

Environmental and Social Report Gentofte 2002

We have many highly varied activities in Gentofte. But one of the things that brings us together is the feeling of responsibility towards the environment and people. We believe that our results show how seriously we take this responsibility.



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 1,256 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.





The company is regarded as a rich company by our neighbours, and we are expected to be involved in the local community. This might be anything from cooperating with local schools and training institutions to sponsoring local events. We are pleased with this interest in us and want to be regarded as an asset to the local community rather than just a company which has to be tolerated.

BOTH RESEARCH AND PRODUCTION Novo Nordisk in Gentofte manufactures pharmaceutical products using biotechnological processes. We manufacture human growth hormone, which is sold under the name Norditropin®, and the diabetes product glucagon, which is sold under the name GlucaGen®. Human growth hormone is fermented at our 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 the fermentation of growth hormone is discharged via our pasteurisation plant. In Brogårdsvej we recover glucagon and human growth hormone, and there is also a central boiler plant, workshops and

administration. Our warehouses are located in Lagergårdsvej, and in Sautesvej we have laboratories and quality assurance. In Niels Steensens Vej and Vangede Bygade we also have facilities for registering new products, quality assurance and administration.

Niels Steensens Vej is also home to our research unit, Hagedorn Research Institute, which researches new possibilities for treating diabetes, and Steno Diabetes Center, Novo Nordisk's hospital and research centre for treating people with diabetes.

ENVIRONMENTALLY FRIENDLY PRODUCTION 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.

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

Our activities are also approved and regulated by a number of permits, environmental approvals and genetic engineering approvals which set limits for our impact on the environment.

Contact

Flemming Junker
Vice President
flju@novonordisk.com
+45 4443 8238

Focus on environmental management and equal opportunities

For Novo Nordisk in Gentofte, 2002 was dominated by the implementation of the Environmental Management System according to the ISO 14001 standard. We also had a range of objectives in the social area that we worked to achieve. We achieved the targets we had set ourselves for 2002 in both environmental and social issues.

From the left: Susanne Jakobsen (Novo Nordisk Servicepartner), Flemming Junker (Product Supply Gentofte), Uffe Jensen (Steno Diabetes Center) and Niels Holger Hansen (Quality Support)



In the coming years we are looking forward to really reaping the benefits of our new Environmental Management System. Here and in the remainder of this report we discuss the issues and activities that in our opinion best show how we at Novo Nordisk in Gentofte have worked on environmental and social responsibility in 2002. We are proud of our efforts and plan to continue in the same vein in future years.

Novo Nordisk's environmental policy obliges us to prevent pollution and continuously improve our environmental performance. We ensure this by carrying out environmental mapping of all new activities and by setting targets relating to the company's main environmental issues. In 2002, one of our targets was that our Environmental Management System should be certified according to ISO 14001.

DEMANDING BUT REWARDING CERTIFICATION Environmental certification of Hagedornsvej and Brogårdsvej was the all-important project in our environmental work in 2002. The results are that we have carried out environmental mapping, that we have drawn up action plans, that we have trained many employees in environmental issues, and that we obtained certification at the end of July. After that, it was a matter of ironing out the details that the certification had brought to light and improving the system. The main thing is that we succeeded in getting certified across organisational boundaries. The various departments belong to many different business areas in Product Supply and research. It has been exciting to see how everyone has supported the project.

Employees are involved in environmental work in two ways. Firstly, through the formal structures in which an environmental coordinator works with those responsible for environment and managers in the individual departments. In addition, employees in the individual departments are involved to a greater or lesser degree in the specific environmental projects that are carried out in the departments, and there are ongoing training and information activities.

PROGRESS TOWARDS OTHER ENVIRONMENTAL TARGETS

We did not receive any complaints in 2002. We are continuing to work to meet the requirements for pH in our wastewater from Hagedornsvej and Brogårdsvej. After our efforts in 2002, we believe that we have found a method for solving the problem. We expect to be finished at both locations at the end of 2003.

HEALTH & SAFETY AND EQUAL OPPORTUNITIES In respect of social issues, all parts of Novo Nordisk in Gentofte have worked on health & safety and equal opportunities. The first through the work with workplace assessments, where in many cases the units have also had the psychosocial working environment on the agenda. The number of occupational injuries in 2002 was nine in production and one elsewhere. Overall, we achieved our target of a maximum of 10 occupational injuries in the production area (commonly referred to as PSG), although the distribution was different from our objective, which was seven injuries in production and three elsewhere. There were also two further occupational injuries at Novo Nordisk's site in Gentofte involving employees from Novo Nordisk Service-partner.

In the work on equal opportunities, several units held meetings with external speakers and subsequently discussed integration and equal opportunities. The target was firstly 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 in which the company, in tandem with the Technical University of Denmark, has established further training for foreign engineers. In Gentofte we have a trainee who is taking part in a water project which is part of this training initiative.

STRATEGY FOR SOCIAL RESPONSIBILITY COMMUNICATED

In PSG we had drawn up a social strategy in 2001 in which one of the targets for 2002 was that this strategy should be communicated to all departments. All employees have had the strategy presented and had the opportunity to discuss its significance at departmental or employee meetings.

Finally, it should be mentioned that our target of carrying out a working climate survey was prioritised downwards because it was decided centrally in Novo Nordisk that the electronic working climate survey should not be obligatory in 2002. We did not therefore carry out a joint, formalised working climate survey.

FUTURE FOCUS AREAS

The main focus for environmental issues has continued to be the work relating to ISO 14001. We are convinced that there are still many savings to be made out of the system, and we are sure that it will be of major benefit to us that in ISO 14001 we have acquired a system and basis for our environmental management. We anticipate savings of both an environmental and financial nature. One of the targets for 2003 will also be to get our activities in Sauntesvej included in the environmental certification.

In 2003 we will be working to make the system a part of everyday life. We will also be executing the action plans that we have drawn up following the mapping of our environmental impact. This will mean a number of smaller and larger projects, all of which will hopefully have a positive effect on how much we impact the environment.

Next year we will also be continuing to improve the discharge of our wastewater so that we can better meet official requirements.

FUN IN PRODUCTION In PSG we will also be starting a project in spring 2003 that will make our method of working in both production and administration more efficient. We have already launched the term FuN – *Forbedringer uden Nøl* ("Improvements without Delay"). The idea is to achieve efficiency gains by trying to do things differently or by making sure that boring work is made more fun, that there are fewer obstacles in everyone's work, etc. The motivation for starting up such a project is the desire to create more room in our budgets so that there can be space for more of the right sort of fun, stimulating work. It is not new for us to think about streamlining. What is new is the idea of the streamlining being systematic and visible. We are certain that FuN will have an effect on all our three bottom lines – environment, social and economic – and this is a project that we are very much looking forward to implementing.

Diverse efforts in social responsibility

The work on social responsibility is carried out primarily in the individual units and departments of Novo Nordisk in Gentofte. Health & safety is a feature of this work, and there was particular focus on the psychosocial working environment in 2002, with many units getting involved in discussing this subject. Similarly, equal opportunities was a new focus area in many places in the company, and we are continuing to exert great effort in developing and training our employees.





In PSG, one of the targets for 2002 was a maximum of seven occupational injuries in production and three elsewhere. Unfortunately, we only partly achieved this target. We had a total of 10 occupational injuries, but nine of these were in production and one elsewhere. In addition, two employees from Novo Nordisk Servicepartner suffered occupational injuries at Novo Nordisk's site in Gentofte.

The work on the physical working environment is proceeding on the basis of the workplace assessments that are carried out in the departments, and there is no general theme for the challenges in this area. The target for workplace assessments is that 80% of recommendations should be implemented within the time period that the plan covers, and PSG is achieving this.

For Quality Support, the move to the newly renovated premises in Sauntesvej in 2002 meant a number of adjustments to ventilation, sun-screening, etc., that had a negative effect on the indoor climate and thus the physical working environment. This was also evident in our workplace assessments.

At Hagedorn Research Institute (HRI), the safety group went through all the chemicals that we had in our buildings to make sure that everything was in order in respect of the various user instructions. We also had our 'fireproof room' tidied up and drew up new procedures for ordering and storing fire-hazardous chemicals.

STRESS IS A COMMON PROBLEM One of the subjects that was discussed in connection with the physical working environment in PSG was stress. We contacted Novo Nordisk's central Occupational Health Service and received a visit from a consultant, who talked about approaches to working with the subject, and we also heard about the work of other Novo Nordisk departments with stress. We are currently working to find the right tools to use for dialogue with employees who are experiencing stress.

As part of the follow-up to the 2001 working climate survey, in January 2002 Quality Support drew up a programme that we pursued throughout the year. One area concerned handling stressful situations. Employees are experiencing a high level of stress from customers. Management is trying to address this by supporting employees and making it clear that too much work is not just a personal problem but something that they have a right to ask management to take responsibility for.

EQUAL OPPORTUNITIES In PSG we have tackled the work of ensuring equal opportunities in various ways. In March, we invited consultant Fahmy Almajid to give a talk at a large meeting for the whole of PSG. This was in light of our target to hold at least one meeting for all employees to increase understanding of foreign cultures. Fahmy Almajid recounted both his own and others' experiences of living and working in Denmark when →

Social targets 2003

We will carry out exit interviews with at least 80% of employees leaving the production area.

70 operators will have completed or begun medical operator training by the end of the year.

We will have a maximum of 10 occupational injuries during the year; seven in production and three elsewhere.

80% of all employees will have taken part in the activities at which the conclusion of the DAWN studies is discussed. (DAWN is a worldwide study into the psychological aspects of diabetes.)

you have a non-Danish ethnic background. There was much positive feedback on the event, which in many departments subsequently gave rise to discussions on how best to facilitate the integration of employees with non-Danish ethnic backgrounds into the workplace and what Novo Nordisk can do.

Furthermore, we are participating in Novo Nordisk's joint project with the Technical University of Denmark which is working on further training for engineers with different ethnic backgrounds. At the moment, one project participant is working in Technical Services in PSG.

In Regulatory Affairs also we have tackled how we should work with equal opportunities. In the recruitment of new employees we worked in 2002 at attracting more ethnic minorities and more men for a traditionally female profession. We bear this in mind when we invite people for interview and stress in our advertisements that applicants may have training backgrounds other than pharmaceutical. We have also worked to develop a plan for equal opportunities (Equal Opportunity Plan), which all employees have had the opportunity to have input on. In May and November we had talks at quarterly meetings on what it was like to come to Denmark and Novo Nordisk from another ethnic background, and similarly a Dane talked about his experiences of being posted to Japan.

Equal opportunities also concerns e.g. physical handicap. In Regulatory Affairs we have fitted out user-friendly workplaces for two employees with a chronic physical disease (not related to their work), and both employees are now able to work reduced hours.

TRAINING CHANGES WORK DISTRIBUTION The target for 2002 was that 25 employees should complete training as medical operators, and we achieved this. At the end of the year, a further 12 employees were also part-way through their training. The training gives participants more knowledge of the processes and machines that they use in their work. Completion of the training leads to a genuine upgrading in qualifications, and thus provides operators with the incentive and reasons for expanding

their work. However, this also requires certain changes in the internal agreements between different groups of employees, and this process is now gradually being put into place. The management attaches great importance to ensuring that the training is fully utilised and leads to changes and improvements in both production and the operators' work.

TRAINING AND INTEGRATION GO HAND IN HAND As we train all our production employees to be medical operators, we will need extra workers. In 2001 we set about achieving this in cooperation with Copenhagen Job Centre (AF). We approached AF because we wanted to recruit from a target group other than the one we normally turn to when we are seeking new employees. We succeeded. Firstly, many of our new employees were not previously aware of Novo and so would probably not have discovered the opportunity of working for us. Secondly, we wanted to marry the need for extra employees with being able to offer equal opportunities, e.g. job-seekers with a non-Danish ethnic background. In practice, the result was that exactly half of the participants on the course represented backgrounds other than Danish. The employees started training in January 2002 and were taken on in April.

EXTERNAL CONTACTS We are generally open for visits if, for example, schools approach us. For this purpose, we have drawn up a description of a visit that is sent to the schools in Gentofte Municipality. In 2002 we were visited by a number of classes from both primary and secondary schools.

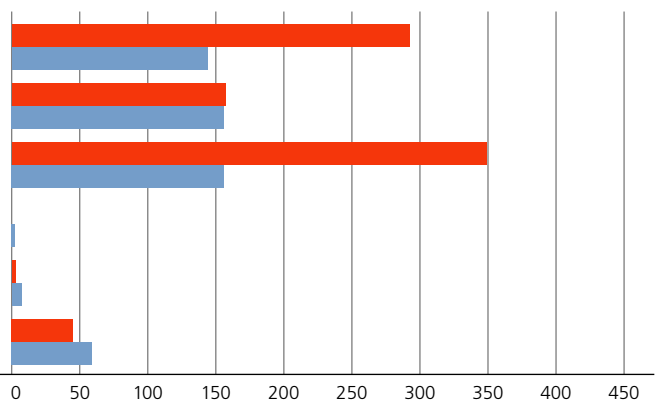
Furthermore, we have a tradition for modest sponsorship of various local activities – e.g. Gentofte Festival Week, the school patrol and Gentofte Fire Service Museum.

A target for 2002 was to make contact with at least three relevant training institutions. We have enjoyed extensive cooperation with several job retraining centres, Pharmakon in Hillerød and the College of Laboratory Sciences in relation to the development of the medical operator training.

Our employees	2000	2001	2002
Total number of employees	1,211	1,332	1,256
Number of full-time employees	985	1,101	1,028
Number of part-time employees	226	231	228
Average age distribution (years)	39.9	40.0	40.3
Average years of service	8.6	8.3	8.7
Employee turnover (%)	7.6	5.5	6.0

Occupational injuries	2000	2001	2002
Frequency of occupational injuries	4.1	5.2	6.0
Number of lost-time injuries	8	11	12

Gender representation		2001	2002
Administration	female	327	292
	male	158	144
Production		148	157
		140	156
Research & Development		384	349
		172	156
Other job functions		0	0
Senior management (SVP, VP)*		3	2
		4	3
Management (Manager)*		7	7
		45	45
		57	59



* The figures for senior management and management are also included in the totals for the other employee categories.



ELECTRONIC PATIENT JOURNAL

New work roles and tools

In 2002, Steno Diabetes Center saw the introduction of electronic patient journals. The project came into operation in 2001 and had a major effect on work and employees in 2002. It has had many consequences for the working environment, where we have had to find the best ways of incorporating a new, foreign element – the computer – into the meeting with patients. We have thus rethought the fitting out of the premises in which the meeting between healthcare professional and patient takes place. Furthermore, many felt that for a while the patient meeting became too hurried because, during the running-in period when the healthcare professional was not fully familiar with the system, the technology was taking up too much time. The new tool has also meant that tasks have needed to be distributed differently between the personnel groups. Coordination groups and observation groups have discussed the situation and, at large general employee meetings and in smaller groups, looked at how we can tackle the new requirements. Novo Nordisk's Occupational Health Service has helped with information on how to cope with major change processes.

WORKING ENVIRONMENT

Togetherness through courses and outings

A few years ago Hagedorn Research Institute went through a major upheaval with restructuring that entailed many redundancies. It was a tough time, and so we also focused on the working climate

in 2002. For example, we held what we hope will be just the first employee outing in Dyrehaven deer park for all employees at the Institute and their families. We also discussed various elements of health & safety on the working climate days that all departments held. It was also important for us to carry out a team-building activity. The safety group had often talked of having first-aid courses for all employees, so we chose to use this as an opportunity for team-building, with all employees taking part in courses together – across organisational boundaries and departments – in order to promote interaction between the groups. The organisers received very positive feedback on the courses, not just because they were extremely good, but because they were something that we did together.

JOB SWAPS

Trying something new in your old job

In CMC-development we had already decided in 2001 that we would like to give our employees in the laboratories an alternative opportunity for development. Between three departments we came up with a project which made it possible to do a job swap for six months to one-and-a-half years at a time. Around 10 employees expressed an interest, and from these we chose three based on how long they had been working in the same area and how we could piece together the jigsaw puzzle between the departments. After the job-swap period, the employees returned to their old jobs.

TRAINING STRATEGY

PSG participates in work groups

During 2002, production took part in Novo Nordisk's general work on developing strategies for training and developing five employee groups in PSG: skilled manual workers; laboratory assistants and technical personnel; middle managers; professionals; and administrative personnel. This work was completed just before the end of the year, and the result is expected to be looked at by PSG's management group at the beginning of 2003. PSG has taken part in four of



these five groups, where i.a. the skilled manual workers group has had a lot to contribute as it is already in the process of formulating a training strategy for the group.

DATABASE

Overview of employee development

During 2002 Steno Diabetes Center set up a database to keep a record of all further training. The intention is to provide an overview of what the resources for further training are being used for and, on the basis of this, to be able among other things to ensure a reasonable activity level for all. We are looking forward to seeing the results of this work in future years.

EXTERNAL

Hagedorn Network for sharing knowledge

Hagedorn Network is a new association whose members have been employed at HRI at one time or another. The association's first event was a scientific afternoon followed by the Institute's summer party. The idea is to establish a network for sharing knowledge, questions and ideas on subjects that are relevant to the Institute's work. There are around 230 people on the membership list at present.



Environment: outstanding base laid in 2002

The environmental work in Gentofte in 2002 was especially marked by ISO 14001 certification, which we had set out to obtain before the end of the second quarter. We succeeded in this. At the same time we achieved other concrete improvements in our consumption of resources so that we are impacting the environment even less per unit that we produce. All in all, we are extremely confident that our future environmental work will reach new heights once we have systematised our environmental management.





Gentofte was one of the first sites in Novo Nordisk to be certified in accordance with ISO 14001. This has been a challenge since for the individual buildings it is not possible to separate out production's consumption of e.g. water and energy from other activities. We therefore chose to select participants by the address. This presented some organisational challenges – but we succeeded in coming through the whole process with the many different units represented without any insurmountable problems. We obtained certification in July.

EMPLOYEES MUST BE INCLUDED The crucial thing is to get employees fully behind the idea of an Environmental Management System since it is they who are closest to the environmental impacts and can influence them through their daily work. In the same way, it is the employees who can come up with ideas for improvements. And they do just that – we have already received numerous suggestions for environmental improvements, some of which have already been implemented, while others are in the process of being implemented. It is our general impression that the employees are committed to environmental work. In 2002 we also included our environmental management programme as an element in our induction programme for new employees.

In 2002 we focused in particular on improving and refining our environmental mapping and drawing up action plans for reducing environmental impacts both in the individual depart-

ments and for Gentofte as a whole. Part of the employee training in the individual departments was also carried out.

ENVIRONMENTAL CERTIFICATION IS IMPORTANT In our relations with the outside world – customers, neighbours, authorities – it is important for us to be environmentally certified. We do not want to be a site that pollutes. We do not want to cause nuisance to our neighbours. And so we also want to limit our consumption of resources – and the certified Environmental Management System helps us to do this. In this way we both spare the environment and save money.

The new Environmental Management System makes our work with the environment and improvements much more focused. It makes it possible for us to be aware of the environment the whole time. It does not mean that all resources have to be used on environmental issues, but it will be a part of the daily routine at departmental meetings, etc.

We are sure that in 2003 we can already see improvements in our environmental results, partly as a result of the introduction of the Environmental Management System. However, we will probably have to wait until 2004 before we can see the full results.

BETTER UTILISATION OF WATER AND ENERGY Water and energy are the most important resources in Novo Nordisk's production in Gentofte. In basic production and in the pilot plants we also use various raw materials for fermenting and recov- →

Environmental targets 2003

Increase productivity per used water and energy unit by 5% and 4% respectively compared to 2002.

Clean up the urea contamination in Brogårdsvej (2003/2004) and set a limit value for completion of cleaning in conjunction with Copenhagen County.

Adjust the pH in wastewater from Hagedornsvej in accordance with Gentofte Municipality's discharge permit – $6.5 \leq \text{pH} \leq 9.0$. Implement and commission the plant for this purpose.

Map the xenobiotic substances (LAS, NPE and DEHP) in wastewater from Hagedornsvej.

Draw up an action plan for reducing N and P in wastewater from Hagedornsvej.

ering, including glucose, filter materials, urea, inorganic salts, bases and acids. In our fermentation processes we use genetically modified microorganisms (GMMs) that are harmless to humans and nature. In finished goods production, the products are filled into vials, labelled and packed.

All water is of drinking quality and is supplied from the municipal supply network. The total water consumption in 2002 was 143,000 m³, which was an increase of almost 10% compared to 2001. By contrast, our general efforts to save water meant that productivity per m³ water used increased by 7% compared to 2001. This is better than our target of a productivity increase of 5% in terms of water consumption.

Energy is supplied in the form of electricity by NESA via the public supply network, steam by the company's own natural gas boiler plant, and heat by the district heating network. In 2002, the total energy consumption in Gentofte was 221,000 GJ, which was an increase of 4% compared to 2001. However, in energy also we increased our efficiency, productivity per energy unit (GJ) increasing by 16% compared to 2001. We therefore more than met our target of a productivity increase of 4% in terms of energy consumption. Thus, for both water and energy we had significant improvements compared to 2001 – measured in consumption per produced unit. In respect of energy in particular we had a fantastic result with an improvement of 16% per produced unit. This result was significantly boosted by our focus on ventilation in production, offices and laboratories. You can read more about this in the case histories on page 13.

Water is a more sensitive area because we use large amounts of very clean water to clean our production plant. We have a project running in which we reckon on being able to considerably reduce our consumption for washing. The project will run for the next two years, during which we are replacing our water system in Hagedornsvej with a new, better one and moving the system from there to the production in Brogårdsvej. This will mean large savings in future. Without this type of improvement, it is difficult to significantly reduce water consumption.

RAW MATERIALS ON THE RIGHT TRACK In 2002 Gentofte used a total of 533 tons of raw materials and auxiliaries, and 243 tons of packaging. This represents an almost unchanged consumption of raw materials, etc., and an increase of 26% for packaging compared to 2001. This increase was due to increased production.

Normally the consumption of raw materials increases when production increases. This should also have been the case for PSG in 2002, but because we have optimised our processes and improved our utilisation of raw materials, we succeeded in producing more with the same consumption. The better we get to know our plant, the easier it becomes to correct any inepen-

diencies and thus achieve savings in raw material consumption. So it is not a specific initiative that has brought about improvements, but an ongoing effort to improve our processes.

GENERAL WASTEWATER PERMIT ON THE WAY

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. All wastewater from the fermentation processes is heat-treated before discharge into the public sewage system so as to inactivate all GMMs.

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. Wastewater with a high content of urea from recovery of glucagon and growth hormone in Brogårdsvej and Hagedornsvej is collected and transported to Kalundborg for treatment in Novozymes' treatment plant. In 2002, 72 tons of nitrogen were collected and transported to Novozymes' treatment plant in Kalundborg.

As of 16 December 2002 we have a wastewater permit covering the whole of the Gentofte site that we had worked towards with Gentofte Municipality in 2002. This meant that during the year we mapped material consumption and wastewater for all Novo Nordisk's units in Gentofte.

ACIDS AND BASES SOON UNDER CONTROL

Measurements of wastewater in Brogårdsvej and Hagedornsvej have shown that the pH and temperature of the discharged wastewater are in some cases outside the future limits of pH 6.5–9 and maximum 50°C laid down in our wastewater permits.

We have therefore done a lot of work on finding the right method for neutralising our wastewater. The project was completed in 2002 in Brogårdsvej. Once we have found a system that works we will begin implementing it in Hagedornsvej, where Gentofte Municipality has given permission for us to complete the work in 2003.

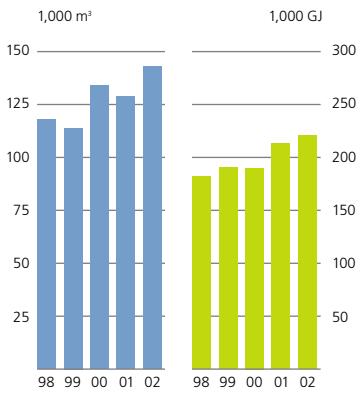
MAXIMUM POSSIBLE RECYCLING OF WASTE

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

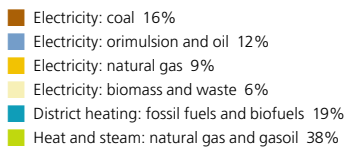
In 2002 we produced a total of 1,068 tons of waste, which was an increase of almost 10% compared to 2001, when the quantity was 973 tons. This was due to increased production. Solid waste is made up primarily of used filter material from the recovery plants and packaging from raw material supplies.

The majority of the waste that is not sent for recycling is sent for incineration at I/S Vestforbrænding in Glostrup. Occasionally waste is dumped at landfill sites, but as a rule only waste from dem-

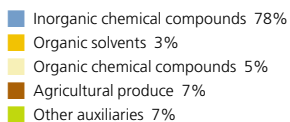
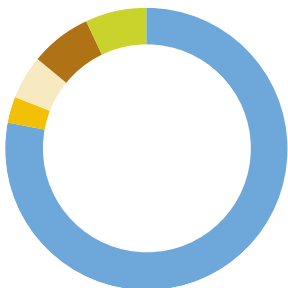
Water and energy consumption



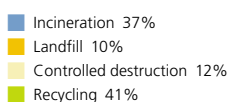
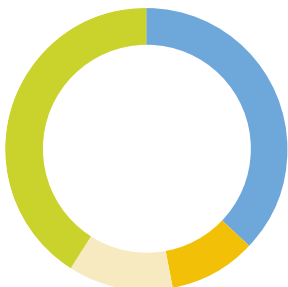
Breakdown of energy sources



Breakdown of raw materials



Waste disposal



RADIOACTIVITY

Hagedorn handles its own waste

At HRI we work with radioactivity – albeit in very small quantities, and obviously in accordance with all rules laid down by the National Institute of Radiation Hygiene. Employees note down what they throw away after use, and a general report is prepared each month. In order to reduce the quantity of waste we transport to Risø National Laboratory for storage – which is both costly and requires a lot of transport – we ourselves decay the isotopes P32 and – new from 2002 – P33. In practice, all radioactive material has a fixed half-life and decays accordingly. When it falls beneath a certain limit, it may be disposed of as general hospital waste in yellow FASS4 buckets that are treated at Vestforbrænding Incineration Plant.

COLD WATER

Pump speed regulation installed

In 2002 we installed a speed regulator on the pump motor of the cooling system that serves three large buildings in Hagedornsvej. In the summer, when more cooling is required, we can run at full power, while in the winter we need to circulate only about 20% of the water. We anticipate that this will save half of the energy consumption for this cooling system. With an investment of 108,000 Danish kroner, 47,320 kroner of which was in 2002, we reckon that from 2003 we will be able to save about 240,000 kWh (equivalent to about 118,000 kroner) in electricity every year. A combination of environmental and economic considerations drives improvement projects on the site's many different systems.

CONTAINERS

Waste focus through ISO 14001

Our waste sorting has been brought into sharp focus by ISO 14001, and our container park has been optimised so that we have all the right containers clearly marked with the waste type that the container should carry. Furthermore, we have set up a new summary card for the

container park. Previously we had to pay for containers to be resorted, but this is no longer the case. We have also introduced new sorting possibilities in the departments. In the past we had several containers inside the buildings from which the waste was fetched. This was a bad solution – it was expensive because the containers were all too often emptied when not full, and it also meant that employees did not have a sense of what was happening with their waste, which resulted in too much mixed waste.

PAPER

Little things matter in environmental work

The Quality department has decided in future to always use double-sided printing. This is obviously a small matter in the wider scheme of things, but important for their department – and it makes its mark in the department's budget.

FUME CABINETS

New ventilation system saves energy

One contribution to the reduction in energy consumption comes from converting the ventilation of all the fume cabinets in the laboratories. The idea for the project arose in connection with the ventilators needing to be replaced due to their age. Previously the cabinets had constant ventilation via their own small ventilators. Now we have connected the cabinets to fewer, larger ventilators, and also installed sensors on each cabinet so that the extraction only operates when someone is standing in front of the cabinet, i.e. when the cabinet is in use. This will save energy. We have about 30 fume cabinets whose ventilation has now been brought together in five large systems.



olition work. In these cases, the waste is dumped at AV-Miljø's landfill site on Avedøre Holme. Waste flows 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.

MINIMAL 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 (spirit).

We do not have much noise. In Sauntesvej we installed a new furnace in 2001 whose chimney was making a lot of noise. This was corrected in spring 2002.

REDUCTION IN OZONE-DEPLETING SUBSTANCES Our stockpile of ozone-depleting substances (HCFCs) fell by 12% in 2002 compared to 2001. This was due partly to the fact that we have shut down certain plants, and the ozone-depleting substances have been returned to the suppliers. Also, in some existing plants we have switched to more environmentally friendly coolants that are not on the authorities' list of ozone-depleting substances.

SOIL CLEANING IN BROGÅRDSVEJ Following discontinuation of a buried chemical tank on Brogårdsvej in 1999, it was confirmed that the soil around the tank had been contaminated with urea. In the spring of 2001, Copenhagen County accepted our proposal to clean up the ground and we began this work in 2002. We expect to continue this work throughout 2003.

NO COMPLAINTS, BUT ACCIDENTAL RELEASES We received no complaints in 2003, but unfortunately we had four incidents of releases.

In the first case, 25 m³ of coolant was released into the public sewage system. This was reported to Gentofte Municipality and in follow up we have installed an alarm in the coolant tank.

Also, two tanks overflowed with a residual product from recovery of growth hormone, namely urea dissolved in water. In total, around 50–100 litres was released into the sewage system in Hagedornsvej and around 50 litres in Brogårdsvej. The releases occurred because the level sensors that should have stopped the filling process once the tanks were full did not work.

Following these releases we have tightened up our maintenance routines for tanks with sensors. Three of the releases were reported to both the county and the municipality as required, but the fourth, a release on Brogårdsvej, was only reported to the municipality due to an error. This was subsequently put right. The releases were not hazardous and, in our assessment, had no environmental consequences.

We also had a spillage in one of our base rooms in Hagedornsvej, where diluted base escaped from the room and seeped through some tiles into the ground. It turned out that a leaky pump did not have a drip pan. The base was flushed out of the room during cleaning. We have now placed drip pans under the pumps so that any future spillage will run down into a drain for subsequent recovery. The spill did not have any serious consequences since the base that escaped into the ground gradually neutralises itself. The county was informed of the matter and did not require any further action.

Statement on green accounts

Copenhagen County has received 'Environmental and Social Report Gentofte 2002' from Novo Nordisk A/S containing the green accounts for 2002 and issues the following statement: As in previous years, Novo Nordisk A/S presents combined green accounts for the company's activities at six different addresses in Gentofte Municipality. The combined green accounts provide an overview of the company's total environmental impacts in Gentofte Municipality, but do not provide the public with information on how individual activities affect the local environment. Copenhagen County is the supervising authority for activities at two of the addresses (Brogårdsvej and Hagedornsvej), while Gentofte Municipality is the supervising authority for the other four. Since the contribution from the individual addresses is not evident, it is difficult for Copenhagen County to comment on the accounts' full content. The county has agreed with Novo Nordisk A/S that data for individual operations in Gentofte Municipality will, as far as possible, be evident from next year. The report is subject to the transitional rules for drawing up green accounts since the accounting year began in the period 1 July 2001 to 31 July 2002. We have taken our position on the basis of the following information in the accounts:

Basic information

- The category/categories for which the company is environment-approved.
- Information on the most significant environmental approvals granted to the company.
- The brief qualitative description of the most significant resource and environment parameters characterising the primary activities of the company and the secondary activities, where relevant.

Information on environmental issues

- Data on the major consumption by the company of energy, water and raw materials.
- Data on significant types and volumes of pollutants to the extent they
 - form part of the production processes,
 - are discharged by the company to air, water and soil,
 - form part of the company's products,
 - form part of wastes from the company.

Copenhagen County's comments

The information contained in the green accounts is in accordance with our information on the company. The county will carry out inspections to follow up on the accidental releases in Brogårdsvej. There is no information on other major issues that, in the opinion of Copenhagen County, should have been included in the report. 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 the following: "The discharge of N and P via wastewater should be measured in accordance with the guidelines laid down at the meeting between Novo Nordisk and Gentofte Municipality on 6.5.2002. Gentofte Municipality does not have the opportunity to verify the specified waste quantities due to the way in which the waste fractions are compiled in the green accounts."

Environmental data 1998–2002

	Unit	1998	1999	2000	2001	2002
Water						
Drinking water	1,000 m ³	118	114	134	129	143
Energy						
Energy (total)	1,000 GJ	182	191	190	213	221
External (electricity)	1,000 GJ	119	124	119	137	138
Electricity	1,000 GJ	84.0	85.0	85.2	91.9	95
District heating	1,000 GJ	35.0	39.4	33.6	45.0	42
Internal (subtotal)	1,000 GJ	63.0	66.2	71.4	76.2	83
Gasoil	1,000 GJ	0.67	0.10	0	0	0
Natural gas	1,000 GJ	62.3	66.1	71.4	76.2	83
Materials						
Materials (total)	tons	489	693	666	731	776
Raw materials	tons	420	540	464	538	533
Packaging materials	tons	69	153	202	193	243
Wastewater						
Volume	1,000 m ³	96.3	92.4	113	115	120
Suspended solids	tons	14	12	21	29	38
COD	tons	35	26	44	51	61
Nitrogen	tons	13	8,8	16	25	36
Phosphorus	tons	1.1	1.3	2.0	3.2	3.6
Urea (wastewater treatment in Kalundborg)						
Volume	m ³	324	325	360	468	437
Nitrogen	tons	53	53	59	77	72
Other waste						
Other waste (total)	tons	661	797	741	973	1,068
Incineration	tons	296	294	400	352	399
Landfill	tons	0	0	2.0	0.9	105
Controlled destruction	tons	13	71	69	161	131
Recycling (subtotal)	tons	352	432	270	459	433
Construction waste	tons	1.0	0	4.0	0	60
Miscellaneous	tons	47	53	61	56	0
Electronic equipment	tons	–	–	–	–	2
Glass	tons	3.6	8.2	5.0	11	9
Kieselguhr	tons	41	41	38	20	24
Food	tons	47	53	61	56	65
Metal	tons	18	16	13	14.0	25
Oil	tons	–	–	–	–	2
Organic solvents	tons	168	257	30	201	160
Paper & cardboard	tons	73	57	119	150	86
Emissions to air						
Organic solvents	tons	0,2	0,2	0,2	0,2	0,2
Ozone-depleting substances (total)	kg	150	0	30	34	5
CFC	kg	7	0	0	0	0
HCFC	kg	143	0	30	34	5
Carbon dioxide (CO ₂)	1,000 tons	18.8	19.0	19.0	22.0	21.4
Sulphur dioxide (SO ₂)	tons	36	33	33	36	14
Nitrogen oxides (NO _x)	tons	45	37	37	25	33
Environmental Impact Potentials						
Global warming	1,000 tons CO ₂ -eqv.	19.1	19.0	19.0	22.0	21.4
Ozone layer depletion	kg CFC ₁₁ -eqv.	11	0	1.2	1.3	0.2
Acidification	tons SO ₂ -eqv.	68	59	58	53	37
Eutrophication	tons NO ₃ -eqv.	154	129	174	248	318
Compliance and complaints						
Breaches of regulatory limits		0	1	0	0	0
Regulatory limits with repeated breaches		0	0	0	0	0
Accidental releases		0	2	0	0	4
Complaints		1	2	0	17	0
Stockpile of Ozone Layer-degrading Substances						
CFC	kg	446	446	446	446	446
HCFC*	kg	2,626	2,836	2,836	2,802	2,480
Methyl bromide	kg	74	0	0	0	0

* The stockpile of HCFCs for 1999, 2000 and 2001 has been adjusted from that reported in 2001. This is due to inclusion of a plant.

Data in this report were included in the assurance engagement performed by Deloitte & Touche. The full Assurance Statement from Deloitte & Touche can be found on page 58 of Novo Nordisk's *Sustainability Report 2002*.



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 haemophilia. We are headquartered in Bagsværd and have production facilities in Denmark, France, the USA, Brazil, South Africa, Japan and China. We have around 18,000 employees worldwide 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 2002. For more information, visit www.novonordisk.com/sustainability, where you can also download this report in English and Danish.

Novo Nordisk A/S
Hagedornsvej 1
2820 Gentofte
Denmark

Tel. +45 4444 8888
Fax +45 4449 0555

www.novonordisk.com

CVR no. 24256790
Brogårdsvej: P no. 1.007.712.304
Hagedornsvej: P no. 1.007.712.312

