

Environmental and Social Report Gentofte 2003



Novo Nordisk – an active company in Gentofte

With buildings at six locations in the municipality, Novo Nordisk takes up a lot of space in Gentofte, and we employ a total of 1,612 people. Our sites are located in built-up areas in the immediate proximity of housing and institutions such as childcare centres, schools and handicapped centres. We want to be regarded as an asset to the local community rather than just a company to be tolerated.

Novo Nordisk in Gentofte manufactures pharmaceutical products using biotechnological processes. We manufacture human growth hormone (Norditropin®) and glucagon (GlucaGen®). Human growth hormone is fermented at our own plant in Gentofte, while glucagon is fermented at Novo Nordisk's plant in Kalundborg. Both products are recovered, filled, freeze-dried and packed in Gentofte. We also fill, freeze-dry and pack the haemophilia medicine NovoSeven®, which is fermented and recovered at Novo Nordisk's plant in Kalundborg.

In Hagedornsvej we have a production facility for fermenting and recovering human growth hormone, a plant for filling and packing growth hormone, glucagon and NovoSeven®, pilot plants for fermenting and recovering proteins and peptides, and laboratories. Wastewater from fermentation of growth hormone is discharged via our pasteurisation plant. In Brogårdsvej we recover glucagon, and there are also a central boiler plant, workshops and administration. Our warehouses are located in Lagergårdsvej, and in Saantesvej we have laboratories and quality assurance. The above-mentioned functions are together known as Pharmaceutical Site Gentofte (PSG).

Niels Steensens Vej is home to Regulatory Affairs, which is responsible for registering new pharmaceutical products, and also Novo Nordisk's research unit, Hagedorn Research Institute, which carries out basic research in diabetes, and Steno Diabetes Center, Novo Nordisk's hospital and research centre for treating people with diabetes.

'House of Quality' in Nybrovej is home to a number of quality assurance and administrative functions.

Water and energy are the most important resources in Novo

Nordisk's production in Gentofte. Our basic production and pilot plants also use various raw materials for fermentation and recovery, including glucose, filter materials, urea, inorganic salts, bases and acids. Our fermentation processes use genetically modified microorganisms that are harmless to humans and nature.

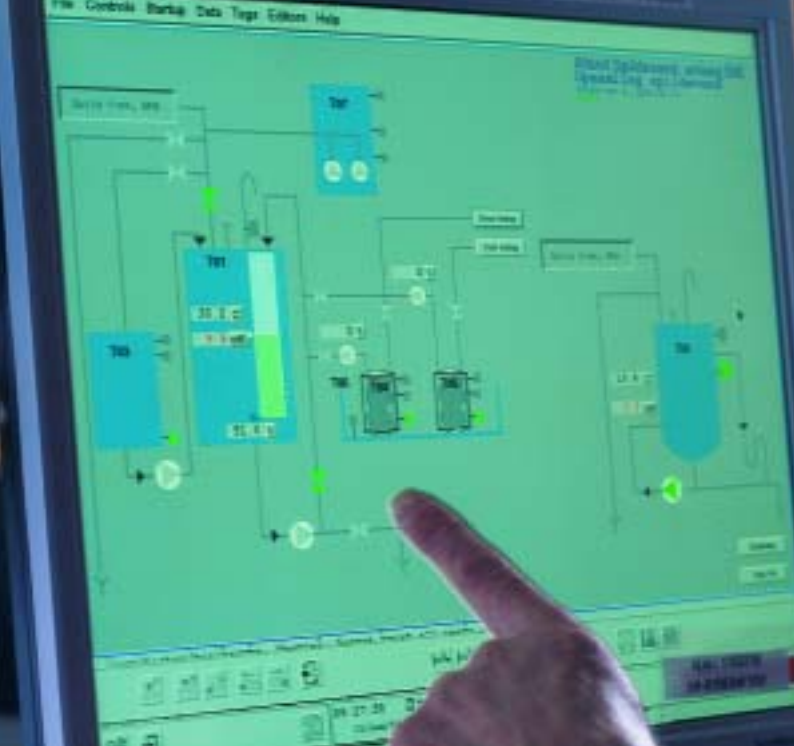
Our major environmental impacts concern water and energy consumption, wastewater, which is either discharged to the Lynetten wastewater treatment plant or collected and treated at Novozymes' wastewater treatment plant in Kalundborg, and various other types of waste that we dispose of in an environmentally appropriate manner.

The activities at our sites are approved and regulated by a number of permits, environmental approvals and genetic engineering approvals that set limits for our impact on the environment.

The authorities that approve and/or monitor our environmental status are Gentofte Municipality (wastewater to the public sewage system and solid waste disposal), the Danish Forest and Nature Agency (genetically modified organisms in production plants), the Danish Working Environment Service (genetically modified organisms in laboratories and pilot plants), and Copenhagen County (other environmental issues).

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Novo Nordisk in Gentofte is home to many different functions, from fermentation of active pharmaceutical products to production of finished goods. We aspire to show social responsibility in all that we do. In Gentofte we find, among others, Peter Bonne Eriksen (top right), head of Regulatory Affairs and Novo Nordisk's ombudsman. In the latter role he seeks with impartial advice to resolve cases where employees and management have not been able to reach agreement.



Focus on improvements in production and environment

In 2003 we focused on our wastewater issues. Many production employees were involved in FuN projects – *Forbedringer uden Nøl* ('Improvements without Delay'). We achieved most of our targets for environmental and social issues.

In this report we discuss our social and environmental performance in 2003, which is of major importance for our employees and for relations with our suppliers, our neighbours, the local community, and the environmental authorities. In the social area we focused on issues that concern our employees' health, well-being and development, and on the targets that we had set for 2003. In the environmental area we focused on documenting that we are meeting the environmental requirements laid down by the authorities and in Novo Nordisk's own Environmental Policy, and on the targets that we had set for 2003.

Novo Nordisk's Environmental Policy obliges us to promote environmental awareness, prevent and limit pollution, satisfy our official environmental requirements, and continuously improve our environmental performance. We carry out environmental assessments of all changes and new activities, and set targets relating to our main environmental issues. Since 2002 we have also been systematically evaluating the environmental and social performance of our suppliers. This evaluation is based on questionnaires, and in 2004 the replies will form part of our auditing of selected suppliers.

Annual targets for water and energy

In 2003 all areas set targets for water and energy consumption measured in relation to the number of units produced. The targets were productivity increases of 5% for water consumption and 4% for energy consumption. Unfortunately, we did not achieve these targets due to renovation of buildings and production plants, which required water and energy without any corresponding production.

An important target for our environmental work is to satisfy the authorities' requirements for discharging wastewater. At

the end of 2002 we obtained a wastewater permit for the whole of the Gentofte site. Among other things, this lays down requirements for wastewater pH and other key parameters, and stipulates that we draw up an action plan for reducing our discharge of nitrogen and phosphorus. The action plan has been drawn up and submitted to Gentofte Municipality. We anticipate a reduction in our nitrogen and phosphorus discharges per produced unit, but as production is also increasing, overall discharges are not expected to fall in 2004.

In Brogårdsvej we have installed a plant for neutralising wastewater in order to satisfy municipal requirements. At the end of 2003 we began installing a similar plant in Hagedornsvej, and by agreement with the municipality this will be ready for use in the first half of 2004.

We have completed mapping of certain xenobiotic substances in our wastewater and subsequently investigated our cleaning agents for content of these substances. The results of the investigations are being submitted to the municipality in the first quarter of 2004.

Since September 15, 2003 we have obtained approval from West Zealand, Storstrøms and Roskilde Counties to spread our nitrogenous wastewater on fields. This means that we can recycle the wastewater in a more useful way than before, when it was transported to the plant in Kalundborg for treatment.

Breaches and releases

In spite of our hard work in installing the wastewater neutralisation plant in Brogårdsvej, we had a multitude of running-in difficulties that led to breaches of the limit value for pH in wastewater.

As a result of various types of operating accident, in 2003 we also had six accidental releases into the sewage system of sili-



Members of the site council in Gentofte (from the left): Jens Eilertsen, Ole Dragsbæk Madsen, Uffe Jensen, Helle V. Petersen, Flemming Junker and Anne Suhr.

cone oil, urea and ethanol respectively. In each case, measures were taken to prevent repeats.

We also had an accidental release of coolant as a result of a rupture in the pipework of a cooling machine. The plant was repaired and, like our other systems, is regularly inspected.

FuN increases productivity and spares the environment

In the spring of 2003 PSG launched the FuN project – *Forbedringer uden Nøl* ('Improvements without Delay') – which involves getting ideas for simplifications and improvements that will bring gains in productivity, in the environmental area, and in job satisfaction. This gave rise to 63 projects last year, 45 of which have been implemented. Some of the largest gains are in minimising waste from production, and reducing energy and water consumption.

Health & safety

We are striving to continuously improve health & safety through workplace assessments (WAs), but unfortunately we failed to achieve our target since Gentofte as a whole had 18 occupational injuries with absence in 2003. The majority of the injuries were in the office areas. In 2003 the health & safety work in a number of departments focused on the psychosocial working environment.

Maintaining focus on equal opportunities

We have continued to work in various ways towards the objectives of ensuring equal opportunities and promoting diversity. Several units have held meetings with external speakers and discussed integration and equal opportunities. The initial target

was to create awareness of the subject, which we will continue to work on in the coming years. Gentofte also takes part in the joint Novo Nordisk project through which the company, in conjunction with the Technical University of Denmark, has established further training for foreign engineers. In Gentofte we have a trainee who is part of this training initiative.

Working climate survey carried out for all employees

In 2003 Novo Nordisk had a common target to complete the electronic employee survey eVoice. All departments in Gentofte achieved this, and the results were generally positive. Among other things, employees express the belief that social and environmental work is important for the future of the company.

Future focus areas

2004 looks set to be marked by cooperation with our environmental authorities Copenhagen County and Gentofte Municipality. As well as the work with Gentofte Municipality on the wastewater permit, we will be drawing up a plan with Copenhagen County to deal with the urea pollution in Brogårdsvej, and working to secure environmental approval for the outdoor areas in Hagedornsvej.

Optimisation of processes and resource consumption are natural elements of our environmental work and will continue to be focus areas in the future so that we can live up to Novo Nordisk's Environmental Policy and continuously improve our environmental performance.

In the social area, we will be maintaining special focus in 2004 on competence development and consolidation of the improvement culture.

Social commitment develops people and the company

The work on social responsibility goes on in all units and departments at Novo Nordisk in Gentofte. Although 2003 was marked by a cost squeeze, we maintained our commitment and kept our promises to employees and the local community.

In 2003 PSG launched FuN – *Forbedringer uden Nøl* ('Improvements without Delay'). The target is to create an improvement culture. Many of the 45 projects implemented during the year were important for employee satisfaction. Among other things, we looked at how we can avoid staggered working hours, and in one department we examined the meeting culture. Some of the financial gains directly benefit the employees. For example, in 2003 we were able to spend some of the gains on training activities.

FuN has made it possible for all employees to come up with suggestions and good ideas. The only condition is that they should draw up a short project description. We have carried out a day's training in FuN for 167 employees, and nearly 140 have been involved in specific projects.

FuN can be regarded as a forerunner of the cLEAN philosophy, which will be rolled out in 2004 throughout Product Supply, and which is Novo Nordisk's version of the LEAN Manufacturing production philosophy. This involves simplifying and optimising our working processes.

Diversity through equal opportunities

In 2001 PSG entered into a cooperation with the National Employment Agency in which 16 long-term unemployed people were taken on as temps while our full-time operators were away on a six-week training course. This gave us the opportunity to consolidate our efforts to offer equal opportunities since the temps had differing backgrounds in terms of gender, age, ethnicity and qualifications.

In 2003 Novo Nordisk Servicepartner (NNS) unfortunately had to lay off a large number of employees. We undertook to offer them jobs, and during the year 11 former NNS employees entered various departments. Retraining employees who have worked in cleaning for many years to work as filling operators, for example, is a major challenge for them, but we have no doubt that they will succeed through our combined efforts.

In 2002 Quality drew up a strategy for social responsibility.

The strategy will be transformed into action to ensure broad diversity in four areas: training, age distribution, gender, and ethnicity. In 2003 we started with campaigns to increase awareness on the subject of diversity. We held a diversity course for managers and three themed meetings for employees. The first two meetings concerned visible and invisible diversity and were conducted by external speakers. The final meeting concerned organisational diversity: understanding, and respecting the many different functions and organisations within the company.

Maintained focus on employee development

In 2003 most departments in Gentofte drew up a competence strategy. As part of this, competences have been mapped at department and group level. Mapping of individual employees' competences is anchored in the personal development plans.

In spite of 2003's general focus on keeping costs down, we kept promises made on employee development. We have continued our operator strategy, which provides the framework for training operators, as well as our PC-user training.

Additionally, in 2003 Novo Nordisk also launched several company-wide courses in which our employees have taken part. These included SMA (Supply Managers Academy) and STA (Supply Teamleaders Academy). The courses are directed at managers and middle managers with a view to developing management competences in a number of different areas.

In Regulatory Affairs we elected to focus on employee development by asking each employee to decide what had developed them most in 2003 and, together with their manager, to define a development activity for the future. One of our targets for 2004 is to define clear career paths in the department.

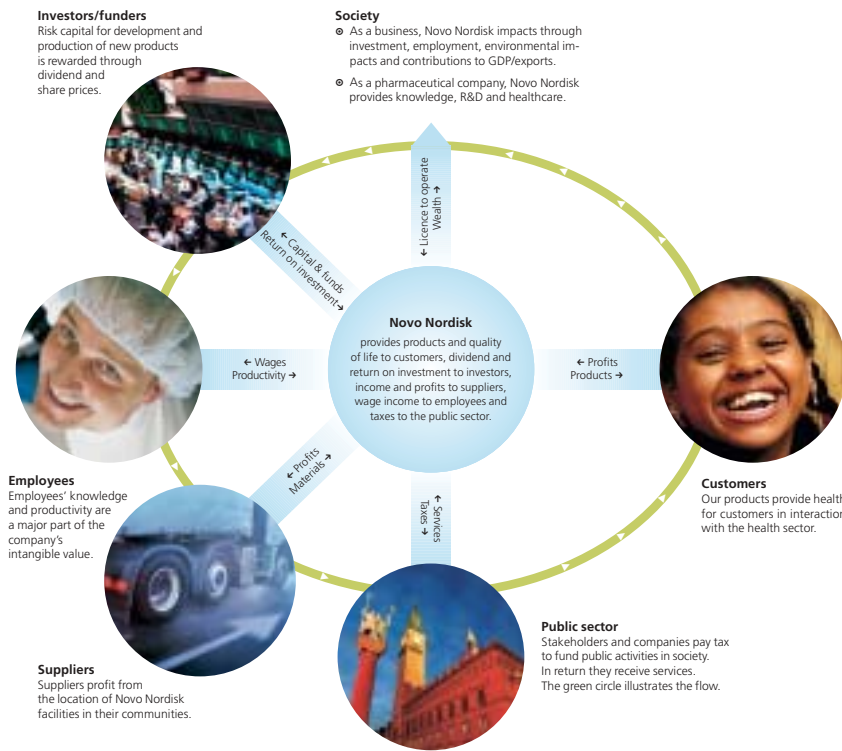
Employee satisfaction surveyed

In 2003 we completed the working climate survey eVoice for all employees and learnt from the results.

In Regulatory Affairs the eVoice results from 2001 led to increased efforts to reduce work pressure. We discovered that →

Socio-economic contribution

Novo Nordisk's operations in Gentofte create jobs for our employees, at suppliers, shopkeepers and in the public sector. In 2002, our overall socio-economic contribution in Greater Copenhagen can be set at 2,437 jobs¹⁾. The chart below provides an overview of the interaction between key stakeholders, with detailed focus on employees, suppliers and the public sector.



Employees

Novo Nordisk employees (1,256 in 2002) account for around 11% of Gentofte Municipality's jobs. 536 of Novo Nordisk's employees live in Gentofte Municipality, 182 of whom work for Novo Nordisk in Gentofte. Employees pay around DKK 66m in tax to the municipalities in which they live, of which DKK 28m is income tax to Gentofte Municipality¹⁾. Their private consumption contributes to some 386 further jobs in the region, 16 of these in Gentofte Municipality. They also contribute property taxes etc, and the remainder of their income tax that goes to the state.

Suppliers

Novo Nordisk in Gentofte is estimated to create the basis for 103 jobs locally, and 795 jobs overall in Greater Copenhagen. These jobs are estimated to contribute municipal income tax of around DKK 18m in the region¹⁾, of which DKK 2m is to Gentofte Municipality. Additionally, income tax is paid to the state.

The public sector

The company, our own employees and local suppliers' employees pay taxes to the municipality¹⁾ totalling around DKK 61m. However, the contribution to the municipality is only DKK 34m because equalisation systems would compensate for the lower tax revenue if these citizens and companies did not live or carry on business in the municipality. Novo Nordisk pays around 13% of the company tax to the municipalities, and DKK 8m in energy and environmental taxes to the state (68%) and municipality (32%).

1) The socio-economic contributions of jobs and taxes are based on assumptions for local purchase habits and multipliers for Greater Copenhagen. Income and tax payments are reduced by the income and taxes that these persons would otherwise have; calculated here as unemployment benefit. All data are from 2002.

AN ACTIVE PLAYER IN THE LOCAL COMMUNITY

Hans Toft, Mayor of Gentofte Municipality

"When it comes to environment, I generally believe that everyone in Denmark expects Novo Nordisk to be the best. This places you in a challenging position, but I find that you are able to meet these expectations. In other words, you are a company that everyone would like to have in their municipality.

"From the outside, Novo Nordisk is a company that is both willing and able. This applies both locally and globally. You conduct yourselves properly, and I think that part of your activeness comes from the unique trust that senior management shows in its employees. This was clear when I attended the opening



of the new offices in Nybrovej. Novo Nordisk in Gentofte has a strong local involvement and in 2003 took an active part in the idea forum, which has drawn up a unified plan for Gentofte Stadium. The aim is to create a future-oriented sports arena with facilities for business and training activities.

"Gentofte is the country's fourth most densely populated municipality, and this means that Novo Nordisk really has very few opportunities to expand here. In the municipality we are aware of the need to be creative when you have to rebuild. This could be of common interest if Novo Nordisk chose to address its need for meeting facilities by using the future stadium's facilities, and in so doing contributed to its running. This would increase the opportunities for creating a lively stadium and supporting local activities and recreation. Another wish that I might have for Novo Nordisk is that the company contribute to the development of the local community by improving conditions for driving in and out of Brogårdsvej, which is both dangerous and unattractive," concludes Hans Toft.

→ our employees were experiencing a higher level of work stress than those in other areas. Following detailed surveys in 2002, in 2003 we began initiatives to improve matters. Among other things, we held a stress course for our management groups, as well as courses in effective personal planning and time management. In our planning process we have worked to ensure consistency between targets and resources. The fact that we acquired more employees after the lifting of the 2002 employment freeze has also helped to alleviate the work load.

Increased customer awareness

In order to increase understanding of the lives of customers who have a chronic illness, Regulatory Affairs staged an internal event at which we discussed the results of DAWN – a survey of the psychosocial aspects of diabetes. We also held small meetings with patients to discuss among other things whether our packaging inserts are comprehensible to them.

In PSG we elected to set a target to increase our understanding of handling and preventing customer complaints, and this theme was discussed at a meeting for all employees.

Physical working environment

Throughout Novo Nordisk we counteract health & safety risks associated with pollutant substances, dust and noise by including health & safety considerations when fitting out our production plants and by focusing on near-misses. All our production sites have been classified as Level 1 by the Danish Working Environment Service, which means that the company is efficiently managing its working environment and meeting the requirements of the Danish Working Environment Act.

Gentofte has a common target of a maximum of ten occupational injuries a year. Unfortunately, with 18 occupational injuries in 2003 we failed to achieve this target. A large number of the injuries were in the office areas. The assessment of the health & safety group is that these injuries are not due to inap-

propriate design of the workplace, but rather to the fact that employees are very busy. The health & safety group has therefore invited the Occupational Health Service (OHS) to discuss how we can focus on this particular problem.

Our health & safety representatives in PSG have mapped each employee's competences and now know who is best qualified within specific areas such as chemicals. We are using our workplace assessment (WA) as an activity plan, and are aware of the need to prevent injuries. The target for WAs is that 80% of recommendations should be implemented within one year. All units are achieving this.

In the Steno Diabetes Center we need to have the responsibility for health & safety more clearly defined, and in 2003 we took the initiative to introduce a system inspired by Hagedorn. Hagedorn has an efficient health & safety system that handles guidelines for managing, storing and transporting chemicals, isotopes and radioactivity. The work to adapt the scheme to Steno will be completed in the spring of 2004.

Psychosocial working environment

In the Steno Diabetes Center we have made special efforts to improve the psychosocial working environment for our medical secretaries. Every day they experience high work stress in the clinic, which is visited on average by more than 100 patients a day. We sought the help of the OHS, which provided good help in removing some of the myths surrounding roles and responsibilities that were creating negative spirals. This has helped the group as a whole and individual employees.

Social targets 2004

- We will continue the training of operators and managers in PSG.
- We will hold meetings for employees relating to marketing of our products.

Social data						
Our employees	1999	2000	2001	2002	2003	Development in % 2002-2003
Total number of employees	1,050	1,211	1,332	1,256	1,612	28
Number of full-time employees	850	985	1,101	1,028	1,354	32
Number of part-time employees	200	226	231	228	258	13
Average age distribution (years)	40.6	39.9	40.0	40.3	40.4	0
Average years of service	9.5	8.6	8.3	8.7	8.8	1
Rate of employee turnover (%)	6.0	7.6	5.5	6.0	5.4	
Job functions and gender representation	Number of employees				2003	
Administration ¹⁾				229	66%	34%
Research and Development				581	70%	30%
Production ¹⁾				802	60%	40%
<i>Of the total number of employees:</i>						
Vice presidents/senior principal scientists				17	35%	65%
Managers/principal scientists				140	43%	57%
Occupational injuries	1999	2000	2001	2002	2003	Development in % 2002-2003
Frequency of occupational injuries	6.9	4.1	5.2	6.0	7.0	17
Number of occupational injuries with absence	12	8	11	12	18	50

1) In 2003 administration in production is included in production and not in administration as in previous years.



ATTRACTIVE WORK

Multi-disciplinary approach brings new perspectives

The Steno Diabetes Center is multi-disciplinary in its treatment principles, which can help to motivate employees. Nurses and doctors work closely together, and this can give employees new methods and approaches in their work. In 2003 we began to work with Balanced Scorecard, and one of our targets is to compose alternative job profiles to make Steno a more attractive workplace.

NECESSARY SPECIALISM

Competence plan for diabetes nurses

The nursing group in the Steno Diabetes Center has drawn up a competence development plan setting out the competences that are required to be a diabetes nurse. This has drawn interest from our peer group and also internationally when the plan was presented at the international meeting for diabetes nurses (FEND) in Paris in August. The National Board of Health had not previously accepted diabetes nursing as a specialism, but we have now been invited to draw up a national action plan for diabetes nursing.

We have also been allocated places at the University Hospitals' Centre for Nursing Research (UCFS) so every year one or two nurses can be admitted to this scientific education programme.

FRESH INPUT

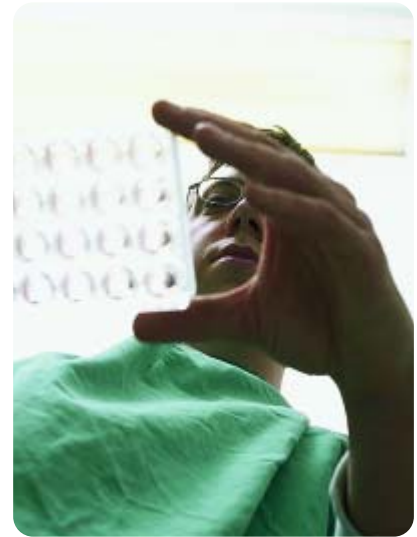
Distance course for quality employees

In 2003 the Quality Department tried something new to balance cost considerations versus the need for impact from outside. In September the American pharmaceutical authorities held a conference in the USA. Quality employees in Clayton, Chartres, Bagsværd and Kalundborg were invited to 'attend' the conference via satellite, and in this way we were able to reach a large number of employees, yet save on costs.

GREY GOLD

Experience counts in quality advisers

Quality Support is an advisory quality function whose employees travel to Novo Nordisk sites throughout the world. It is a demanding job, and we need experienced people that can work independently, effectively and determinedly. One of our employees was over 60 when he was taken on. He met all our requirements and is able to commit to the work for five years, making him an attractive employee.



NEW LEGISLATION

Researchers included in discussion on stem cells

Hagedorn Research Institute has taken part in the public debate on stem cell research, which was widely discussed in the lead-up to the adoption of the Danish legislation in this area in the spring of 2003. For example, research manager Ole Dragsbæk Madsen was invited to give a lecture in Jægersborg Church on the issues relating to stem cells.



OPENING OF NYBROVEJ

Quality functions together under one roof

In May 2003 we opened House of Quality on Nybrovej with an open-day. This was attended by the mayor, local police and a group of schoolchildren,

who received a gift from us of DKK 10,000 so that their school patrol officers can take a trip after one year's work, for example to Norway.

Environmental management with increased power

In 2003 we expanded our environmental certification to also cover our operations in Sautesvej. The environmental work in the other departments proceeded according to plan. We are proud of our certification, which shows that we can work across the functions that share the address in Gentofte.

The environmental organisation in Gentofte was strengthened in 2003 in several ways, which together make it possible to further improve our environmental work. The position of environmental coordinator is now a full-time position, whereas previously it was only a part-time position. The environmental group has been expanded so that all functions are represented by at least one employee. In addition, relevant departments have appointed an environmental representative, and continued development of the Environmental Management System will be anchored in the departments.

Developments in the environmental area are also heading in the right direction. Improvements in wastewater quality are under way, efforts to optimise waste management are being stepped up, and various water- and energy-saving projects that have already started are continuing into 2004. Furthermore, we have set up a system on our intranet that gives an updated overview of Gentofte's environmental approvals and permits.

Striving to improve water and energy utilisation

Water and energy are the most important resources in Novo Nordisk's production in Gentofte. Our basic production and pilot plants also use various raw materials for fermentation and recovery, including glucose, filter materials, urea, inorganic salts, bases and acids. Our fermentation processes use genetically modified microorganisms that are harmless to humans and nature. In finished goods production, the products are filled into vials, labelled, and packed into boxes.

All water is of drinking quality and is supplied from the municipal supply network. The total water consumption in 2003 was 143,000 m³, on a par with the consumption in 2002.

Energy is supplied in the form of electricity by NESAs via the public supply network, steam by the company's own natural gas boiler plant, and heat by the district heating network. In

2003 the total energy consumption in Gentofte was 227,000 GJ, which was an increase of just under 3% compared to 2002.

Our targets were productivity increases of 5% for water consumption and 4% for energy consumption. We did not achieve these targets since the production plant was inactive for a period due to renovation work that at the same time required water and energy resources.

In production we use large amounts of very pure water (WFI water) to clean our equipment. We are in the process of replacing the plants that produce WFI water. In Brogårdsvej the new plant is replacing a 15–20 year old plant, which will double efficiency in respect of water and energy as well as significantly reducing chemical consumption. Without this type of improvement, it is difficult to significantly reduce water consumption. In Hagedornsvej the new plant is being run in, and here we are using a waste stream of clean hot water to produce district heat.

Increasing production and raw material consumption

In 2003 Gentofte used a total of 606 tons of raw materials and auxiliaries, and 288 tons of packaging. This was an increase of 14% for raw materials and an increase of 19% for packaging compared to 2002. These increases are due to increased production.

Wastewater efforts

At the end of 2002 we obtained a wastewater permit covering the whole of Gentofte. Among other things, this lays down requirements for the wastewater's pH, temperature, nitrification-inhibiting effect, and content of suspended substances. It also stipulates that we draw up an action plan to reduce our discharge of nitrogen and phosphorus, and that we map certain xenobiotic substances in the wastewater.

We have completed mapping of the xenobiotic substances in the wastewater and are in the process of investigating our →



The local environmental work involves all employees, and everyone has the opportunity to contribute ideas and suggestions for improvements. The environmental group (above left) coordinates the work, and all functions are represented in the group by at least one employee.



→ cleaning agents for content of these substances to see whether the substances originate from here. In the first quarter of 2004 we will be submitting a report on our investigations to Gentofte Municipality.

The action plan to reduce nitrogen and phosphorus in our wastewater has been drawn up, with the target of reducing the content of nitrogen and phosphorus per produced unit. However, there are plans for minor expansions in production, and for that reason the total discharge of nitrogen and phosphorus is not expected to fall immediately.

The wastewater from Novo Nordisk in Gentofte consists of wastewater from production, pilot plants and laboratories, and sanitary wastewater and rainwater from outdoor areas impervious to water. The wastewater from the fermentation processes is heat-treated before discharge into the public sewage system so as to kill all genetically modified microorganisms. The majority of the wastewater is piped via the public sewage system to Lynetten wastewater treatment plant, from where the treated wastewater is discharged into the Sound.

Previously we collected wastewater with high nitrogen content and transported it to the wastewater treatment plant in Kalundborg. But it is actually an exceptionally good fertiliser, and on 15 September 2003 we were granted approval by West Zealand, Storstrøms and Roskilde Counties to spread it on fields. The first load has been shipped out, and we are extremely pleased that we are now recycling this resource in a useful way.

In October 2003 we moved recovery of growth hormone in Brogårdsvej to a newer plant in Hagedornsvej. The process uses the nitrogen compound urea, and the new plant utilises this substance much more efficiently than previously, producing less waste.

Neutralising wastewater

One of the really large environmental projects in Gentofte has been the introduction of neutralisation plants for our wastewater in order to meet the requirement for wastewater pH. One plant was opened in 2003 in Brogårdsvej, and we are in the process of setting up another in Hagedornsvej.

In spite of the new plant, Brogårdsvej had a number of breaches of the pH requirement due to various difficulties with running in the system.

The neutralisation plants handle all process and laboratory wastewater. This makes perfect sense because some of the wastewater streams can neutralise one another in the plants. However, this has proved difficult to implement in practice, and the challenge has not been made any easier by the lack of space at Hagedornsvej. By agreement with the municipality, this project will be completed during the first half of 2004.

Focus on waste recycling

All waste is managed, sorted, transported and disposed of in accordance with Gentofte Municipality's waste regulations with a view to maximum possible recycling.

In 2003 we began a range of initiatives to optimise waste management, including the introduction of recycling for plastic foils in Hagedornsvej and glass waste in Brogårdsvej and Saantesvej. Major improvements can only be achieved by creating focus on and awareness of waste among employees. We

will be continuing this work in 2004, and we hope to be able to increase the amount for recycling and reduce the amount for incineration and landfill.

In 2003 we produced a total of 1,710 tons, which was an increase of 60% compared to 2002. This increase was due to building work in Hagedornsvej, where a lot of earth was excavated and removed. As well as building waste, our solid waste includes used filter material from the recovery plants and packaging from raw material supplies.

The majority of the waste that is not sent for recycling is sent for incineration at I/S Vestforbrænding Incineration Plant in Glostrup. Occasionally waste is dumped at landfill sites, but as a rule only waste from demolition and building work, as was the case in 2003. Hagedornsvej was previously a rubbish dump, so earth that is dug up in connection with building work is disposed of at AV-Miljø's landfill site on Avedøre Holme and at Kalvebod Recycling Centre. Waste streams containing ethanol from recovery of glucagon and growth hormone are collected and recycled in a biogas plant. Chemical waste is sent for destruction at Kommunekemi in Nyborg.

Minor air pollution

The major source of air pollution from production in Gentofte is operations connected with our own production of energy, which is based on natural gas. We also discharge small amounts of organic solvents into the air, about 0.2 tons per year from recovery of glucagon and growth hormone and from the pilot plants, mainly in the form of ethanol. We have become aware that there are also discharges of ethanol from production, where it is used for drying equipment and surfaces. This figure will be included in future calculations, and in 2003 the total was 2.8 tons.

All air streams containing dust pass through effective filters; the plants only have a minor dust impact on the environment.

In 2003 we optimised the pasteurisation plant that heat-treats the wastewater from fermentation of growth hormone in Hagedornsvej. This is done to prevent odour nuisances for employees and neighbours. Our associated auxiliary plants have been noise-dampened to the necessary extent and do not in our experience cause major nuisances to our neighbours.

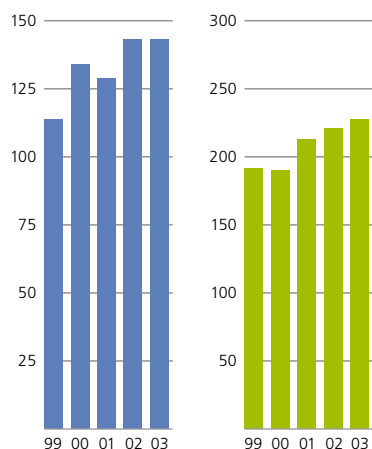
Prospect for completing soil pollution work

We are continuously working to recover the urea pollution in Brogårdsvej that was detected in the soil layers around the urea tank in 1999. At the start of the recovery process we measured levels around 420 mg nitrogen per litre, while the most recent analyses show that we are now at less than 100 mg nitrogen per litre. This proves that the recovery work has been effective, and we hope that in 2004 we can draw up a plan for ending the recovery work in conjunction with Copenhagen County. This was a target for 2003 that we unfortunately failed to achieve.

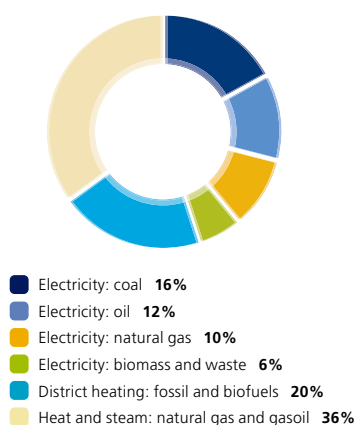
Breaches

The project to install the neutralisation plant in Brogårdsvej and the rearrangement of internal sewage systems has been a complicated process. In connection with our own measurements of wastewater pH, we have recorded a number of breaches, and on the basis of these we have made continuous improvements →

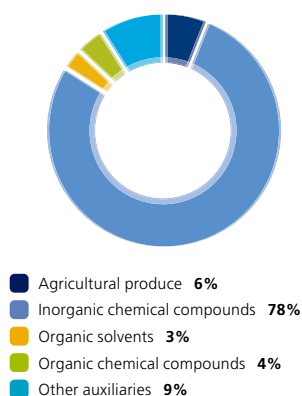
Water and energy consumption
1,000 m³ 1,000 GJ



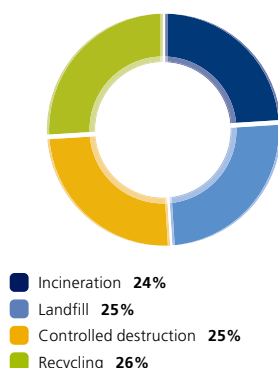
Breakdown of energy sources 2003



Breakdown of raw materials 2003



Waste disposal 2003



OPTIMISATION

Reduced glass consumption in Filling

In 2003 we worked to optimise our processes in the Filling Departments in order to minimise our glass consumption. Whereas previously we threw away lots of empty glassware, we now expect that reduced glass waste will result in substantial savings every year.

MONEY TO BE SAVED

More effective use of expensive raw materials

One of our FuN projects is to use column materials for chromatography more times; potentially up to five times more than is currently the case. Column costs are high, so there is a lot of money to be saved. In order to ensure that this is not to the detriment of quality, we have invested in a new piece of analytical apparatus that will show how many times the

columns can be recycled. The survey will continue in 2004.

WATER SAVINGS IN COOLING

Small investment gives large result

Cleaning equipment for pharmaceutical production requires a lot of water and energy. This applies eg to the running of autoclaves, which are used to sterilise equipment. Previously we used 8,000 m³ water a year to cool one of our autoclaves in Hagedornsvej. This is now a thing of the past since we connected the autoclave to our cooling system. The resulting water saving is equivalent to the annual consumption of 40–80 households.

ECONOMIC ENVIRONMENTAL ACCOUNTS

Compliance with new requirements dominates

In response to new environmental requirements, we have invested more than DKK 18.5 million during the period 2002–2004. It is not possible to calculate the payback time on investments of this type. Additionally, we have invested around DKK 175,000 in other pollution-limiting measures and maintenance. These investments will be recouped in less than two years as a result of reduced operating costs, and will thus contribute to both the environmental and financial bottom lines.



Supply Managers Academy (SMA) is an internal training course for managers in production. They receive training in tools for improving productivity and quality, and the course includes a week-long practice to try out the tools for real. Here we see Max Lord (left) and Jan R. Faarbæk.

→ to the system. With our continued efforts we expect a significantly lower number of breaches in 2004.

Spills and releases

We have taken general measures to minimise the risk of accidental releases in accordance with the requirements of our environmental and genetic engineering approvals. However, as a result of various types of operational accident in 2003 we had six accidental releases into the sewage system of silicone oil, urea and ethanol respectively. In each case we took measures to prevent repeats.

We also had one release of coolant as a result of a rupture in the pipework of a cooling machine. The plant was repaired and, like our other systems, is regularly inspected.

Environmental targets 2004

- Productivity indices per water and energy unit of 1.0 and 0.9 respectively compared to 2003 (PSG).
- Continue the recovery of urea pollution in Brogårdsvej and draw up a plan for completion in conjunction with Copenhagen County.
- Install and run in the neutralisation plant for wastewater in Hagedornsvej.
- Report on the mapping of certain xenobiotic substances in our wastewater.
- Obtain environmental approval for outdoor areas in Hagedornsvej.

Statement by the authorities on the green accounts for 2003 for Novo Nordisk A/S in Gentofte

As in previous years, Novo Nordisk A/S has chosen to draw up combined green accounts for the company's activities at the six different addresses in Gentofte Municipality. The combined green accounts provide an overview of the company's environmental impacts in Gentofte Municipality. This year the accounts are supplemented with an annex including a statement of the resource consumption and emissions of the individual addresses. Copenhagen County is the supervising authority for activities at two of the addresses (Brogårdsvej 66 and Hagedornsvej 1), while Gentofte Municipality is the supervising authority for the other addresses.

On the basis of its knowledge of the company's environmental issues and the conditions laid down by the environmental approvals, the County has taken its position on the corresponding elements of the green accounts.

Basic information

In the view of the County, the basic information assessed satisfies the requirements of the statutory order.

Management statement

The County regards it as positive that, in connection with its mapping of certain xenobiotic substances in wastewater, Novo Nordisk in Gentofte is continuing to survey its cleaning agents. The County challenges Novo Nordisk in Gentofte to continue its work on mapping chemicals.

The County regards it as positive that Novo Nordisk in Gentofte is trying to create more focus on and awareness of waste among employees with a view to minimising waste quantities.

The County also regards it as positive that in the period 2002–2004 Novo Nordisk in Gentofte has invested in environmental protection through renovation of the sewage system, the setting up of a neutralisation plant, and recovery in Brogårdsvej to prevent groundwater pollution.

In future the County would like to see Novo Nordisk A/S state its environmental targets in the transport and waste area. The

county is aware that Novo Nordisk A/S has also set an environmental target for 2004 to introduce instructions in Brogårdsvej to minimise spills and releases in outdoor areas.

During the year the County has not received any complaints from neighbours about the company.

In its report, the company has sketched out its activities to remedy regulatory breaches that occurred and to prevent repeats. The County is aware of the details of these incidents.

Information on environmental issues

The County is not aware of other significant environmental issues that should have been included in the green accounts. The environmental information is in accordance with the County's information on the company. Information on the amount of waste is only divided into major fractions where it concerns waste for recycling.

The County would like the information on consumption of raw materials and auxiliaries – and especially substances that are harmful to the environment and health – to be more detailed in future.

Summary of self-monitoring

The information on the company's self-monitoring, which is compiled in a separate annex, is in accordance with the County's information. In future the County would like more information to be included, for example on the annual inspection of high-efficiency discharge filters (HEPA).

Presentation of information

The County generally finds the company's green accounts to be easily accessible.

Since the accounts also relate to matters that are regulated by Gentofte Municipality, the County has asked for the Municipality's comments. In response to this, the Municipality has stated that the description of the issues relating to wastewater is in accordance with the Municipality's knowledge of this matter.

Environmental data for Novo Nordisk in Gentofte 1999–2003

	Method	Unit	1999	2000	2001	2002	2003
Water							
Drinking water	M	1,000 m ³	114	134	129	143	143
Energy							
Energy (total)	M	1,000 GJ	190	190	213	220	227
External (subtotal)	M	1,000 GJ	124	119	137	137	144
Electricity	M	1,000 GJ	85	85	92	95	99
District heating	M	1,000 GJ	39	34	45	42	45
Internal (subtotal)	M	1,000 GJ	66	71	76	83	83
Gasoil	M	1,000 GJ	0.1	0	0	0	0
Natural gas	M	1,000 GJ	66	71	76	83	83
Materials							
Materials (total)	M	tons	693	666	731	776	894
Raw materials	M	tons	540	464	538	533	606
Packaging materials	M	tons	153	202	193	243	288
Wastewater							
Volume	B	1,000 m ³	92	113	115	120	123
Suspended solids	B	tons	12	21	29	38	29
COD	B	tons	26	44	51	61	71
Nitrogen	B	tons	9	16	25	36	36
Phosphorus	B	tons	1	2	3	4	4
Urea							
Volume	B	m ³	325	360	468	437	651
Nitrogen	B	tons	53	59	77	72	107
Waste							
Waste (total)	M	tons	797	741	973	1,068	1,710
Incineration	M	tons	294	400	352	399	412
Landfill	M	tons	0	2	1	105	429
Controlled destruction	M	tons	71	69	161	131	426
Recycling (subtotal)	M	tons	432	270	459	433	443
Construction waste	M	tons	0	4	0	60	108
Miscellaneous	M	tons	0	0	7	0	0
Electronic equipment	M	tons	–	–	–	2	3
Glass	M	tons	8	5	11	9	7
Kieselguhr	M	tons	41	38	20	24	14
Food	M	tons	53	61	56	65	57
Metal	M	tons	16	13	14	25	29
Oil	M	tons	–	–	–	2	1
Organic solvents	M	tons	257	30	201	160	134
Paper and cardboard	M	tons	57	119	150	86	87
Plastic	M	tons	–	–	–	–	3
Emissions to air							
Organic solvents	B	tons	0.2	0.2	0.2	0.2	3.0
Ozone-depleting substances (total)	A	kg	0	30	34	5	156
CFC	A	kg	0	0	0	0	0
HCFC	A	kg	0	30	34	5	156
Carbon dioxide (CO ₂) from energy production	A	1,000 tons	19	19	22	22	21
CO ₂ from external production	A	1,000 tons	15	15	18	17	16
CO ₂ from internal production	B	1,000 tons	4	4	4	5	5
Sulphur dioxide (SO ₂) from energy production	A	tons	33	33	36	14	12
SO ₂ from external production	A	tons	33	33	36	14	12
SO ₂ from internal production	B	tons	0	0	0	0	0
Nitrogen oxides (NO _x) from energy production	A	tons	37	37	25	32	31
NO _x from external production	A	tons	30	30	21	28	27
NO _x from internal production	A	tons	7	7	4	4	4
Environmental Impact Potentials							
Global warming	A	1,000 tons CO ₂ -eqv.	19	19	22	21	21
Ozone layer depletion	A	kg CFC ₁₁ -eqv.	0	1.2	1.3	0.2	6.2
Acidification	A	tons SO ₂ -eqv.	59	58	53	37	34
Eutrophication	A	tons NO ₃ -eqv.	129	174	248	318	315
Compliance and complaints							
Breaches of regulatory limits	M		1	0	0	0	26
Regulatory limits with repeated breaches	M		0	0	0	0	1
Accidental releases	M		2	0	0	4	7
Complaints	M		2	0	17	0	0
Stockpile of Ozone Layer-degrading Substances							
CFC	A	kg	446	446	446	446	0
HCFC	A	kg	2,836	2,836	2,802	2,480	2,482
Methyl bromide	A	kg	0	0	0	0	0

In the 'Method' column, the following categories are used in accordance with the Danish Environmental Protection Agency's guideline on green accounts: Measured (M), Calculated (B) and Estimated (A).

Data in this report were included in the assurance engagement performed by Deloitte. The full Assurance Statement from Deloitte can be found on page 58 of Novo Nordisk's *Sustainability Report 2003*.

Novo Nordisk is an international biotechnological and pharmaceutical company. We offer a wide range of insulin products, as well as products for growth disorders, hormone replacement therapy and haemostasis management. We are headquartered in Bagsværd, Denmark, and have production facilities in Denmark, France, the US, Brazil, South Africa, Japan and China. We have around 19,000 employees and are part of the holding company Novo A/S, which is also headquartered in Bagsværd. We are committed to the integration of sustainable development into the management of our company. This is being done on the basis of the 'Charter' for companies in the Novo Group. The Charter sets out our Values, Commitments and Fundamentals, as well as the Novo Nordisk Way of Management, which includes the company's Vision and Policies. We aim to be sustainable not only financially but also in terms of social and environmental responsibility. This report (including the annex) also constitutes the company's green accounts for 2003.



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