

# Hillerød 04



## COMPETITION IN THE NAME OF GLOBALISATION

### **Streamlined**

Production targets achieved  
as well as major reorganisation

### **Equipped for change**

Training and competences top the agenda

### **Good year for the environment**

More recycling and optimised operations

1,264

people were employed by Novo Nordisk in Hillerød at the end of 2004.

143

of Novo Nordisk's employees in Hillerød live in Hillerød Municipality.

# At one with our surroundings

Novo Nordisk's site in Hillerød is located in an industrial area to the southwest of the town. A great effort has been made to blend the site into the landscape, the surrounding recreational area of Brennum Park, which is open to the public. Novo Nordisk has helped to build a lake near Favrholt and to plant the area.

# 84

million DKK is paid in local taxes by Novo Nordisk's employees living in Hillerød.

# 118

local jobs and 1,188 jobs in the region were created by Novo Nordisk's operations in Hillerød in 2004.

# 1.6

million m<sup>2</sup> is the total area occupied by Novo Nordisk in Hillerød.

# 13%

of Novo Nordisk's company tax goes to the municipalities.

# 100

events are held every year in Hillerød for visitors.



**T**o the east, Novo Nordisk's property borders a residential area, while on the other three sides it is a minimum of 250 m to the nearest house. Novo Nordisk occupies a total area in Hillerød of 1,630,000 m<sup>2</sup>, of which 790,000 m<sup>2</sup> is in urban zone and the remainder in agricultural zone. The number of employees at the end of 2004 was 1,264. Novo Nordisk in Hillerød works on the research, development and manufacture of devices for treating diabetes, and on the production of the haemophilia medicine NovoSeven®. The site in Hillerød also has warehouses for raw materials and products, a central boiler plant and administration. We operate in four main areas:

- Research and development of Novo Nordisk's delivery systems for pharmaceutical products – Protein Delivery Systems (PDS).
- Manufacture of disposable insulin pens – Diabetes Pharmaceutical Site Hi (DP Site Hi). In the manufacture of NovoLet® and FlexPen®, we fill the insulin into cartridges, then assemble and pack the disposable pens.
- Manufacture of reusable pens and delivery systems plus moulding of components for disposable pens – Device Manufacturing & Sourcing (DMS). NovoPen® and Innovo® are made from bought-in components. The products are assembled using automatic and manual processes, and then packed. Components for NovoLet® and FlexPen® disposable pens are injection-moulded.
- Manufacture of factor VIIa bulk – Site FVII. Factor VII is the active substance in the blood preparation NovoSeven®. Production is based on culture using genetically modified mammal cells, followed by a series of recovery processes. The recovered product is sent for final treatment and packing at Novo Nordisk's plant in Gentofte.

Quality control and assurance are an integrated part of production in all areas.

#### Simple resources and low environmental impact

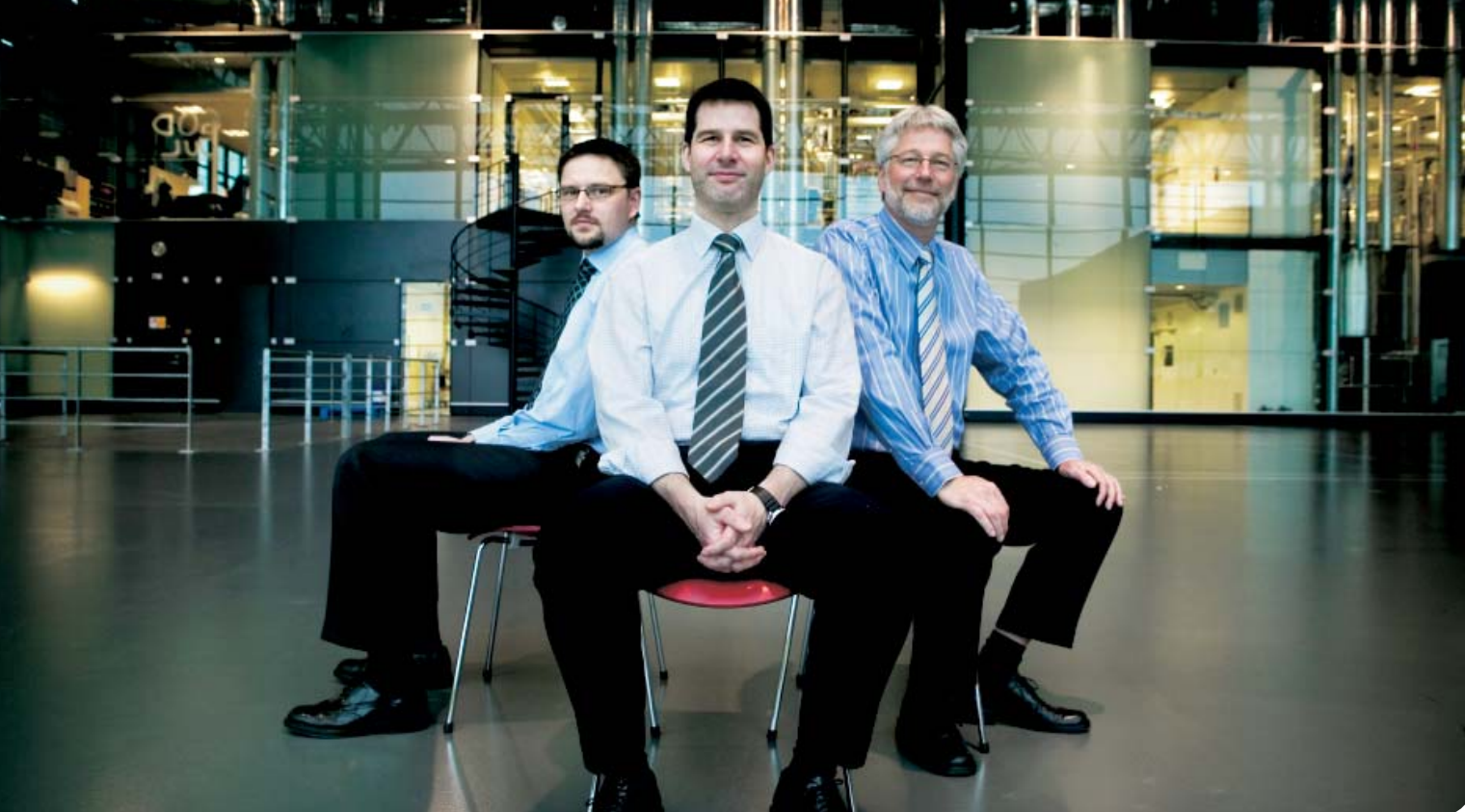
In addition to water and energy, the plants use raw materials and auxiliaries to manufacture the products, various types of plastic material and glass for the production of pen systems, and packaging in the form of paper and cardboard.

The environmental impacts from production are generally limited. The major impacts are air emissions of CO<sub>2</sub> and NO<sub>x</sub> from our natural-gas boilers, and paper and plastic waste, the majority of which is sorted and sent for recycling.

#### Management systems and environmental regulation

The plants are covered by an ISO 9001:2000-certified quality management system, and in 2003 they were also environmentally certified according to ISO 14001. The site's operations are regulated by several environmental and genetic engineering approvals and one wastewater permit that set limits for our impact on the surrounding environment.

Our environmental status is approved and monitored by Hillerød Municipality (wastewater and rainwater to the public sewage system and solid waste disposal), the Danish Forest and Nature Agency (genetically modified organisms in production plants), Greater Copenhagen Development Council (Environmental Impact Assessment), and Frederiksberg County (other environmental issues). \*



Left to right: Jesper Kløve (vice president, DMS), Henrik Rasmussen (vice president, DP Site Hi) and Henrik Risborg (vice president, Site FVII). (The management team also includes Kim Steengaard (vice president, PDS), who is not shown in this photo.)

## Globalisation leaves its mark in Hillerød

2004 was a year of major focus on globalisation for Novo Nordisk as a company, and this was certainly noticeable. There was a good deal of restructuring, which meant big changes for many employees. All the same, we still achieved the targets for our environmental and social work.

It has become clear to everyone that the production of pharmaceutical products and delivery systems is also under pressure from competitors in countries with lower wage costs. Novo Nordisk has worked to define its strategy in this world context, among other things looking at how production in Denmark can be carried out more competitively.

This was background to the major reorganisation of Novo Nordisk's production areas that took place with effect from 6 January 2004. This meant major changes for both DP Site Hi and DMS, so in the first months of 2004 we devoted a lot of energy to getting the internal structures in place. In practice, this meant DMS taking over two plants from DP Site Hi – one in Hillerød and one in Værløse – while DP Site Hi integrated NovoLet® production from Kalundborg. This in turn meant a number of new colleagues for everyone and upheaval for many employees, for better or worse. We are proud to say that, in spite of all this, we produced more in 2004 than ever before.

In FVII, the year was marked by start-up, production and process validation. There are now huge requirements for launching biopharmaceutical production – all working and maintenance procedures have to be described in detail, and it takes a lot of work to train all employees. This training also has to be documented. In environmental and health & safety terms, it is also important to focus on incorporating good habits so that we can prevent injuries. Starting up a

plant also places tough requirements on the flexibility of employees if there are problems. We therefore aim to ensure that the plant is manned round-the-clock with several employee groups in shift teams.

### **cLEAN™ – requirements for management, communication and employees**

cLEAN™ is a mindset and a set of tools that will improve productivity and make our work easier. All areas worked with cLEAN™ in 2004. In DP Site Hi we launched a model project with the help of consultants. We took over the project after the summer holiday, and it was a challenge.

We also focused intently on the management function in 2004. Focusing so much on increasing and improving our production requires greater attention from management. We therefore appointed 10 additional team leaders in 2004. The target was to support our teams that have to oversee roles and responsibilities in an extremely complex production process, while the work still has to be done – and even better and quicker than before.

In DMS we are also focusing on overall equipment efficiency (OEE). However, since many areas of production already have very high OEE levels, we have concentrated more on other areas. Based on a value stream mapping, we are looking at subjects such as unit cost reduction, batch documentation, handling of non-conformities and waste monitoring. Furthermore, we developed a cLEAN™ training

model with five steps. We have learnt how important it is to have good, quick communication for everyone. We worked a lot on this, and after just two months' work we could see increased productivity.

### Job Transfer Centre (JTC)

The purpose of Novo Nordisk's Job Transfer Centre is to make it easier for employees whose jobs are discontinued as a result of restructuring or streamlining to find new positions in Novo Nordisk. There is no doubt that JTC is a very sound scheme through which many employees have been transferred to other work.

For example, this was relevant for DMS in 2004 because, after many years of steady growth, our NovoLet® production had begun to decline as FlexPen® took over more and more of the market. This meant that we had to make use of JTC three times in 2004 to enable nearly 100 employees to move to new jobs in Novo Nordisk. It is a challenge every time, but there has also been a positive development. The last time that we had to use JTC, 27 employees from our part of the organisation had to change jobs, and of these 26 enrolled voluntarily. This is about us becoming better at communicating in these situations, but also about affected employees now understanding how JTC works.

In PDS we decided to focus on protein delivery systems (injection systems), so for strategic reasons we discontinued our research & development in glucose monitoring systems. Fortunately, most of the 25 employees or so that worked in the area were relocated to other functions in PDS or other departments. It was obviously a difficult process to change strategy and organisation, but things turned out well, which is also evident from the eVoice survey that was subsequently carried out.

### Annual environmental targets

In 2004, all production areas achieved their targets to reduce consumption of water and energy measured in relation to the number of produced units – and with good results in all areas.

### Breaches and releases

In 2004 we had a total of five breaches of regulatory limit values and two accidental releases, which are described in more detail later in this report. In all cases we informed the relevant authorities and took action to ensure that the problems would not recur.

### Wastewater on track

In 2004 we completed our part of the work on the application for a permit to discharge wastewater, including discharging wastewater containing Triton X-100, a soap that is used for cleaning in factor VIIa production. The case is expected to be closed at the start of 2005. During 2004 we installed a system for collecting wastewater containing Triton X-100, which means that we are actually no longer discharging waste streams containing Triton X-100 into the sewage system. The waste streams containing Triton X-100 are now collected and transported to Kommunekemi in Nyborg.

We also improved the control of our neutralisation plant to ensure compliance with the stipulated limits of  $6.5 \leq \text{pH} \leq 9$ . We will continue to focus on pH in wastewater.

### Contacts locally

In 2004 we again supported various local events. These included the

Hillerød Castle Festival, Hillerød Castle Lake Run, Castle Path Relay Race and Kongensvænge Ball Club, which in addition to their sporting events have also come to play an important role in the cross-cultural community and integration into the neighbourhood.

Generally we enjoy good communication with Hillerød Municipality and we meet regularly with the mayor and the chief executive. We will also be establishing good contact with our new neighbour and potential competitor for workers, BioGene Idec, which is building a plant on a neighbouring plot of land.

Hillerød is a popular, visitor-friendly site. We receive lots of visitors from other departments in Novo Nordisk, but also people with diabetes, representatives of training institutions and nurses, both in small groups and in connection with, for example, conferences.

### Future focus

All areas will be working further to pursue the strategy for optimising production so that it can be competitive. We will also be seeking to ensure that our employees are competitive in the future job market. And we will obviously continue to work on minimising our environmental impacts. Here we will be working on CO<sub>2</sub> quotas, which are being introduced from 2005; especially exciting because this is a completely new way of looking at our energy consumption. \*

## Principles for environmental and social responsibility

In this report we account for our achievements in 2004 in our efforts to be environmentally and socially responsible in areas that are important for our employees, our suppliers, our neighbours, the local community, and the regulatory authorities. Our social reporting focuses on what matters most for our employees' health, well-being and development, and on our pursuit of the targets that we had set for 2004. Our environmental reporting aims to document how we are complying with regulations and with Novo Nordisk's Environmental Policy, and how we fared in meeting the targets that we had set for 2004.

Novo Nordisk's Environmental Policy requires that we encourage environmental awareness, prevent and reduce pollution, comply with regulatory standards, and continuously improve our environmental performance. We make environmental assessments of all changes and new activities, and set targets for key environmental impacts. Since 2002 we have also been systematically evaluating the environmental and social performance of our suppliers on the basis of questionnaires.

The employees are involved in environmental work in various ways, and in 2004 we sought to make the Environmental Management System part of our everyday working life. Each area has an environmental group, which works with the environmental representatives from the departments. There are also ongoing training and promotional activities so that everyone is aware of the main environmental impacts of their work.



# Presence and proximity on a daily basis

In these pages you will meet eight employees from Novo Nordisk in Hillerød, who we invited to be employee representatives at an informal discussion on the past year seen through their eyes. We asked them about cLEAN™ and the environment, downsizing and JTC, NovoSund, occupational injuries, team leaders, presence and motivation.

**S**ite Hillerød is a large site both organisationally and physically. This means that the employees are spread over many departments and buildings and have different targets and challenges. But there is one project – cLEAN™ – in which the majority of employees were heavily involved in 2004. All employees received a cLEAN™ presentation so that they know what the projects are about. In DP Site Hi we worked on cLEAN™ and environmental work where it was relevant. In FlexPen® production we ran a 16-week cLEAN™ project focusing on roles and responsibilities in operation and when switching from one product to another. We subsequently measured a fall in batch change time. This is very satisfactory. One employee talks about the future:

“It will be exciting to see whether we can keep up with all the cLEAN™ projects that have been launched. We have appointed a group of three that is responsible for ensuring continuous follow-up on the projects. We will also be preparing some working tools for team leaders, supporters and operators so that we can ensure that the initiatives continue into the future.”

#### **Auditing brings motivation**

DP Site Hi, DMS and Site FVII were all environmentally audited in 2004. The audits affected a large number of people and covered everything. For example, the auditors looked at pest control, waste management, cleaning, use of chemicals etc. Everyone is always very anxious about the results of audits. Jørgen Darling from Service



From left to right: Jørgen Darling Sørensen (supporter), John Stern Nielsen (research scientist, DR&T), Bent Christensen (team leader, Warehousing, Business Support), Michael Jacobsen (production assistant, FlexPen®), Charlotte Hunding, GMP lab technician), Zilla Juul Nobel (QC assistant, QC), Torben Strauss Stenbo (process supporter) and Jens Dejgaard Jensen (smith, not shown in the photo) took part in the round table discussion. (Bettina Hunæus Pedersen is shown in the photo but did not take part in the discussion.)

Centre Hillerød wants to see more constant attention paid to the environment and waste: "I would like to see random sampling and unannounced visits. At the moment, the motivation for sorting waste etc seems to coincide very much with the timing of audits."

#### Motivation in focus

One motivating factor on a daily basis has been to get team leaders attached to the individual teams again. This has directed focus onto the individual teams and their needs for, among other things, back-up and courses. The general view is that the employees find it easier communicating and get quick support and help from a team leader who is closely attached to the individual team. At the moment there are only team leaders on the day shifts, but a team leader on the night shift would be welcomed by the employees around the table.

We will soon be taking a closer look at motivating factors in general – so that employees are happy to go to work. In some places they have already looked at how language is used: "We do not work with the term 'absence' here; we prefer 'presence'," says one participant in the round table discussion. "The individual employee should have been present at least 96% of the time. We changed terms because it sounds negative to measure efficiency using a word such as 'absence'."

#### Occupational injury and downsizing a cause for concern

In many ways 2004 was a serious year at Site Hillerød. In DP Site Hi we had a very bad accident that shook everyone. One of our colleagues got his arm stuck in a conveyor belt and sustained serious injuries. The team leader from the department and the environmental coordinator examined the reason for the accident and looked at the possibilities for preventing a repeat. We also invited the Occupational Health Service to a meeting for all department man-

agers. We wanted to understand our responsibilities in the event that a bad injury should happen again.

Unfortunately, we also suffered a number of job cuts in DMS, which produced a very depressed mood. On the plus side, the majority of employees affected found jobs in other places through our internal Job Transfer Centre. JTC has been criticised and discussed a lot among employees – no one enrolls at JTC for fun. You have no influence over where you are shipped out to, and this has been difficult to face. Cutbacks also meant that fewer employees were able to go on courses in 2004.

#### Environment days in the autumn

The environment days in DMS provided information on correct source sorting of waste. There was an environment quiz with excellent prizes at stake for the lucky winners and great food in the canteen, which was decorated for the occasion. The environment group was recognisable by its nice green printed T-shirts!

#### NovoSund and TakeAction!

Many employees have been involved in NovoSund's activities: 'The Workplace Exercises', in which some walked, some cycled, some ran, and some ... stayed at home on the sofa!; and the DHL relay race in Fælledparken, in which people from all over Hillerød took part. In DP Site Hi a group of portly men tried to set up a TakeAction! project in which they would be sponsored to lose weight to raise money for the World Diabetes Foundation. They were weighed once a week on a pallet scale, but so far they have managed a total weight loss of ... 0 kilos! We hope things will go better for the smokers on the quit-smoking course, in which many Hillerød employees have enrolled. \*

# Organisation prepares for change

The work on employee development is extremely important in an organisation undergoing as much change as ours. In keeping with the increasing requirements of the outside world, we need to ensure that we have done all that we can to ensure that the employees and our organisation have the necessary competences.



# 27

employees in Hillerød found new jobs through JTC in 2004.

# 200

employees in PDS spent a day in 2004 converting ideas into project proposals.

# 6

years is the average length of service of employees in Hillerød.

# 5.2%

of employees in Hillerød left the company in 2004.

# 1

serious injury occurred in DP Site Hillerød in 2004.

In 2004 everyone worked to identify the critical competences for cLEAN™ and the distribution of tasks and competences for different groups. In DP Site Hi we worked on this in the management groups and on incorporating it in the employee development plans. DP Site Hi also focused on the development plans by establishing a standard for how the work is tackled at all levels of the organisation. In the best cLEAN™ style, we concentrated overall on standardising some of the work on human resources in order to be able to work more efficiently.

DMS has developed a better system for evaluating the performance of key employees, bearing in mind that those that we regard as key employees must know how their efforts are viewed and where they stand.

In DMS we are also still carrying out training days for operators, although they are organised differently depending on the working conditions in the individual plants. We are also running the cLEAN™ training within this context. The operators also take part in the general industrial operator training course.

Site FVII has also followed up on the competence mapping that we carried out in 2003. We worked successfully to plug the gaps that we had identified. For example, the employees report that they can see the correlation between the courses that are now being offered and the needs and wishes that they previously indicated.

### Innovation at a premium in PDS

In PDS we are concentrating on nurturing our innovation culture and our openness to change. Among other things, we hold an annual innovation day. In October, all PDS employees were split into 26 working groups to spend a whole day translating creative and innovative ideas into new project proposals. All the groups received feedback on their proposals, which were first processed in a committee, following which the PDS management decided which projects could be launched immediately and which required more work. The projects covered technical details, new concepts, new designs, problems relating to products for less well-off countries and questions on quicker, more flexible product development.

### Continuous focus on health & safety

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

In future we will continue to need increased focus on occupational injuries because we suffered a serious injury at DP Site Hi in 2004. In connection with maintenance work on some conveyor belts, a situation arose that led to an employee getting his arm trapped and

badly damaged. We cannot allow this type of injury to occur, so we have tried to learn as much as possible from this incident and changed the procedures that we could.

In Site FVII we are concentrating on following up on near-misses. It is our experience that the more and quicker the organisation follows up, the more individuals think about how they are acting and organising themselves at work. And this is working – we had no injuries with absence in 2004.

In Site FVII our target in 2004 was to make an extra effort to prevent and manage stress. Thus, all managers spent a whole day on management and stress, and subsequently each department ran theme days on stress. This work will continue in 2005.

PDS had a special focus area in 2004: the balance between work life and private life. The most important thing is that this should not be a taboo subject, but that we should be able to talk about it freely.

### eVoice climate survey

In 2004 all departments in Hillerød again carried out the eVoice climate survey, which is common to the whole of Novo Nordisk.

DP Site Hi worked more on eVoice in 2004 than previously. We linked it to our cLEAN™ culture and focused on the areas that are particularly relevant to this such as 'clarity' and 'commitment and performance'. We have equipped the team leader and the department manager to enter into dialogue with employees both before and after the survey, and in 2004 we had a very high response rate and a high level of follow-up on the survey.

DMS carried out eVoice in all departments with good results, and action plans were drawn up where necessary. In connection with employee development, we are working on sharing better practices and increased competence through cLEAN™.

In the FVII plant, the survey clearly showed that we have had a lot to do and have had tough deadlines. We therefore worked on stress prevention. Cooperation across the various teams in the department has been a focus area and will continue to be so.

PDS scored especially well on innovation and also made a great effort in competence mapping and development plans in the organisation. In 2004 we worked to expand the various competence development models, and this has brought its rewards. On the other hand, we need to work more on decision-making processes and bureaucracy.

### Market knowledge

A target for the whole company in 2004 was that everyone should have a better understanding of our market and competitive situation. Novo Nordisk's central Training Department arranged six large meetings to give employees a presentation on this theme, and the diabetes area achieved the target that at least 80% of employees should attend.

### Equal opportunities

Another Novo Nordisk project is Equal Opportunities. In 2004, DP



## SOCIAL PERFORMANCE

Site Hi achieved all the targets that we had set in the area. One was that all employees should take part in a dialogue on equal opportunities, and this was also part of the induction programme for new employees. Management also considered the subject of women in management. As in other areas, the proportion of women in management is low, so we looked at the barriers that women face. Fortunately, the proportion of female team leaders is growing, and in future this will strengthen our base for recruiting women into department manager positions.

In Site FVII we also dealt with all the points in our action plan. We ran a series of lectures explaining equal opportunities from company, community and site perspectives. We also included equal opportunities in our induction programmes, in which new employees are given an introduction to the company's attitude to the subject and a form that they can use if they have complaints about discriminatory actions. The subject of women in management was also discussed in our management groups, but against the unusual background that we have a majority of women in the management groups at all management levels.

### Winning culture

In 2004 DMS focused on linking winning culture with achieving the organisation's specific targets. Celebrations covered everything

from breakfast and cakes to everyone in February being invited to see a famous show because for the first time in 2003 we had achieved all the production targets. There were also a number of social events: bowling, the Christmas party etc. However, not all social events should be part of the winning culture phenomenon, even though it is important to celebrate the achievement of our targets.

In Site FVII we celebrated milestones in many different ways, including a speech and special breakfast in a canteen, a bottle of wine to take home, tasty cakes for coffee etc. In August we also held an event where we gathered all employees from the three geographical areas in FVII for a whole day at the Recreation Centre in Kalundborg. Across departments, many employees enjoyed a variety of entertainments, including lectures, lunch and salsa dancing in home-made costumes, and got to know each other in new ways. \*

### Social targets 2005

- Development plans for employees and teams.
- 10% less absence than in 2004.
- Occupational injury frequency of max 7.0 per million working hours.
- At least 90% of vacant positions filled through JTC.



SOCIAL DATA	2000	2001	2002	2003	2004
<b>Our employees</b>	812	1,130	1,262	1,259	<b>1,264</b>
Number of full-time employees	778	1,082	1,222	1,214	<b>1,208</b>
Number of part-time employees	34	48	40	45	<b>56</b>
Average age distribution (years)	37.1	37.2	37.9	38.6	<b>39.4</b>
Average years of service	4.7	4.4	4.6	5.3	<b>6.0</b>
Rate of employee turnover (%)	7.3	3.2	4.6	3.9	<b>5.2</b>

### JOB FUNCTIONS AND GENDER REPRESENTATION

<b>Administration<sup>1)</sup></b>	511	730	84	<b>74</b>
Female / male (%)	37 / 63	38 / 62	23 / 77	<b>20 / 80</b>
<b>Production<sup>1)</sup></b>	481	367	994	<b>996</b>
Female / male (%)	47 / 53	50 / 50	43 / 57	<b>44 / 56</b>
<b>Research and Development</b>	136	165	181	<b>194</b>
Female / male (%)	29 / 71	28 / 72	30 / 70	<b>30 / 70</b>
<b>Other job functions</b>	2	-	-	<b>-</b>
Female / male (%)	- / 100	- / -	- / -	<b>- / -</b>
<b>Of the total number of employees, the management comprises:</b>				
Senior vice presidents and vice presidents		10	9	<b>10</b>
Female / male (%)		- / 100	11 / 89	<b>10 / 90</b>
Managers, senior specialists and specialists		47	83	<b>81</b>
Female / male (%)		19 / 81	16 / 84	<b>14 / 86</b>

### OCCUPATIONAL INJURIES

Frequency of occupational injuries	8.5	6.6	8.4	7.9	<b>5.4</b>
Number of occupational injuries with absence	11	12	17	16	<b>11</b>

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



## A good year environmentally, but restruc-

The work on changing structures and systems stole time from the specific environmental work but we managed to achieve good results.

**A**longside the organisational change in Product Supply, the management of Novo Nordisk decided to rearrange the environmental management work in the company. We want to ensure uniform guidelines, partly by bringing the environmental certifications together so that uniform production is subject to the same Environmental Management System. The setting up of new structures and cooperation projects across Novo Nordisk therefore took up a lot of time in 2004.

### Environmentally sound waste management

We focus intently on waste. The total amount of waste from Hillerød increased from 868 tons in 2003 to 1,638 tons in 2004. This increase was due to increased production and to the series of building projects, but also to a more detailed way of calculating our waste quantities. The majority of waste is made up of plastic, which is collected and sent to Expladan in Haarlev for recycling. Paper and cardboard are sent to AFAV I/S and Renoflex-Gruppen A/S for recycling.

DP Site Hi and DMS have visited Vestforbrænding Incineration Plant to see how our waste is sorted and destroyed and whether our preliminary work is good enough. We have evaluated this in management and in the relevant teams, and we will continue to work on

this. We can already see that our focus means less incorrect sorting.

In DP Site Hi, a backing foil film residue is produced when we apply labels to the pens. We have found a buyer for this foil, which means that we are now separating out this fraction from our general combustible waste and thus contributing another waste fraction for recycling. Generally, we are prioritising recycling very highly.

In 2004, DMS focused in particular on source sorting of waste and sought to involve everyone. In November and December we held a waste quiz and other activities for employees to highlight our environmental work.

We also worked on agreeing with our cooperation partners the data that they provide on the waste that they collect from us. It is important that we have the right data base because this is the starting point for setting appropriate targets for our future work. We also carried out random sampling on certain waste fractions so that we can follow developments and intervene where necessary.

Finally, in DMS we focused on the waste percentage of finished goods, based on both economic and environmental considerations.

### Minimal environmental impact from production

In DMS we will soon be starting up production of NovoPen® 4, and this will require an overall environmental assessment. We have

# 62%

of our raw materials in 2004 were device materials and components.

# 82%

of the waste in Hillerød is recycled.

# 83.000

m<sup>3</sup> of water was consumed in 2004.

# 49%

of our energy consumption is in the form of electricity bought from external suppliers.

# 5

breaches of regulatory limit values were recorded in 2004.

worked on this in conjunction with Novo Nordisk's central External Environment Department and obtained environmental approval for the new production from both the county and the municipality. This was another target for 2004 that we achieved.

In 2004 PDS set up a 'Green Team'. This comprises representatives from areas in PDS and DMS who will jointly ensure that our colleagues have access to help and advice in environmental issues that are relevant to our work. The background to this is the need to ensure that in the development phase of our systems for delivering insulin we focus on choosing a design that has minimal environmental impact and takes account of all current and future rules.

### Resource consumption on the daily agenda

The major consumption of resources at Novo Nordisk's plants in Hillerød consists of water and energy. Generally increased activity is the reason why energy consumption increased by 3% in 2004. By contrast, water consumption fell by 3% due to optimisation of our operations and processes.

DP Site Hi achieved the targets for increased resource efficiency measured by the Eco-Productivity Indexes (EPIs), mainly due to increased productivity. On the other hand, we made an effort to future-orient our EPIs by determining which processes have the potential for energy savings. We had a student map our energy consumption in both the production processes and all auxiliary functions. We found that we need to focus on process optimisations.

We also worked on water, for example looking at how we can optimise our plants for the production of water for injection (WFI). We have begun to send recirculation water back into our system for producing steam. This involves 100–150 litres a day.

DMS more than achieved its target for reducing energy consumption. The majority of our consumption is from heating, lighting and ventilation of our buildings, not from actual production. We therefore carried out process optimisations on the ventilation systems, and thus reduced the number of air changes in rooms where this was possible, including office landscapes. We also carried out optimisations on lighting using timer solutions, especially at night.

Site FVII easily achieved its targets for both water and energy due to a much greater quantity of released product than scheduled.

### Charges and quotas affect energy work

In order to ensure that we are paying the right charges for our consumption of electricity, we have carried out extensive mapping of our consumption. We examined all our electricity meters to look at the consumption that they are connected to, and we now know that we are observing the legislation. We have also acquired an overview, which means that in the longer term we can get ideas for where we can intervene to optimise our energy consumption. This will also help us in the coming years in the work on CO<sub>2</sub> quotas. In 2004 we prepared an application for the Danish Energy Authority in which we explain our boiler types, and we were allocated quotas for the next three years on the basis of this application.

### Material consumption

In 2004 we used a total of 2,715 tons of raw materials and auxiliaries, and 1,414 tons of packaging. Compared to 2003, this was an increase in the consumption of raw materials and auxiliaries of 26% and in packaging of 19%, which was due to increased production.

We also use large amounts of plastic materials in the production of injection pens as well as paper and cardboard for packaging. In the factor VIIa plant we use various raw materials in the production of NovoSeven<sup>®</sup> such as nutrient medium, and alkali and acid, which are used for cleaning process equipment etc.

In DMS we have worked on chemical management in the smithy. This has cleaning agents and sprays that are used to clean the tools, and there has been a lot of focus on the number of chemicals that are being used to the effect that there are no more products and chemicals in use or open than actually need to be used.

### Wastewater under the microscope

The wastewater for the whole site consists of water from cleaning glass cartridges and production equipment, plus sanitary wastewater. The wastewater is piped via the public sewage system to Hillerød Central Wastewater Treatment Plant, from where the treated wastewater is discharged via Pøleå Stream to Lake Arresø. Rainwater from roads, car parks and roofs runs via a sand trap and oil separators to a holding basin, and from there via the municipal rainwater system to Havelse Stream. In 2004 we discharged 72,000 m<sup>3</sup> of wastewater, which was 4% less than in 2003.

For the whole of Hillerød, Novo Nordisk has worked hard to prepare a new application for a permit to discharge wastewater from our production processes. This was submitted in December 2004. The challenging areas are limit values for pH and temperature as well as the occurrence of the soap Triton X-100 in the wastewater.

We worked intensively in both areas in 2004. In FVII production we set up a collecting plant that catches the parts of our waste streams that contain Triton X-100. The collected wastewater is driven to Kommunekemi in Nyborg. The plant cost DKK 9.5 million to set up, and the running costs are DKK 2 million a year. The alternative would be to drive all wastewater from FVII production to Kommunekemi. In the short term, this would be more profitable financially, but taking into consideration the environmental impact resulting from transportation by tanker this was not a solution that we could opt for as a responsible company.

Limit values for pH have been our other focus. Here we spent a lot of time installing and monitoring meters. We can now explain a good deal of our breaches of regulatory limit values as the results of technical error.

### Accidental releases and accidents

There were two operating disruptions in 2004: a release from a cooling system in April and a release of Triton soap that, on discharge to the collecting tank, foamed up and ran into a drain outside the collecting system. We reported both cases to the municipality and explained the preventive measures that we have taken.

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neighbour complaints about our operations were received in 2004.

**Minimal air pollution**

The major sources of air emissions in Hillerød are activities connected with our own production of heat and steam based on natural gas and gas oil. In 2003 we carried out first-time measurements of stipulated limit values for the flue gases CO<sub>2</sub> and NO<sub>x</sub> for the boiler plant in the Factor VII plant, and the measurements showed that we are observing the stipulated requirements by a good margin.

Our environmental approval sets limits for air emissions of metacresol and phenol, which are used as preservatives in insulin preparations, and formaldehyde, which is given off in small concentrations when injection-moulding plastic components. As part of our self-monitoring, in 2000 and 2001 we carried out first-time measurements of air emissions of these substances showing that we are observing the applicable requirements by a high margin.

**Noise**

The site's activities do not normally entail nuisances which may give cause for complaint and we did not receive any complaints about nuisances from our production operations on the site in 2004. However, it is still important that we are continually aware of any noise sources so that we can prevent any need for complaint. We did not record any breaches of our permitted noise limits in 2004.

**Breaches**

In 2004 we had a total of five breaches of regulatory limit values, one of which was a repeat breach of the same limit value. All five breaches related to pH. The neutralisation plant was subsequently optimised, and we no longer have overflows from the plant. If there is a high level in the neutralisation tank and the pH has not adjusted itself to within the permitted limits, the operator will receive an alarm, following which the operator manually adjusts the pH to

within the permitted pH limits before discharge. In connection with an optimisation of the plant, we have seen far fewer of these situations. The optimisation comprised more frequent maintenance of heat exchangers and better pumping from the tank. Many of the sewage outlets in the basement have been and continue to be blocked so that all water is fed back to the neutralisation plant. The lines carrying pure water such as WFI are now run outside the neutralisation plant. They were previously fed to the neutralisation plant because at the outset we wanted to ensure that we included all lines. However, WFI is neutral and would in this context take away capacity from the plant, so it has subsequently been disconnected and is now discharged directly into the sewage system or recycled.

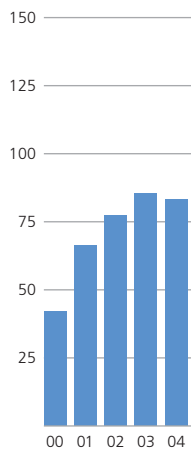
In 2004 there were far fewer cases of elevated pH values in wastewater. The pH values were not as high as previously. Nevertheless, in 2005 we will be surveying all sewage outlets from building 25A.

Subsequently we discussed issues relating to our measuring method. \*

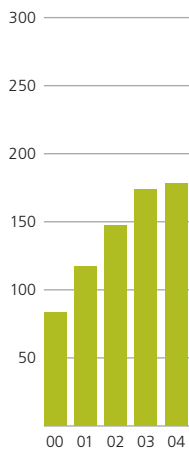
**Environmental targets 2005**

- DP Site Hi: EPIs of 1.04 for water and 1.02 for energy.
- DMS: EPI of 1.02 for energy.
- Site FVII: focus on better utilisation of water and energy (EPIs of 0.55 and 0.55, the same as for Site FVII Ka).
- Site FVII: prevent pollution by, among other things, increasing the environmental awareness of employees.
- Greater integration between external environment and health & safety in chemical handling.
- Continued focus on correct source sorting of waste.
- The implemented ISO 14001 Environmental Management System to be recertified for all areas.

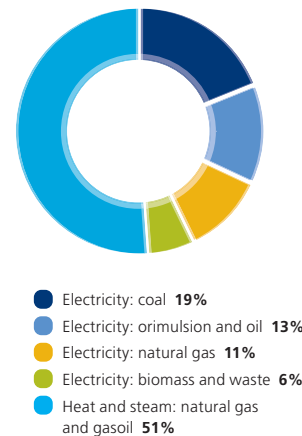
**Water consumption**  
1,000 m<sup>3</sup>



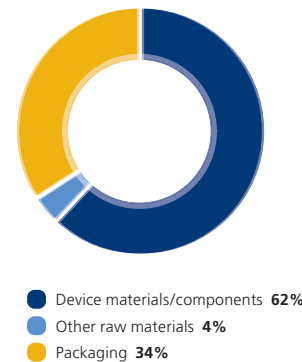
**Energy consumption**  
1,000 GJ



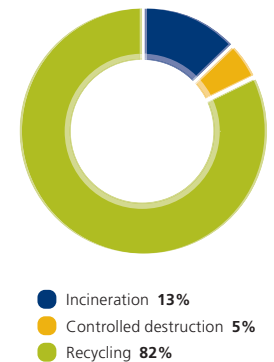
**Breakdown of energy sources**  
in %



**Composition of materials**  
in %



**Waste disposal**  
in %





In 2004 the environmental group in DMS held a waste quiz in the canteen.

## Ideas for better H&S

In two of the plants in DMS we carried out an extensive questionnaire survey on employees' wishes and expectations for their workplace. This was done on the initiative of two health & safety representatives. Following the survey, the management decided on some of the ideas that were received. There was one in particular that had to be rejected: many employees wanted to have flexitime, but we simply cannot get this to operate in practice in a production where the machines have to run continuously. However, there were many other usable ideas that we would like to do something about.

## More women in management

In November DMS co-hosted an event as part of the 'Women in management' programme. All the female professionals in Product Supply were invited to meet Ginger Gregory, Novo Nordisk's head of People and Organisation, who gave a presentation on the subject. Working groups subsequently discussed how we could change the situation that Product Supply has more female professionals than male while the reverse applies at all management levels. By including employees who were not managers or team leaders, we obtained a more diverse exchange of opinions.

## Who is where?

For the four environmental coordinators in Hillerød it is important to work on problems that affect the whole of Novo Nordisk in Hillerød. In 2004 this cooperation was especially important because the restructuring in January meant major upheaval. Specifically, this involved three production processes moving from DP Site Hi to DMS, namely moulding of NovoLet®, FlexPen® and InnoLet®. This entailed changes in the environmental organisation and the environmental targets, which then had to be implemented in a different context to what was originally intended.

In DP Site Hi, for example, this meant the environmental group having one representative from each department rather than one from each plant. In DMS there are new environmental rules to be considered. There has therefore been a need to focus on essential issues such as mapping and measuring.

## Statement by the authorities on the green accounts for 2004 for Novo Nordisk in Hillerød

Frederiksborg County has examined the company's green accounts for 2004 and consequently takes its position on the following information contained in the accounts. References to Statutory Order no. 594 of 5 July 2002 are given in parentheses.

### Basic information

- ⊙ The category/categories for which the company is environmentally approved (§ 5, no. 2).
- ⊙ Information on the most significant environmental approvals granted to the company, including information on the recipient of direct discharges of wastewater and on connection permits for public wastewater systems (§ 5, no. 4).
- ⊙ Date of the latest revision of the company's environmental approval(s) (§ 5, no. 5).
- ⊙ Brief, qualitative description of the most significant resource and environment parameters characterising the primary activities of the company and the secondary activities, where relevant (§ 5, no. 6).

### Management statement

A statement of what the company has done in the accounting year to remedy regulatory breaches that have occurred and to prevent repeats (§ 6, no. 6).

### Information on environmental issues

- ⊙ Data on the major consumption by the company of energy, water and raw materials (§ 7, para 1, no.1).
- ⊙ Data on significant types and volumes of pollutants to the extent they
  - form part of the production processes (§ 7, para 1, no. 1a)
  - are discharged by the company to air, water and soil (§ 7, para 1, no. 1b)

- form part of the company's products (§ 7, para 1, no. 1c)
- form part of wastes from the company (§ 7, para 1, no. 1d).
- ⊙ Data on the company's waste production and management (§ 7, para 1, no. 3), including data on
  - The total volume of waste (§ 7, para 1, no. 3a)
  - The proportions of the total volume that go for recycling, incineration or landfill (§ 7, para 1, no. 3b)
  - Division of the waste volume into main fractions (§ 7, para 1, no. 3c)
  - The company's efforts to sort the waste (§ 7, para 1, no. 3d).
- ⊙ Data on noise, dust and odour (§ 7, para 1, no. 4).
- ⊙ Information on all environmental issues in § 7, para 1.

### Summary of self-monitoring

The summary of the results of the company's self-monitoring, which outlines how the company's measuring results compare with the conditions of its approval (§ 9).

### Frederiksborg County's comments

Frederiksborg County has examined the company's green accounts for 2004 and found that the information they contain on the company's environmental issues corresponds to the information that the County possesses. Frederiksborg County therefore has no comments to make on the green accounts.

We would also like to state that the County received no complaints about the company in the given accounting year.

*Frederiksborg County*

# ENVIRONMENTAL DATA

ENVIRONMENTAL DATA	Method <sup>1)</sup>	Unit	2000	2001	2002	2003	2004
<b>Water</b>							
Drinking water	M	1,000 m <sup>3</sup>	42	67	77	85	<b>83</b>
<b>Energy</b>							
Energy (total)	M	1,000 GJ	83.5	117	147	174	<b>178</b>
External (electricity)	M	1,000 GJ	45.7	55.5	73.7	84.3	<b>87.5</b>
Internal (subtotal)	M	1,000 GJ	37.8	61.5	73.3	89.4	<b>90.9</b>
Gas oil	M	1,000 GJ	0.9	0.9	1.0	1.0	<b>1.5</b>
Natural gas	M	1,000 GJ	36.9	60.6	72.3	88.4	<b>89.4</b>
<b>Materials</b>							
Materials (total)	M	tons	1,788	2,611	2,787	3,351	<b>4,129</b>
Raw materials	M	tons	1,223	1,693	1,855	2,163	<b>2,715</b>
Packaging materials	M	tons	565	918	932	1,188	<b>1,414</b>
<b>Wastewater</b>							
Volume	B	1,000 m <sup>3</sup>	39	51	72	75	<b>72</b>
Suspended solids	B	tons	5	6	5	6	<b>9</b>
COD	B	tons	9	10	17	19	<b>26</b>
Nitrogen	B	tons	2	2	1	4	<b>8</b>
Phosphorus	B	tons	0.2	0.3	0.2	0.4	<b>0.4</b>
<b>Waste</b>							
Waste (total)	M	tons	535	724	769	868	<b>1,638</b>
Incineration	M	tons	195	205	209	188	<b>210</b>
Landfill	M	tons	–	–	–	0.3	<b>0.4</b>
Controlled destruction	M	tons	13	60	85	45	<b>89</b>
Recycling (subtotal)	M	tons	327	459	475	635	<b>1,339</b>
Construction waste	M	tons	27	39	1	18	<b>497</b>
Electronic equipment	M	tons	3	2	2	6	<b>7</b>
Fat	M	tons	–	–	–	21	<b>21</b>
Polluted soil	M	tons	–	–	–	15	<b>–</b>
Glass	M	tons	–	0.1	0.3	0.4	<b>6</b>
Garden waste	M	tons	–	–	–	–	<b>114</b>
Food	M	tons	6	7	8	13	<b>12</b>
Metal	M	tons	–	4	6	23	<b>29</b>
Oil	M	tons	–	–	–	1	<b>2</b>
Paper and cardboard	M	tons	68	112	132	166	<b>193</b>
Plastic	M	tons	223	295	326	361	<b>396</b>
Sludge	M	tons	–	–	–	6	<b>–</b>
Wood	M	tons	–	–	–	5	<b>62</b>
<b>Emissions to air</b>							
Organic solvents (ethanol)	B	tons	–	–	–	0.74	<b>0.98</b>
Ozone-depleting substances (CFC)	A	kg	–	–	–	–	<b>13</b>
Ozone-depleting substances (HCFC)	A	kg	–	47	103	11	<b>370</b>
Carbon dioxide (CO <sub>2</sub> )	A	1,000 tons	8.9	13.5	16.4	17.9 <sup>2)</sup>	<b>20.9</b>
CO <sub>2</sub> from external production	A	1,000 tons	6.7	10.0	12.2	12.8 <sup>2)</sup>	<b>15.7</b>
CO <sub>2</sub> from internal production	B	1,000 tons	2.2	3.5	4.2	5.1	<b>5.2</b>
Sulphur dioxide (SO <sub>2</sub> )	A	tons	15	19	10	10	<b>17</b>
SO <sub>2</sub> from external production	A	tons	15	19	10	10	<b>17</b>
SO <sub>2</sub> from internal production	B	tons	–	–	–	–	<b>–</b>
Nitrogen oxides (NO <sub>x</sub> )	A	tons	17	13	23	25	<b>35</b>
NO <sub>x</sub> from external production	A	tons	13	10	19	20	<b>30</b>
NO <sub>x</sub> from internal production	A	tons	4	3	4	5	<b>5</b>
<b>Environmental Impact Potentials</b>							
Global warming	A	1,000 tons CO <sub>2</sub> -eqv.	9	14	16	18	<b>22</b>
Ozone layer depletion	A	kg CFC <sub>11</sub> -eqv.	–	2	4	0.4	<b>25</b>
Acidification	A	tons SO <sub>2</sub> -eqv.	27	28	27	27	<b>41</b>
Eutrophication	A	tons NO <sub>3</sub> -eqv.	52	54	83	53	<b>98</b>
<b>Compliance and complaints</b>							
Breaches of regulatory limits	M		4	5	12	8	<b>5</b>
Regulatory limits with repeated breaches	M		2	1	1	1	<b>1</b>
Accidental releases	M		–	–	2	3	<b>2</b>
Complaints	M		–	–	1	–	<b>–</b>
<b>Stockpile of Ozone Layer-degrading Substances</b>							
CFC	A	kg	13	10	13	13	<b>0</b>
HCFC	A	kg	670	686	697	682	<b>541</b>

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

2) The quantities for internal and external CO<sub>2</sub> emissions were mixed up in the 2003 report.

Data from this report have been consolidated into corporate data that have been assured by PricewaterhouseCoopers as part of the assurance of the *Annual Report 2004* with reference to the Auditors' Reports on pages 104 to 105 in the *Annual Report 2004*.



Novo Nordisk is a healthcare company and a world leader in diabetes care. The company has the broadest diabetes product portfolio in the industry, including the most advanced products within the area of insulin delivery systems. In addition, Novo Nordisk has a leading position within areas such as haemostasis management, growth hormone therapy and hormone replacement therapy.

Novo Nordisk is headquartered in Bagsværd, Denmark, and has production facilities in Denmark, France, the US, Brazil, Japan and China. In all, we have around 20,700 employees in 78 countries and sell our products in 179 countries. We are committed to integrating 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, Fundamentals and the Novo Nordisk Way of Management, which includes the company's Vision and Policies. We aim to pursue not only financial targets, but also environmental and social targets. This report (including the annex) also constitutes the company's green accounts for 2004.

The data given in this report are part of the total data set in Novo Nordisk's *Annual Report 2004* and have been assessed via independent assurance. Find out more at [novonordisk.com/sustainability](http://novonordisk.com/sustainability), from where this report can also be downloaded in English and Danish.

Further information can be found at [novonordisk.com](http://novonordisk.com).

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