

Environmental and Social Report Bagsværd 2002

We are a major feature – in the lives of our employees and our nearest neighbours, and in the life of the town of Bagsværd. This entails major responsibility. Responsibility that we take very seriously – as we believe our work shows.



Novo Nordisk in Bagsværd

Novo Nordisk A/S is a pharmaceutical company with headquarters in Bagsværd. The Novo Nordisk Group's main activities are pharmaceutical product research and the development, production, marketing, sale and distribution of such products. Novo Nordisk's operations in Bagsværd are situated in an industrial area bordering private housing, recreational areas, other industry and the town of Bagsværd itself.





Novo Nordisk in Bagsværd occupies a total area of 180,000 m². The site also houses the head offices of the affiliates Novo Nordisk Engineering A/S (NNE), Novo Nordisk Information Technology A/S (NNIT) and Novo Nordisk Servicepartner A/S (NNS).

Bagsværd is located in Gladsaxe Municipality, which forms part of Copenhagen County. Employment within the municipality amounts to some 36,000 jobs. In 2002, Novo Nordisk in Bagsværd had 3,928 employees, including 815 in production, 920 in research & development, and 879 in administration. The remaining 1,314 people were employed by the affiliates.

DEVELOPMENT AND PRODUCTION Our main activities consist of developing and manufacturing insulin products for treating people with diabetes and, to a lesser extent, hormone tablets for hormone replacement therapy. We purify the insulin (which is fermented and recovered at our production site in Kalundborg) and formulate the final product for filling into cartridges and packing. We make caps for sealing the insulin cartridges, and print labels and finished goods packaging. In connection with the individual production processes, we have quality control laboratories to ensure that the products satisfy the stringent quality requirements for pharmaceutical products.

We also have research laboratories for developing new pharmaceutical products, and pilot plants for optimising and developing production processes. We work with fermentation and cell cultivation, recovery and formulation of insulin and other pharmaceutical proteins, and chemical synthesis related to the development of processes and the manufacture of substances for treating type 2 diabetes. Fermentation and cell cultivation are performed using genetically modified microorganisms (GMMs) or animal cells that are harmless for humans and nature.

Bagsværd is also home to a range of other operations such as purchasing, raw material and product warehouses, maintenance workshops, admin-

istrative departments, and corporate functions. Finally, we have a central boiler plant and a heat power station for producing heat, steam and electricity, as well as a waste centre for sorting waste.

RESOURCES AND ENVIRONMENTAL IMPACTS

Novo Nordisk in Bagsværd uses large amounts of water and energy, and a range of raw materials and auxiliaries. The most significant impacts on the environment are from wastewater (which is piped to Lundtofte Wastewater Treatment Plant), solid waste (which is either sent for recycling, incineration or landfill, or, in the case of chemical waste, to Kommunekemi for destruction), and air emissions of combustion gases from energy production and organic solvents (ethanol and acetone) from the insulin purification plant and, to a lesser extent, the pilot plants. From the point of view of our neighbours, noise is the main environmental impact.

ENVIRONMENTAL MANAGEMENT In 2002, insulin and hormone production and the associated administration and quality control in Bagsværd had their Environmental Management System certified according to ISO 14001. The pilot plants will be environmentally certified in the same way in 2003.

All development and production activities in Bagsværd are approved and regulated, under specified conditions, in accordance with the Danish Environmental Protection Act. The use of GMMs is also approved and regulated in accordance with the Danish Act on the Environment and Genetic Engineering (production) or the Ministry of Labour order on genetic engineering and health & safety (laboratories and pilot plants).

The authorities that approve and/or monitor our environmental status are Gladsaxe Municipality (wastewater for public sewage and waste disposal), the Danish Forest and Nature Agency (GMMs in production facilities), the Working Environment Service (GMMs in laboratories and large-scale plants), and Copenhagen County (other environmental issues).

Contact

Henrik Friese
Vice President, Diabetes
Pharmaceutical
hefr@novonordisk.com
+45 4442 7779

Henrik Kim Nielsen
Vice President, Production
Development
hkn@novonordisk.com
+45 4442 6298

Certification and optimisation

Environment was the order of the day in 2002 for large parts of Novo Nordisk in Bagsværd with the planning work in the run-up to environmental certification according to ISO 14001. The year was also marked by Novo Nordisk's clampdown on costs at the same time as demand for our products was on the increase. This required optimisation of our work procedures – a process in which our employees were naturally involved.

From the left: Henrik Kim Nielsen, vice president of Production Development, and Henrik Friese, vice president of Diabetes Pharmaceutical



For many years the environment has been a natural part of our daily work as we have sought to limit environmental impacts from our operations. Novo Nordisk's environmental policy obliges us to prevent pollution and continuously improve our environmental performance. We ensure this by carrying out environmental analyses of all new activities and by setting targets relating to the company's main environmental issues.

ENVIRONMENTAL MANAGEMENT SYSTEMATISED The main environmental target for 2002 was the implementation and certification of Environmental Management Systems according to ISO 14001 in our development and production areas. Insulin Production and Hormone Production have now been certified, while Production Development, Printing and Purchasing will be certified in 2003. The environmental groups for the individual areas have been responsible for carrying out the preparations, which involved organising environmental training for employees, mapping major environmental issues, drawing up instructions, and setting up the environmental system itself. ISO 14001 certification assures us that we are observing our environmental policy and ensuring ongoing improvements in a systematic fashion.

OTHER ENVIRONMENTAL TARGETS FOR 2002 As well as certification of our environmental system, for 2002 Insulin Production had set itself the targets of improving utilisation of water and energy by 5% and 4% respectively. We achieved the target for energy, but not for water, where in some months consumption was significantly higher than normal. As part of our environmental system, we launched an investigation into this high water consumption to prevent a similar situation arising. The result of the investigation is not yet available. The target for energy was achieved by focusing on energy-saving initiatives, in particular in the packing plant and warehouses.

Another target was to map the extent of the soil pollution around a ground tank for impure ethanol and, if necessary, initiate preventive actions. We completed the mapping and, by agreement with Copenhagen County, this will be followed by control measurements in 2003.

BREACHES, RELEASES AND COMPLAINTS In 2002 we recorded 12 breaches of regulatory limit values, all relating to the insulin purification plant. Eight concerned the pH requirement for discharged wastewater, while four involved exceeding the limit value for discharging ethanol into the air. We also had two accidental releases of hormone-containing wastewater into the sewage system from Hormone Production, and one spillage of washwater from a pump well in a fermentation pilot plant with a potential release of genetically modified micro-organisms. Fortunately, this proved not to be the case. We also received four complaints about noise. We followed up on all these incidents to minimise environmental impact and reduce the risk of repeats, and the environmental authorities were also informed.

PRODUCING MORE WITH LESS Insulin Production produced upwards of 20% more units in 2002 than in 2001 due to increasing demand for our products. Combined with tight budgets, this meant that we had to optimise our processes within the existing framework. This is not to say that employees have had to do everything in half the time. On the contrary, we have worked hard to utilise our equipment better and increase process yields.

In some areas we have therefore introduced improvement circles, where at least once a month we assemble various professional groups to discuss how we can make improvements. Although the improvement circles have only been running for a year, we can already see concrete results from our initiatives. For example, close cooperation between the employee groups has led to an increase in the output of a number of machines as a result of streamlined work procedures. This has meant i.a. that we have less waste and that we are utilising our resources better.

TARGETS FOR SOCIAL RESPONSIBILITY ACHIEVED In the social area also we had set a number of general targets for 2002 against which we could measure our performance. We aimed to hold exit interviews with at least 80% of employees leaving the company, and we met this target.

A target that Bagsværd shared with the rest of Novo Nordisk was that 80% of all employees should enter into dialogue with patients. We achieved this through employees taking part in the large 'patient meetings' held in Bagsværd and elsewhere during the year.

The final two targets for social responsibility for 2002 were also achieved. The first was that 90% of managers at all levels with direct reports should formulate a strategy for how they would develop their employees. Additionally, all vice presidents and directors should identify a team target and ensure that their team celebrated when the target was achieved.

CONTINUED FOCUS ON OCCUPATIONAL INJURIES The number of lost-time occupational injuries rose from 47 in 2001 to 93 in 2002. This was a massive increase, but it should be noted that 55 of these injuries resulted from a single incident at a social event outside working hours in Research & Development.

Not including this incident, we experienced a fall in occupational injuries. For example, in Insulin Production the number of occupational injuries fell from 24 in 2001 to 21 in 2002. Part of the explanation was increased health & safety initiatives, where e.g. we included the topic in our induction course for new employees.

EVALUATING OUR SUPPLY CHAIN 2002 was a year in which we focused on evaluating the environmental and social performance of our suppliers. Bagsværd surveyed 12 suppliers, all of whom showed satisfactory performance in both the environmental and social areas.

FOCUS OF THE REPORT This report discusses our environmental and social performance in 2002, which is of major importance for our employees and relations with our suppliers, our neighbours, the local community, and the environmental authorities. In the social area we have focused on issues that are of major importance for the health, well-being and development of our employees, and on the targets that we set for the year. In the environmental area we have attached importance to documenting that we are compliant with the environmental requirements laid down by the authorities as well as Novo Nordisk's own environmental policy and the environmental targets we set for 2002.

Focus on employees

Health & safety is an area that we have been actively working on for many years. This concerns the physical and psychosocial well-being of employees – something that is uppermost in our minds. We are therefore working continuously to improve our work processes so that we have a sound, healthy working environment. Another major focus area in 2002 was employee development.





As well as our work on environmental management, in 2002 we also systematised our work on health & safety. In support of the great efforts of our health & safety representatives, we drew up a procedure for how we intend to proceed in this area.

FINALLY A REDUCTION IN INJURIES For a number of years Insulin Production in Bagsværd had the highest frequency of lost-time occupational injuries at Novo Nordisk. Health & safety has therefore been an area of which management, as well as the health & safety representatives, has been especially aware. In 2002 we placed more emphasis on workplace assessments as a means of identifying possible areas for improvement and preventing potential occupational injuries. In Production Development we carry out annual workplace assessments with six-monthly follow-ups, while all other areas carry out statutory follow-ups once a year.

For the first time, Insulin Production included health & safety in its induction course for new employees in 2002. From the start of their employment, employees must be aware of the issues and know what precautions they can take to prevent occupational injuries. In this way, we also hope to create a culture of improvement in health & safety.

Systematisation and increased efforts in this area have produced results. Insulin Production experienced a reduction in the number of occupational injuries from 24 in 2001 to 21 in 2002.

Looking at the number of occupational injuries throughout Bagsværd, there was a marked increase from 47 in 2001 to 93 in 2002. The explanation for this was that more than half (55) resulted from a single incident at a departmental social event in Research & Development outside normal working hours.

PROACTIVE INTERVIEWS ON ABSENCE FROM WORK In order to tackle the issues relating to the physical and psychosocial working environment of employees, we have begun to hold employee interviews in connection with absence from work. Groups of employees have helped to develop a guide for managers on how to handle cases of high absenteeism. The main purpose of these interviews is to find the reason for the absenteeism – whether it is physical, psychosocial, work-related or private. If we can find the reason, we can then help and support the employee in the best possible way. It may be, for example, that the employee needs a physiotherapist, a psychologist, or simply a lightening of their workload. The work to reduce absenteeism has also been a starting point for greater focus on employee well-being, since absenteeism can easily affect the social working environment.

FOCUS ON PSYCHOSOCIAL WORKING ENVIRONMENT

In some areas of Bagsværd, the psychosocial working environment in particular has been in the spotlight. Novo Nordisk's general hiring freeze in 2002 resulted in many employees experiencing a greater workload, with stress thus becoming a focus area. Hormone Production, in team with a Human Resources adviser, has been working with various tools to tackle this problem and is continuing the work in this area. In Production Development, the health & safety group received a visit from an occupational psychologist from the Occupational Health Service who provided input on the work to improve employee well-being by tackling stress and excessive workloads.

Through the year, the Cell Culture Pilot Plant in Research & Development worked to improve the psychosocial working →

environment since it was clear from the 2001 working climate survey that there was a need to tackle the problem. We have therefore now drawn up some rules of conduct based on employee input. We are following up on developments at departmental meetings and in employee groups.

VARIOUS FORMS OF EMPLOYEE DEVELOPMENT In tandem with the central Human Resources department, Insulin Production has drawn up a development plan for the management group for how they should be working on employee development. The managers have used this development plan as a basis for setting targets for their employees. This is helping to produce uniform development of employees, management and Novo Nordisk as a workplace.

In Production Development, some managers have been working with 'employee challenges'. This involves giving employees a task that is slightly more advanced than their normal work and that points in the direction in which they would like to develop. This year we also focused on the development of employees in production. A survey showed that many would like to be better at training and teaching others. We are therefore planning to hold a seminar in 2003 focusing on how to master this difficult art. Furthermore, we will be giving employees the opportunity to have a training partner. This means that two employees who both have training tasks can observe each other's training and then offer feedback.

COMMON TARGET OF EQUAL OPPORTUNITIES In 2002, a common target for the whole of Novo Nordisk was to ensure equal opportunities – regardless of ethnic background, sex, age, etc. The first step was to create awareness of equal opportunities within the organisation.

We have chiefly focused on ethnicity, and the topic has been taken up in area meetings at which both internal and external

speakers have addressed the challenges and opportunities in, for example, taking on people with non-Danish ethnic backgrounds. Furthermore, existing recruitment procedures have been revised to ensure that account is taken of all groups in society. Due to the corporate hiring freeze for most of 2002, it was difficult to convert the recruiting principles into practice. However, most departments have made plans for how they will ensure equal opportunities when we begin taking on employees again.

NEW PROJECT EVALUATES SUPPLIERS At the beginning of 2002 our purchasers sent out a questionnaire to a selection of the suppliers with whom they deal. On the basis of this we have been able to gauge whether there are areas in which suppliers are not meeting the standards, expectations and requirements for environmental and social responsibility that Novo Nordisk places on them and on other cooperation partners.

In the case of Bagsværd, 12 suppliers were chosen, all of which showed satisfactory performance in both the environmental and social areas. The purpose of evaluating suppliers is not to terminate cooperation if they are not meeting our expectations and requirements, but to influence them, through trust and dialogue, to improve their performance. In this way we are seeking to be a company that is aware of its responsibilities.

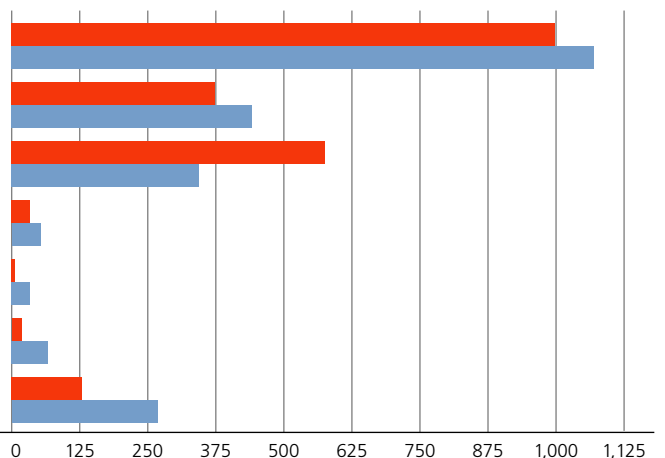
GOOD COOPERATION WITH THE LOCAL COMMUNITY

Novo Nordisk has a tradition of good cooperation with the local community. And we are constantly striving to ensure that our relationships with the community are working well. We therefore periodically invite our neighbours to dialogue meetings – to inform them of future operations, but equally importantly to answer their questions. If you live next to a large industrial site, clearly you have questions about pollution, noise, and much more. We are always ready to answer these questions.

Our employees	2000	2001	2002
Total number of employees	3,622	3,855	3,928
Number of full-time employees	3,193	3,381	3,485
Number of part-time employees	429	474	443
Average age distribution (years)	39.6	39.5	39.9
Average years of service	8.0	7.7	8.0
Employee turnover (%)	6.7	6.3	6.6

Occupational injuries	2000	2001	2002
Frequency of occupational injuries	7.2	7.6	14.8
Number of lost-time injuries	42	47	93

Gender representation		2001	2002
Administration	female	1,021	998
	male	1,107	1,069
Production		325	374
		338	442
Research & Development		573	575
		337	345
Sales & Marketing		42	33
		66	53
Other job functions		10	5
		36	34
Senior management (EVP, SVP, VP)*		20	18
		64	66
Management (Manager)*		119	129
		271	268



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

Social targets 2003

All units in Bagsværd will contribute to achieving the following corporate targets:

80% of all employees should discuss the findings from DAWN, HERS or other relevant studies with patients.

80% of all managers should score 3.0 or more in eVoice on questions related to 'winning culture'. All managers with a score below 3.0 should take action to improve in this area.

The 2003 targets for increasing equal opportunities should be set and 80% of these targets achieved.

Units with an unwanted employee turnover of more than 10% should reduce their turnover to a maximum of 10% by the end of 2003.



COMMUNICATIONS

Local cooperation committee set up

In 2002, Insulin Production set up a local cooperation committee where employees i.a. can discuss new initiatives in their area and come up with ideas for how they can best be implemented. It started with a desire to improve communication between the various employee groups in the packing plant. In conjunction with the Communications department, we therefore drew up guidelines on communication between group leaders, line managers, supervisors and operators. When we saw how well this was working, we decided to set up cooperation committees for the whole area.

Although it has obviously taken a little time to get the cooperation committees up and running, we can see that they have prompted a mass of important discussions between the various employee groups. Many areas have shift work, and we anticipate that the increased dialogue will in future help to ensure that maximum consideration is given to all interests when e.g. changes are made in working conditions. The dialogue in the cooperation committees is also helping to ensure that account is taken of all employee groups when new buildings and facilities are put into use.

HORMONE PRODUCTION

Employees choose new respiratory protection

In 2002, Hormone Production spent a lot of resources on finding new types of respiratory protection for employees handling concentrated hormones. The

employees were actively involved in this process. We were visited by another firm that produces hormone tablets, and by a representative of the Occupational Health Service. In both cases the employees were able to ask questions that were on their mind about experiences, safety, etc. After trying out various types of respiratory protection, the employees chose the two models that they consider to meet our requirements for safety and comfort.

PRODUCTION DEVELOPMENT

Knowledge management in focus

Throughout the year, Production Development worked extensively on knowledge management. We took on a knowledge manager to survey the knowledge that we have within our area, and we hope in this way to improve utilisation of our existing knowledge base. And there is great potential for employee development in this area. The crux of our thinking is that we know that by sharing our knowledge we develop as employees. There is also therefore a social side, which concerns employee well-being and the right to a reasonable career progression.

STAYING HEALTHY AT WORK

Lunchtime jogging every Wednesday

Every Wednesday lunchtime a number of employees from Production Development take a five-kilometre jog through Smørmosen Marshes. The lunchtime is extended slightly to make time for the jog, a shower and lunch. And rightly so – the joggers return with renewed energy. The club has existed for three years with a varied number of members.



Considering the environment in all that we do

Our main environmental target for 2002 was to implement and then have certified our Environmental Management System according to ISO 14001 in the development and production departments in Bagsværd. And this was undoubtedly the most prominent feature of our environmental work. Insulin Production and Hormone Production were certified in 2002, while the remaining departments will complete the certification process in 2003. The process has involved all employees, and everyone has shown great commitment to actively helping to identify areas in which we can make further environmental efforts.





The purpose of environmental management is to create a basis for ongoing improvements and to reduce environmental impacts. The process was driven in the various areas by an environmental coordinator in conjunction with an environmental group. All members have worked tirelessly to prepare and execute the implementation. They have mapped all environmental impacts, trained employees, identified possibilities for improvement, and drawn up instructions for work procedures.

All employees in the areas involved have been trained with regard to the implementation. It is important that everyone is aware of the environmental impacts of their work and how they can restrict them, and that they are familiar with Novo Nordisk's environmental policy, targets and focus areas. Employee groups working in areas of special significance for environmental impacts such as waste handling have been given in-depth training. The same applies for managers, since their support is crucial for successful implementation.

Although a general hiring freeze in Novo Nordisk in 2002 meant that many employees were extremely busy, there was still great support for the work on implementing the system. The fact that employees are helping to make a difference has resulted in an enormous commitment. We have

also established a procedure within the system for collecting, processing and, where possible, implementing employees' ideas for environmental improvements. The ideas are assessed in consideration of the anticipated environmental effect and costs. The procedure is helping to ensure that anyone can get a good idea implemented, which again is strengthening commitment.

As part of environmental regulation, all investment applications are now environment-assessed by an environmental coordinator or the central External Environment department. This will ensure that we take account of the environment before we begin investing, thus also ensuring environmentally sound development. The initiative has been so well received that it now applies for the whole of Novo Nordisk in Denmark and not just environmentally certified areas.

IMPROVEMENTS IN ENERGY We use large amounts of water and energy in our operations. Water is supplied by Gladsaxe Municipality as groundwater. Electricity is supplied by NESÅ. 31% of the electricity is generated from environmentally friendly energy sources such as wind and natural gas, while the remaining 69% is generated mainly from fossil fuels such as coal and oil. Steam and →

Environmental targets 2003

To avoid environment-related complaints.

To reduce our combustible waste by 5% compared to 2002.

To improve our utilisation of water and electricity by 2% compared to 2002.

To obtain ISO 14001 certification for our Environmental Management Systems in Production Development, Printing and Raw Material Purchasing.

To limit ethanol emissions from the insulin purification plant.

To dampen noise sources according to our action plan.

heat are produced and supplied by our central boiler plant and heat power station in Bagsværd using natural gas.

Two of the environmental targets for 2002 were that Insulin Production should improve its eco-productivity in terms of water and energy by 5% and 4% respectively. We achieved our target for energy exactly, but not for water, where our resource utilisation per produced unit fell by 4%. This was due to the fact that in some months our consumption was significantly higher than normal. As part of our environmental system, we are now investigating this to prevent a repeat of the situation. The result of the investigation is not yet available.

We achieved our target for energy by focusing on energy-saving initiatives. These involved major work in our packing plant to ensure that machines are not using electricity when they are idle, and automatic light shutoff in our warehouses.

In 2002 we used 217,000 m³ of water and 479,000 GJ of energy. This was equivalent to an increase in total consumption of 12% and 1% respectively compared to 2001.

RAW MATERIAL CONSUMPTION In 2002 we used a total of 2,447 tons of raw materials and auxiliaries and 1,306 tons of packaging for Novo Nordisk's activities in Bagsværd. In the case of raw materials, this was a fall of 20% compared to 2001, when we used 3,064 tons of raw materials and auxiliaries. This fall was mainly due to lower consumption of ethanol in one of our pilot plants where temporary production of an insulin analogue came to an end. Less than 1% of the total raw material consumption was in the form of substances that are harmful to the environment or health. In the case of packaging, the increase was 9% against 2001, when we used 1,197 tons. This was due to increased production in the packing plant.

WASTE HANDLING A FOCUS AREA Waste handling is an important focus area in our Environmental Management System. It has naturally therefore been one of the areas on which we have focused in the training of employees. It is important that everyone knows how waste should be sorted and disposed of since this is part of the daily work of all employees. And this is an area in which we want to continuously improve. As part of the preparations for ISO 14001 certification, we mapped our waste flows. And on the basis of this we are planning further reduction and sorting of waste.

All waste from Novo Nordisk in Bagsværd is gathered, sorted, transported and disposed of in accordance with Gladsaxe Municipality's waste regulations. This means i.a. that the waste has to be sorted with a view to maximum possible recycling. Non-recyclable waste is sent for incineration at I/S Vestforbrænding in Glostrup or for disposal at an approved landfill site. Chemical waste is sent for destruction at Kommunekemi in Nyborg or for recycling at specially approved treatment plants. In 2002, Novo Nordisk in Bagsværd generated a total of 4,314 tons of waste, which was a fall of 36% compared to 2001. The explanation for this is the ending of a temporary production operation that generated a lot of ethanol waste.

WASTEWATER The total discharge of wastewater rose from 174,000 m³ in 2001 to 197,000 m³ in 2002, an increase of 14%. This was mainly due to rising production.

Wastewater consists of process wastewater and cleaning water from production, general sanitary wastewater, and rainwater from outdoor areas impervious to water. Wastewater from pilot fermentations and cell cultivation is heat-treated to

inactivate GMMs before discharge into the sewage system. Wastewater with acid or alkaline pH is neutralised before discharge into the sewage system. Wastewater from production and sanitation is discharged via the public wastewater system to Lundtofte Wastewater Treatment Plant, from where the treated water is discharged into the Sound. Rainwater from areas impervious to water is discharged to Smørmosen Marshes in Bagsværd. In all relevant areas in Bagsværd we have taken extra precautions to prevent discharges into Smørmosen. For example, all the grills in our rainwater systems are painted red to make it clear that chemicals or other pollutants must not be poured into them. Furthermore, at critical points we have installed sliding gates in the systems to ensure that any spills can be stopped before they reach Smørmosen.

In 2000 and 2001 we implemented CCTV-monitoring of parts of our sewage system in Bagsværd with a view to identifying wells and pipe stretches that needed to be repaired. This repair work began in 2002 and will run until 2005.

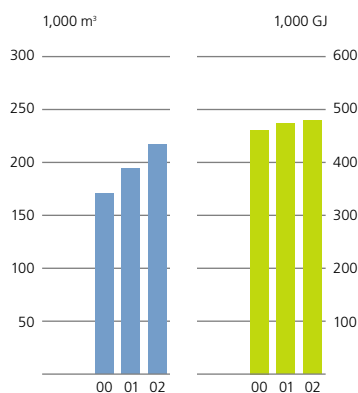
AIR EMISSIONS OF ORGANIC SOLVENTS Quantitatively, the main air emissions are emissions of combustion gases (CO₂, SO₂ and NO_x) from the production of energy in our own gas-fired plant and external plants, and emissions of ethanol (spirit) and acetone from the insulin purification plant and, to a lesser extent, the pilot plants. Air emissions of ethanol and acetone from Novo Nordisk in Bagsværd in 2002 totalled 75 tons, which was considerably more than in 2001, when the recorded emissions were 23 tons. This increase was mainly due to the fact that we began to carry out continuous measurements on the main air outlets, whereas previously we had only taken sample measurements. The new measuring method appears to give a more accurate picture of emissions.

EXTERNAL NOISE AND COMPLAINTS The main sources of external noise are ventilation outlets (located on the roofs of our buildings), cooling towers and traffic to and from the area. We are pursuing our action plan for noise damping, and in fact dampened 32 noise sources in 2002, nine more than stated in the original plan. The remaining noise sources will be dampened in 2003. The target is to reduce the company's total noise contribution in the residential areas that we adjoin so that we are not a nuisance to our neighbours and, wherever possible, observe the Danish Environmental Protection Agency's guideline noise limits.

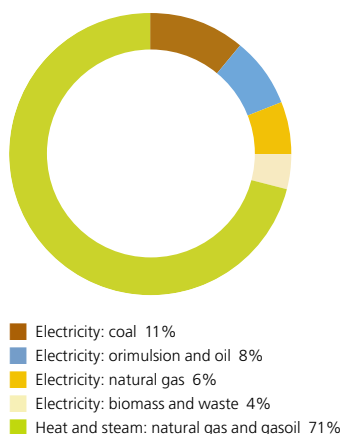
Nevertheless, we received four complaints relating to noise in 2002. One was a case of noise from building work at night, two concerned a sweeper that ran late into the evening, and the final complaint was about noise from a defective ventilator. In all these cases we immediately took action to stop the noise nuisance and ensure that it was not repeated. The supervising authorities were informed of the complaints.

MAPPING SOIL POLLUTION One of our targets for 2002 was to map the extent of the soil pollution around a ground tank for impure ethanol (spirit) at one of our pilot plants. The mapping was completed in March 2002 and showed that the pollution had not spread far from the point of leakage. Measurements also showed that in the course of a year the pollutant substances had degraded considerably so that there is no need for preventive action. We will be following up on the matter in 2003 with further control measurements by agreement with Copenhagen County. →

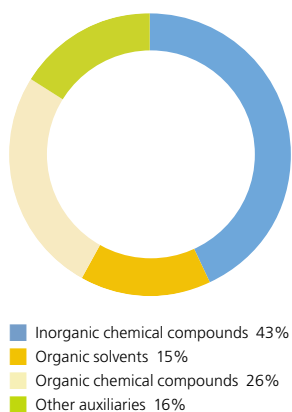
Water and energy consumption



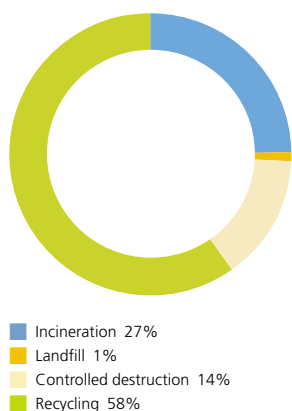
Breakdown of energy sources



Breakdown of raw materials



Waste disposal



ENVIRONMENT WEEKS

Environment week in Hormone Production

In August, Hormone Production in both Bagsværd and Måløv arranged an environment week with the aim of increasing awareness of the environment. Over lunch, employees were presented with various activities in the canteen, and throughout the week the canteen served ecological meals. There was focus on the themes of water, energy, waste and environmental policy. During the week, the environmental group performed an environmental song, and on the Tuesday employees in Bagsværd were invited to Måløv, where the Danish former environment minister Svend Auken gave a talk in the canteen. There was also a permanent exhibition in the common room relating to the week's themes. The environmental group also made a tour of the departments with posters, etc., to increase focus on the environment.

ENVIRONMENT WEEKS

Insulin Production and the environment

The environment week in DP in Bagsværd focused on the training of employees and furthered awareness of environmental issues. The whole environmental group made a tour of all the departments and focused on how employees can help to reduce our overall environmental impacts. We focused in particular on water and energy savings, and hope that the awareness also has an effect on employees' private consumption. In Insulin Production also we were served ecological meals in the canteen and received a visit from Svend Auken.



NEW COOLING SYSTEM

Noise considerations are important

When during the year the Cell Culture Pilot Plant built a new cooling plant, noise played an important role in the considerations. The main purpose of the new system was to disconnect us from Novozymes' cooling system, to which we had previously been connected. However, since noise is an important environmental factor for our neighbours, it was important that the new system should not increase Novo Nordisk's overall noise contribution to the environment. The cooling system was therefore noise-dampened as much as possible, and subsequent measurements have shown that the noise contribution from the new system is not of major significance to our environment.

SWAPPING EXPERIENCES

Environmental work in laboratories

Environmental issues and requirements in laboratories are rather different from those that apply in production. In 2002, the control laboratories in Bagsværd and other laboratory departments in Novo Nordisk therefore set up a network for swapping experiences of environmental work in laboratories. This provides an opportunity to meet with colleagues that work with problems similar to your own, and involves i.a. sharing good ideas on labelling substances, waste handling, mapping environmental impacts within the laboratory, etc. The network, which has around 20 participants, plans to meet every quarter. The founders are reporting great enthusiasm and support from those involved.

During 2002 we unfortunately discovered another instance of soil pollution originating from a synthesis plant that is now closed. By agreement with Copenhagen County, we have begun mapping the extent of the pollution, and when the results are available we will decide jointly with the county on the best course of action.

BREACHES OF REGULATORY LIMIT VALUES We are continuously taking a range of random measurements at our pilot and production plants to document compliance with the discharge requirements of our environmental approvals and wastewater permits. This involves measuring wastewater discharges, air emissions of organic solvents (ethanol and acetone), and noise.

In 2002, the insulin purification plant had eight breaches of the regulatory limit values for pH in discharged wastewater. The wastewater passes through a neutralising well, where acids or bases are added before the wastewater is discharged into the public sewer. We are currently in dialogue with Gladsaxe Municipality concerning a solution to the problem.

The plant also had four breaches of the regulatory limit value for ethanol in an air outlet. We are working determinedly to reduce the ethanol concentration in discharged air, and our actions have resulted in a significant reduction, although the concentration is still higher than the limit value. We have submitted a report to Copenhagen County and will be implementing emission-reducing measures in 2003.

In 2001, Production Development recorded one breach of the regulatory limit value for ethanol in waste air in connection with starting up trial fermentations. We subsequently applied to Copenhagen County for exemption from the regulation given the fact that there are only relatively small amounts of ethanol (less than 50 kg per year). The county granted the exemption.

ACCIDENTAL RELEASES IN 2002 We have taken general precautions to minimise the risk of accidental releases in accordance with the requirements of our environmental and genetic engineering approvals. However, in 2002 there were two cases of accidental releases into the environment and one spillage of GMO-containing washwater.

In 2002, Hormone Production had two accidental releases of hormone-containing washwater. This involved a total of around 240 litres of washwater that accidentally entered the sewage system. The wastewater was piped to Lundtofte Wastewater Treatment Plant, and we assess that the spill had no major environmental consequences. The supervising authorities were informed of the two releases, which did not constitute breaches of regulatory limit values since they only involved infringement of an internal procedure.

In Production Development we discovered that a pump well was leaking washwater into the ground due to a leaky joint. Since there was a risk that the washwater might contain GMOs from our trial fermentations, we immediately advised the environmental authorities and began investigating whether GMOs had indeed escaped into the ground. GMOs were found in the soil around the pump well and, by agreement with the authorities, we inactivated them using sodium hydroxide. Subsequent measurements showed no GMOs in the soil. We have sealed the well with a stainless steel lining so that the accident cannot be repeated. On this basis, the Danish Forest and Nature Agency classified the incident as a spillage and the episode is not therefore included in the statistics for releases.

Statement on green accounts 2002 for Novo Nordisk Bagsværd

On 18 February 2002 Copenhagen County received a draft of Novo Nordisk A/S' Environmental and Social Report 2002, which also constitutes the company's green accounts. On the basis of this draft and subsequent dialogue that resulted in a small number of changes, the county has issued the following statement. 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. The county has therefore taken its position on the basis of the following information relating to the company's activities in Bagsværd in 2002:

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 environmental information contained in Novo Nordisk A/S' green accounts / Environmental and Social Report 2002 is in accordance with Copenhagen County's information on the company. There is no information on other major issues that, in the opinion of Copenhagen County, should have been included in the Report.

Copenhagen County also wishes to express its satisfaction with the progress of the company's noise action plan.

Environmental data 2000–2002

	Unit	2000	2001	2002
Water				
Drinking water	1,000 m ³	171	194	217
Energy				
Energy (total)	1,000 GJ	461	473	479
External (electricity)	1,000 GJ	125	130	133
Internal (subtotal)	1,000 GJ	336	342	346
Gasoil	1,000 GJ	16.5	0.4	0.2
Natural gas	1,000 GJ	319	342	346
Materials				
Materials (total)	tons	4,114	4,261	3,754
Raw materials	tons	2,810	3,064	2,447
Packaging materials	tons	1,303	1,197	1,306
Wastewater				
Volume	1,000 m ³	133	174	197
Suspended solids	tons	48	65	61
COD	tons	331	377	448
Nitrogen	tons	21	24	33
Fosfor	tons	5.0	6.7	6.7
Distillation residue from 8E (reused as fertiliser)				
Volume	m ³	4,050	4,727	5,796
Dry matter	tons	252	294	361
Nitrogen	tons	20	23	28
Phosphorus	tons	0.06	0.07	0.09
Other waste				
Other waste (total)	tons	4,499	6,688	4,314
Incineration	tons	866	1,146	1,161
Landfill	tons	42	91	38
Controlled destruction	tons	619	1,005	594
Recycling (subtotal)	tons	2,972	4,446	2,522
Construction waste	tons	13	0	47
Electronic equipment	tons	0	9.4	14.1
Glass	tons	50	36	43
Kieselguhr	tons	152	0	0
Food	tons	47	96	106
Metal	tons	116	117	101
Mineral oil	tons	3.0	2.5	5.4
Organic solvents	tons	2,072	3,432	1,344
Chemicals	tons	–	–	1
Paper & cardboard	tons	501	621	697
Plastic	tons	19	22	6
Wood	tons	0	110	156
Emissions to air				
Organic solvents (ethanol and acetone)	tons	24	23	75
Ozone-depleting substances (total)	kg	1,358	494	533
CFC	kg	115	0	0
HCFC	kg	1,243	494	533
Carbon dioxide (CO ₂)	1,000 tons	37.9	43.0	41.8
Sulphur dioxide (SO ₂)	tons	42	45	19
Nitrogen oxides (NO _x)	tons	70	40	52
Environmental Impact Potentials				
Global warming	1,000 tons CO ₂ -eqv.	41.0	43.9	42.8
Ozone layer depletion	kg CFC ₁₁ -eqv.	144	20	21
Acidification	tons SO ₂ -eqv.	91	73	55
Eutrophication	tons NO ₃ -eqv.	342	374	431
Compliance and complaints				
Breaches of regulatory limits*		0	8	12
Regulatory limits with repeated breaches*		0	1	2
Accidental releases		0	2	2
Complaints		0	4	4
Stockpile of Ozone Layer-degrading Substances				
CFC	kg	217	217	211
HCFC**	kg	3,596	3,661	3,397
Methyl bromide	kg	8.9	8.9	8.9

* The number of breaches of regulatory limits and regulatory limits with repeated breaches in 2001 has been adjusted from that reported in 2001 due to late test results.

** The stockpile of HCFCs for 2000 and 2001 has been adjusted from that reported in 2001 due to inclusion of new plants.



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
Novo Allé
2880 Bagsværd
Denmark

Tel. +45 4444 8888
Fax +45 4449 0555

www.novonordisk.com

CVR no. 24256790
P no. 1.006.455.042

