out under the project: in the life-cycle study of grain products, the subject is porridge oats manufactured by Milling business; in the study on cheese, Raisio Nutrition contributes through an intermediate animal feed; and in the case of potato products, we focus on potato cultivation and potato starch. The final report on the Foodchain project will be published in early 2003.

The results of these projects and the discoveries made will above all help the participants to improve their own environmental practices, and we will be able to provide our customers with more environmental information on specific products in the future. The Green Paper (2001) on EU environmental policy names the “greening of markets” as one of its objectives, alongside traditional environmental thinking which focuses on production and legislation.

In addition to environmental, health and safety issues, product safety is another important quality factor at Raisio Nutrition. The Group was not hit by the recurrent food and animal feeds scandals plaguing Europe. Additional resources were devoted to raw material and process control, and new methods were developed to monitor the traceability of products and raw materials. Raisio Nutrition gives preference to domestic raw materials, which creates a solid basis for the business sector’s safety and environmental record.

## **Raisio Nutrition: EHS events**

In 2002, Raisio Nutrition began to provide training in hygiene expertise to employees, customers and partners. All employees handling raw materials or products are to be trained in order to pass the hygiene expertise test during spring 2003 and will receive a hygiene expertise certificate from the National Food Agency.

Phosphorus levels in fish feeds were reduced further. Thanks to the progress made in fish feeds development, the Finnish fish farming industry already reached the environmental objectives set for 2005 last year. We are continuously trying to increase plant-based raw materials to replace fish meal and fish oil.

As before, Raisio Nutrition continued to use traditional, non-genetically modified soy in Finland. The largest soy user is Animal Feeds, where soy is an essential source of protein. Both the certificates of origin and results from analyses of each lot delivered to Raisio are required to prove that the soy contains less than 0.5% GM-material. However, it will become increasingly difficult and thus more expensive to avoid genetically modified soy, which already accounts for about 80% of all soy grown in the United States and more than half of all soy fields in the world.

Because of restricting the use of soy to non-GM sources, Oil Milling had to struggle to keep within the allowed solvent emission limits in 2002. Towards the end of the year, however, we managed to adapt the absorption system for new soy varieties and will continue to develop the system in 2003.

## **RAISIO LIFE SCIENCES**

### **Raisio Life Sciences: EHS objectives**

In accordance with the EHS policy approved by the Raisio Group Board of Directors, Raisio Life Sciences is committed to using environmental, health and safety considerations as the basis for its product and process development. As before, the key targets are to make the use of raw materials more efficient and to reduce the amount of waste.

In 2003, Raisio Benecol will start training in hygiene expertise for production and laboratory personnel. The aim is to have the personnel pass the hygiene expertise test during spring 2003 and receive a hygiene expertise certificate from the National Food Agency.

### **Raisio Life Sciences: EHS management**

Raisio Benecol, part of the Raisio Life Sciences business sector, built its quality management system in compliance with ISO 9001:2000. The system is due to be certified in early 2003.

Development of an environmental management system complying with ISO 14001 will begin in 2003 with a survey of the main environmental aspects of our activity. EHS issues will be monitored as part of normal management practice.

### **Raisio Life Sciences: Development**

Raisio Benecol is participating in a project launched by the Lifelong Learning Institute Dipoli under Helsinki University of Technology which aims at creating a balanced scorecard on social responsibility for monitoring, reporting and improving social responsibility in Finnish bioindustry companies. The project began in spring 2002 and will last for a year and a half.

Product development at Raisio Benecol is focusing on further development of stanol esters, an ingredient of Benecol, for greater compatibility with customers' products and processes. An important part of this work is made up of clinical studies to verify the health effects of Benecol products containing stanol esters; in 2002, these studies focused on Benecol pasta.

### **Raisio Life Sciences: EHS events**

The 2002 theme in Finland was the reduction of wastewater pollution. In the field of safety, the aim was to achieve a zero accident level and to implement a project on the prevention of accidents caused by hot water. A more efficient filter was installed to make the production process more environmentally friendly.

At the Summerville plant, located in the US state of South Carolina, the focus was on HAZWOPPER update training (Hazardous waste operations and emergency response) and the introduction of BAF (Bubble Accelerated Flotation system), the aim of which is to put wastewater treatment on a more efficient basis.

In 2003, employees will be given training on EHS issues in particular.

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## GLOSSARY

BOD <sub>7</sub>	Biochemical oxygen demand. The amount of oxygen consumed by micro organisms (bacteria) for breakdown of organic matter during a 7-day period.
CO <sub>2</sub>	Carbon dioxide. Main component of flue gases; formed during combustion through oxidation of carbon in fuels. The most important 'greenhouse gas'.
COD	Chemical oxygen demand. The amount of oxygen required for the chemical decomposition of slowly degrading organic waste in wastewater.
EHS	Environment, Health and Safety.
Hazardous waste	Waste which is dangerous or harmful to human health or the environment and must be treated or disposed of separately from other waste.
ICC	International Chamber of Commerce
IPPC	Council of Europe directive which aims at preventing and reducing environmental pollution.
ISO 9001	An international quality management standard.
ISO 9001:2000	An international quality management standard replacing the earlier ISO 9001.
ISO 14001	An international environmental management system standard.
MTT	MTT Agrifood Research Finland.
Notification	Notification procedure concerning new substances.
NO <sub>x</sub> , nitrogen oxides	Products of the combustion of nitrogen, formed from the nitrogen contained in fuel and in combustion air. Emissions of nitrogen compounds to air are calculated and reported as nitrogen dioxide (NO <sub>x</sub> ).
P	Total amount of phosphorus.
Recoverable waste	The reusable waste produced by the company's operations (other than that bought from outside the company for reuse).
Responsible Care	An international programme in the chemical industry. Companies committed to the programme set clear targets related to environmental, health and safety issues in all their operations.
Safety 24 h	A year-long project launched by organizations in the chemistry sector which provides a broad operational framework for companies and project teams to apply to their own development projects from the specific perspective of their sector of business.
SO <sub>2</sub> , sulphur dioxide	A product of the combustion of fuel containing sulphur.
3 RHSE	Requirements and Recommendations for managing Health, Safety and Environment.
VOC	Volatile organic compounds
VTT	Technical Research Centre of Finland
Waste for final disposal	Waste taken to landfills, including municipal waste but excluding hazardous waste.