

Environmental and Social Report Måløv 2003



Research, development and production in Måløv

The main activities in Novo Nordisk Park are research and development of new pharmaceutical products, the production of hormone tablets for hormone replacement therapy, and packing of products for clinical trials for the whole of Novo Nordisk.

Novo Nordisk Park is situated in an industrial area on the outskirts of Måløv in Ballerup Municipality. The site occupies an area of 450,000 m² and may be used, in accordance with local planning, for administration and light production, including pharmaceutical finished goods production, laboratories and warehouses.

The surrounding areas consist of other industry and agriculture. The distance to the nearest housing is about 500 m. Novo Nordisk Park in Måløv is still being developed, and in 2003 we began using an entire new building that now accommodates offices, laboratories, and our new animal housing.

The bulk of Novo Nordisk's hormone tablet production is carried out at the plant in Måløv. The production area, Pharmaceutical Site Måløv (PSM), produces the hormone tablets, and fills and packs the finished products. We carry out quality control on the products before they are released for sale.

The research & development area has several laboratories and animal housing. The site also has a pilot plant for developing new pharmaceutical products. Added to this are various support functions such as a canteen, workshops, a central boiler plant and administration.

Novo Nordisk Park employs 938 people split between salaried employees and hourly-paid workers. There are around 200 hourly-paid workers. Salaried employees consist of engineers, biologists, chemists, pharmacists, laboratory technicians, pharmacologists, technicians, and similar professional groups.

The main resource consumption is water and energy, raw materials (lactose and maize starch) for the production of hormone tablets, and packaging materials in the form of plastic, paper and cardboard. Novo Nordisk Park's main environmental impacts are from hormone-containing waste in the form of solid waste and wastewater from the production of tablets. This waste is sent for destruction at Kommunekemi in Nyborg.

Our management systems take account of all the main aspects of our activities, including social and environmental issues. PSM was environmentally certified according to ISO 14001 in 2002. In research and development, the actual environmental impact is not very high.

The activities at the site are also approved and regulated by a number of environmental approvals and a wastewater permit that set limits for our impact on the surrounding environment.

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The majority of employees in Måløv work on the research and development of new pharmaceutical products. Pharmaceutical Site Måløv (PSM) manufactures, fills and packs hormone tablets for hormone replacement therapy. In 2003 we focused on equal opportunities, and among other things Ellen Nagato Watanabe (below) talked about her experience of coming to Denmark (see page 8).



A year of challenges for research and production

In this report we discuss our social and environmental performance in 2003, which is of major importance for our employees and for relations with our suppliers, our neighbours, the local community, and the environmental authorities.

In the social area we focused on issues that concern our employees' health, well-being and development, and on the targets that we had set for 2003. In the environmental area we focused on documenting that we are meeting the environmental requirements laid down by the authorities and in Novo Nordisk's own Environmental Policy, and on the targets that we had set for 2003. Once again we are proud of our efforts, and we plan to continue in the same vein in the coming years.

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

Employees are involved in environmental work in various ways, and in 2003 we sought to make the Environmental Management System part of our everyday working life. We have implemented action plans for the focus areas that we identified when assessing our environmental impact. As well as the environmental group, in which an environmental coordinator works with the environmental representatives from the departments, employees in the individual departments are involved in local environmental projects. There are ongoing training and promotional activities so that everyone is aware of the main environmental impacts of their work.

Annual targets for water and energy

In 2003 Pharmaceutical Site Måløv (PSM) set targets for water and energy consumption measured in relation to the number of units released. The targets were to reduce water consumption by 5% and energy consumption by 3% per released unit. We

failed to achieve these targets, with increases of 28% for energy consumption and 15% for water consumption in production.

We had no breaches of regulatory limit values and received no complaints from neighbours about nuisance from our activities.

A challenging year for PSM

In hormone production one of the main activities was the switch to new, more user-friendly and reliable packaging – the MKII dispenser. In 2003 the speed with which we progressed was extremely rapid: the packaging was replaced in nearly 100 countries, and now only 25% of the market remains. This switch has dominated our supply situation and provided a lot of work for our maintenance department in running in new machines.

As well as our customers getting a better product, the MKII dispenser means that we will be using less plastic. Once the switch has been made in all markets, we will be sparing the environment 55 tons of plastic every year.

The business area for hormone tablets for hormone replacement therapy is under pressure at the moment. Clinical studies on the effect of the hormone products published in 2003 showed side-effects such as breast cancer and cardiovascular disease. This has worried some of our employees, especially since sales of our products – with the exception of Vagifem® – also fell. In order to reassure our employees, we explain the positive aspects of the products. Among others, that Novo Nordisk was the first company to produce low-dose products and that we are doing everything that we can to promote them. Our products were not directly implicated in the critical studies, and there are women who have such bad symptoms that they would find it difficult to manage without hormone products.

In 2003 the pharmaceutical company Pfizer terminated our mutual sales agreement in the US, and in future we will be selling the hormone products ourselves. Although in 2003 we had



The management team in Måløv represented by Flemming Feddersen (left) and Peter G. Nielsen.

lower production than the previous year for the first time in many years, we have not gone into mourning. The fact is that we are taking market shares from other producers. The trend suggests that we are moving in the right direction, in both the short and long term. In 2003 Novo Nordisk started up two projects to develop new products with even lower hormone content. This all tells employees that there is a future for the area.

From Måløv to Brazil

Another important target in 2003 was the cooperation and integration with Biobrás in Brazil, of which Novo Nordisk acquired full ownership at the start of 2003. The first project at Biobrás was to establish NovoNorm® production, and subsequently to get this production approved by the Danish National Board of Health.

The project was undertaken by eight Måløv employees, representing various departments and levels, who have spent time at Biobrás. We also held a training course here in Denmark for a group from Biobrás. The cooperation has been very positive. Måløv will also in the future be involved in the integration of Biobrás, which within a few years will be responsible for a large part of the NovoNorm® production.

We also discussed the difference between Denmark and Brazil at a theme meeting on diversity at site Måløv – with the participation of the whole site. One of our employees comes from Brazil, and she also talked about her experiences of encountering Denmark and the Novo Nordisk workplace.

New strategy and organisational change in research

In 2002 Novo Nordisk carried out a revision of the research strategy, which has meant that many employees were given new work duties. In 2003 we worked to adapt the organisation within research & development for the new strategy, and among other things introduced a team structure to increase our

flexibility and cooperation across the organisation and to improve our working climate. We also carried out training and instruction within the new areas.

Moving employees away from their core professional area is difficult, and there has been a huge need for real and thorough dialogue during the process. We managed to implement the changes in a satisfactory manner, and the climate surveys in the area show that the organisational change has been well received.

Environmental Management System evolving

We have been conducting a large number of activities in the environmental area since PSM was environmentally certified in 2002. The activities include optimisation of compressed air, increased recycling of plastic waste, and prevention of spills and releases. The Environmental Management System is being continuously developed and adapted to be more usable. We have managed to maintain enthusiasm after the highly focused efforts in the lead-up to certification in 2002. This is seen among other things in the fact that employees are still just as active in coming up with suggestions for environmental improvements.

Future environmental work

We currently collect the wastewater from hormone production and send it to Kommunekemi for destruction. This is a safe method, but not necessarily optimal. In 2003 we therefore began trials to develop another safe method for managing the wastewater in conjunction with an external firm. This work will continue in 2004.

In several areas in 2003 we had the pleasure of working with our Health & Safety Organisation. We have formalised the cooperation and defined the boundaries between duties and responsibilities. The cooperation offers prospects for development of the environmental work and for integration of this work with the health & safety work in the longer term.

Developing employees and the organisation

The ability to predict change and to use it to our benefit is one of the company's core skills. In greater and lesser ways 2003 reminded us of why this is true and of the opportunities that change can bring.

The year began with PSM being scrutinised by the Novo Group's facilitator corps. Novo Nordisk's Executive Management has authorised this corps of former managers to investigate whether the individual functions are living the company's values in their daily work. The facilitators only indicated one area for improvement – awareness of the site's common targets and role distribution in the various management layers. We have resumed our joint meetings for all employees two to three times a year.

Another way of creating awareness of our targets and duties, while at the same time developing our employees, is the course 'Tablets make a difference' for hourly-paid workers in PSM. The course examines our products from development and production to marketing. It has been a great success. PSM manager Flemming Feddersen attends the end of the course to answer questions from employees.

Additionally, our Quality Department holds courses on various topics relevant to their field. We have taken on a training coordinator to determine relevant themes, arrange courses, handle contact with participants etc. Initially, he is focusing on courses for hourly-paid workers.

Research follows up on new strategy

In both research and the development function CMC Development management and employees have worked with the modified research strategy that Novo Nordisk implemented in 2002. Many employees have been given new work duties, and some have been loaned out to other departments in the company, from where most have returned.

In order to increase our flexibility and the quality of our work we have introduced a team structure which has allowed us to work more closely together and to make use of one another's experiences. We have been able to measure the effect of the organisational change through the working climate survey.

CMC Development held a two-day seminar for chemists to discuss the link between the departments' work duties and the new strategy. The new duties mean that new training needs have arisen. A quarter of employees are doing something different now to what they were doing before the change.

For Discovery the changes have meant that half of all employees have been given new work areas. A large study has been made of how employees have experienced the change.

Many have found that things have ended up being really exciting and positive, even though they had feared the worst. There is no doubt that great efforts have been made to carry out real and thorough dialogue throughout the process.

Through the reorganisation we have succeeded in retaining employees, and we have only had a few redundancies.

Mapping of competences

We have placed great emphasis on mapping competences in order to be able to match employee training with departmental needs and at the same time meet management targets. The employees have received this initiative positively because it provides clarity on our core competences now and in future. It is evident from the mapping that the organisational change has increased the demands on employees' competences, and that it requires greater professional diversity. We have not carried out any more courses, but the courses are now being directed at the new areas.

Working climate survey

The working climate survey in CMC Development generally showed good results. Although employees have experienced a high level of work stress and the employment freeze has made the strategy change more demanding, the employees are nevertheless satisfied. This is due to the fact that most of them believe that it is exciting to have new work duties and broader cooperation between departments.

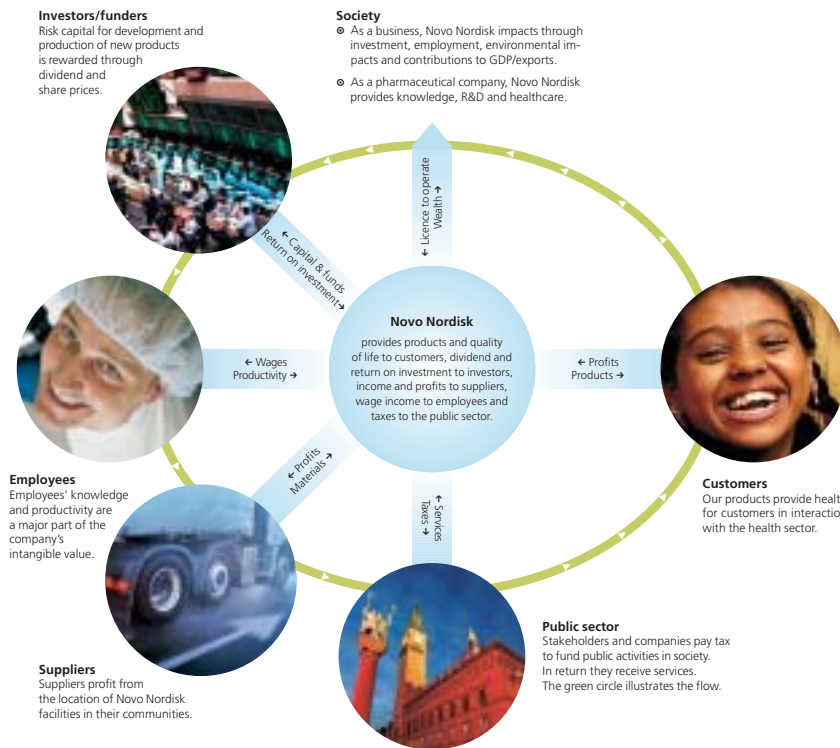
The working climate survey also produced really good results in PSM. Some areas with high workload are experiencing stressful situations from time to time, so in 2003 we held a meeting on stress management with an external speaker.

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. In PSM we have worked to reduce the number of occupational injuries. In 2002 →

Socio-economic contribution

Novo Nordisk's operations in Måløv create jobs for our employees, at suppliers, shopkeepers and in the public sector. In 2002, our overall socio-economic contribution in Greater Copenhagen can be set at 1,808 jobs¹⁾. The chart below provides an overview of the interaction between key stakeholders, with detailed focus on employees, suppliers and the public sector.



Employees

Novo Nordisk employees (932 in 2002) account for around 2% of Ballerup Municipality's jobs. 398 of Novo Nordisk's employees live in Ballerup Municipality, 122 of whom work for Novo Nordisk in Måløv. Employees pay around DKK 49m in tax to the municipalities in which they live, of which DKK 21m is income tax to Ballerup Municipality¹⁾. Their private consumption contributes to some 277 further jobs in the region, 15 of these in Ballerup Municipality. They also contribute property taxes etc, and the remainder of their income tax that goes to the state.

Suppliers

Novo Nordisk in Måløv is estimated to create the basis for 78 jobs locally, and 599 jobs overall in Greater Copenhagen. These jobs are estimated to contribute municipal income tax of around DKK 13m in the region¹⁾, of which DKK 2m is to Ballerup Municipality. Additionally, income tax is paid to the state.

The public sector

The company, our own employees and local suppliers' employees pay taxes to the municipality¹⁾ totalling around DKK 50m. However, the contribution to the municipality is only DKK 25m because equalisation systems would compensate for the lower tax revenue if these citizens and companies did not live or carry on business in the municipality. Novo Nordisk pays around 13% of the company tax to the municipalities, and DKK 5m in energy and environmental taxes to the state (91%) and municipality (9%).

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



Before long, the new, more user-friendly and reliable packaging, the MKII dispenser, will have fully replaced the former packaging. Its manufacture uses less plastic, and when the replacement is complete we will be sparing the environment 55 tons of plastic every year.

→ we were the unfortunate holders of the record for occupational injuries among the production sites in Novo Nordisk. Fortunately, these are not serious injuries; the worst that we have sustained is broken teeth, back pain, and the like. The injuries are not the result of hazardous working conditions, and there is only one area where we see the same type of injury again and again. Many employees are hurt when they 'swing over the bench' in the locks where we change clothes and footwear.

We hold an annual health & safety day on which we focus on health & safety, transparency, stress management, cooperation, attitudes etc. In 2003 we reduced the number of occupational injuries to eight, nearly half the number in 2002. This means that we are now back at a level that indicates our constant efforts to reduce the number of occupational injuries and to maintain focus and improve health & safety.

The new buildings into which CMC Development moved in 2002 and 2003 have brought a better working environment with more space and better ventilation.

Equal opportunities

In 2003 PSM began some initiatives to promote equal opportunities. Among other things we held an event at which two employees from Italy and Brazil talked about their experiences of coming to Denmark. One of them, Ellen Nagato Watanabe, came to Måløv from Brazil four years ago.

"At the start there were colleagues who didn't contact me, probably because they knew that they would have to speak English, but now that I have learnt to speak Danish things are much easier. The way I present myself has also become more Danish. The Brazilians are very open people, perhaps too open," says Ellen. Her recommendation is that both Novo Nordisk and employees from abroad should place more emphasis on Danish tuition, including for employees who are only going to be in the country for a short period. "The main responsibility for making things work is your own if like me you have

chosen to come to Denmark, and the language is the way to integration. Although Novo Nordisk is an international company, the general working day in PSM is very Danish. This also has major benefits: the Danish culture means more respect for one another, less hierarchy, and greater emphasis on cooperation and teamwork than in Brazil, all positive things," concludes Ellen.

All non-Danes have been offered a Danish 'friend' who will support them and help with any linguistic and cultural problems.

In PSM we have had an increasing number of cases where we have had to find alternative work for employees who, for various reasons have not been able to do shift work. In these special situations we offer modified working conditions for a period in order to retain employees. Otherwise we seek to provide equal conditions and opportunities for all.

CMC Development has decided to advertise new positions in English and to organise the recruitment process so that non-Danes have the opportunity to take part. The working language is still Danish for many teams, and it will not always be appropriate to change this. At the moment we have an Iraqi refugee with a pharmaceutical background on a work trial. We have also had a Dutch student on a six-month placement, and we are trying, through contacts with local universities, to draw attention to Novo Nordisk abroad.

Social targets 2004

- Identify critical competences for the introduction of an improvement culture for all employee groups in relevant areas.
- At least 80% of employees to attend a presentation on marketing of our products.
- All employees to take part in a climate survey in which they are questioned on the winning culture, and at least 80% to score above 3.
- All areas to have a plan for their work on equal opportunities and to implement 90% of the actions in the plan.
- Reduce the number of occupational injuries per 1 million working hours compared to 2003.

Social data

Our employees	1999	2000	2001	2002	2003	Development in % 2002-2003
Total number of employees	729	847	924	932	938	1
Number of full-time employees	628	738	788	798	818	3
Number of part-time employees	101	109	136	134	120	-10
Average age distribution (years)	39.0	39.1	38.9	40.2	40.7	1
Average years of service	8.1	7.5	7.4	8.2	8.9	9
Rate of employee turnover (%)	5.0	7.5	6.6	5.1	4.0	
Job functions and gender representation	Number of employees				2003	
Administration ¹⁾	15				27%	73%
Research and Development	558				61%	39%
Production ¹⁾	365				55%	45%
<i>Of the total number of employees:</i>						
Vice presidents/senior principal scientists	10				30%	70%
Managers/principal scientists	85				25%	75%
Occupational injuries	1999	2000	2001	2002	2003	Development in % 2002-2003
Frequency of occupational injuries	5.1	5.9	7.4	10.1	5.3	-48
Number of occupational injuries with absence	6	8	11	15	8	-47

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

LOCAL

Sponsorship provides good experiences

The school adoption scheme continues, and one of this year's activities was to take the class to Kalundborg. It was a big success. In keeping with previous years we have made small donations of typically DKK 5,000–10,000 to a number of different local initiatives. In 2003 we sponsored a 'cycle guide' on possible cycle tours in the municipality, a summer party in a local housing development, a 'sense-party' for the mentally handicapped in Ballerup Municipality, the visit to Denmark of an orchestra from Burkina Faso, and the local championship in the 'First Lego League'.



TAKEACTION!

Big and small projects help others

In 2003 Novo Nordisk launched Take-Action!, which challenges employees to integrate environmental and social responsibility into their daily work. This can be done by initiating new activities and by sharing experiences or ideas – big or small. Some employees sponsor diabetes treatment of children in developing countries, and one department has participated in a jumble sale in Lyngby with the proceeds going to a children's home. We have taken part in collecting football boots, and in the bazaar at Hvidovre, from which the proceeds of DKK 70,000 were donated to the setting up of diabetes clinics in Vietnam.



BIOBRÁS

What you learn from a foreign posting

"All the employees wear T-shirts with the Novo Nordisk logo and say that now they are Novo Nordisk," smiles Marianne Jensen. In 2003 she worked to set up NovoNorm® tablet production at Biobrás in Brazil, where Måløv is responsible for regulating capacity, negotiating contracts, and planning the production.

"We are the first to have experience of the whole process from the initial analyses until production is up and running, and we have gained experience that is valuable for the integration of Biobrás in Novo Nordisk.

It has been especially challenging because Biobrás did not have any experience of contract production where another party comes in and decides everything. Then there is the adaptation of their processes to the European health authorities' standards, which has taken the best part of a year.

At the outset there was a big difference in the two company cultures in the method of tackling production planning. I had to find out how much I should take control of and how much should be done their way. On my second visit I was more clear about my role and remembered that we were all Novo Nordisk. That made it easier to come up with suggestions and establish a spirit of cooperation," says Marianne.

"It is important to remember that cultural differences do not explain everything. All projects have fields of conflict, and we would also have had them if the whole thing had been done in Måløv. Finally, you have to pack away your ideas of simply telling others how things are going to be done. We can certainly learn just as much from them as they can from us," concludes Marianne.



CMC Development entered 11 teams in the late-summer DHL relay, which meant that one in three employees took part. It was a great success, and an evening of activity, food and pleasant company.

Employees' ideas blossom and improve the environment

Since PSM was environmentally certified in 2002, we have used the Environmental Management System diligently and developed it continuously. When we find inexpediciencies, we adapt the system to make it more usable. At the end of 2003, research put into use its new animal housing, which focuses on the welfare of the experimental animals.

Our environment-improving ideas are some of those that are interesting for all employees, and we are proud of the fact that so many suggestions are being made. And not just by members of the environmental group; we are also receiving lots of ideas in the postboxes in the area. With 50 large and small suggestions, we received the same number in 2003 as in the previous year. We have thus managed to stay at the same level even after the intense focus on the certification process has passed.

It is the processing of ideas and suggestions that takes up most of our time. The ideas relate not just to what we could do better in production, but also to what our suppliers could do, and these we bring to their attention. Obviously we do not have the same influence over these ideas, but we do what we can to get them implemented by our suppliers.

There is more than one reason for the high level of commitment. Firstly, the environmental group is made up of some strong and committed people, and there are lots of us; ten of the 335 employees in production work on environment. Also, environment has become a permanent item in all regular meetings. Finally, it is of great significance that people can see that work is being done on the suggestions and that we are doing it quickly. The rapid follow-up is vital.

Environmental assessment

Our Environmental Management System requires that all investment proposals should include a consideration of the consequences for the environment. The environmental coordinator has to see all proposals, and if the environmental consequences are not described, the proposer is contacted. We are nearing the point where the environment is an integral part of our daily work.

We had planned well over 100 activities in the environmental area in 2003, and we carried out the vast majority of them, and ahead of schedule at that. We also studied many suggestions that were not implemented, either because the payback time is too long or because we have other requirements that mean that they cannot be done. However, it is always beneficial to

study things and take a decision on them because new ideas can arise out of the study process itself.

One example is our work with compressed air, where we use a huge amount of electricity. It turns out that the plant is running optimally, but that it is overdimensioned for our needs. If we are to do something about the consumption, it would require us to replace the entire system, and the investment is too high to justify the gains. On the other hand, we have found ways of using the surplus production of compressed air in other places on site, so we can save on some of the small plants. And we will be working further on this idea in the coming years.

There are other examples, including the establishment of cooling in our packing plants, which seen from an environmental viewpoint is a step in the wrong direction, but which is necessary due to quality requirements. The challenge was to establish the cooling in the most environmentally appropriate way. In such cases detailed environmental assessment is carried out and the system's operation is optimised. This was also true of the replacement of the cooling for a compressed air system, where the most environmentally friendly equipment was chosen. We are still working on safety and environmental assessment of the entire new production line.

We have targets and objectives towards which we have been working. Many of them have been achieved, while for others we will continue work into next year to achieve them.

Reduced risk of hormone releases

One of our objectives is to reduce the risk of discharges of hormone-containing wastewater, and we have been working on this in a number of ways. One target was to increase the safety of a well through which our hormone-containing wastewater passes. The well is now monitored 24 hours a day, 365 days a year by the monitoring centre. We have also clarified which discharges in production are used for collection and which are not. Those that are not used for collection have been marked in red. We have begun to collect hormone-containing wastewater from our laboratories. This is not a legal requirement, but a value judgement since all our analyses show that we are not exceed- →



Among other things, our focus on preventing pollution has increased our recycling of plastic waste (above left) and improved safety in our management of hormone-containing wastewater (above right).



External voice: Ole Münster, director of the Danish Animal Welfare Society



Ole Münster visits our new animal housing.

Better animal welfare – a common interest

“For the Danish Animal Welfare Society the basis for negotiations was that we would prefer that there were no experimental animals. But we can see that the animals are undoubtedly better off now,” says Ole Münster, director of the Danish Animal Welfare Society.

The new animal housing in Måløv is the result of a radical change project that has animal welfare at its centre. This is due among other things to an unusual partnership with the Danish Animal Welfare Society. In 2000 the Society started a campaign to improve welfare for experimental animals. Hanne Gürtler from Novo Nordisk contacted the organisation because in her capacity as head of bioethics she was in the process of looking at how animal welfare could be improved in the company.

“In the matter of experimental animals there has traditionally been ex-

tremely poor dialogue between animal welfare organisations and the industry. At the outset, the Danish Animal Welfare Society also met with amazement and scepticism when our cooperation with Novo Nordisk was presented to the outside world. But it soon became clear that this was not just a media stunt, but rather a determination on both sides to make an effort to improve conditions for the animals that are involved in experiments at Novo Nordisk.

“Our common interest was to ensure better animal welfare, among other things through better housing conditions. It is often the housing – and not the experiments – that is most stressful for the animals because it is here that they spend most of their time. The good thing about our process was that we started off by asking: how can we do this as well as possible? We discussed this with a number of experts, and in this way we forced everyone to think differently.

“At Novo Nordisk working groups

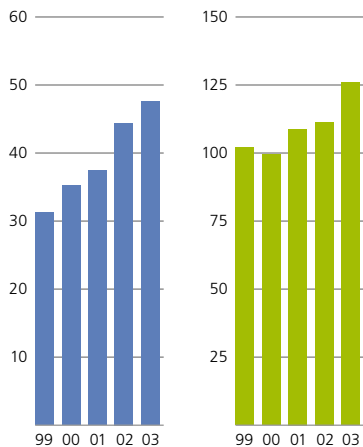
were appointed in the animal housing to translate the proposals into practice as models that also took account of the employees’ working conditions. In this way a model was drawn up for loose-housing of rabbits, new systems for mice, rats and guinea pigs, and the conditions for dogs were improved in both indoor and outdoor areas.

“In 2004 we will be able to celebrate the whole thing being implemented – and we are pleased about that,” concludes Ole Münster.

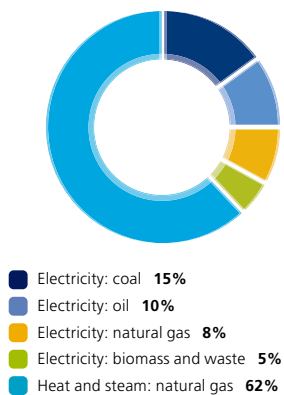
In a remarkable recognition of Novo Nordisk’s efforts on behalf of experimental animals, the Danish Animal Welfare Society chose in 2002 to nominate Hanne Gürtler Animal Friend of the Year.

As an offshoot of the partnership between the Danish Animal Welfare Society and Novo Nordisk, in the summer of 2003 new Danish legislation was published on experimental animals that reflects the models that have already been set up in Novo Nordisk.

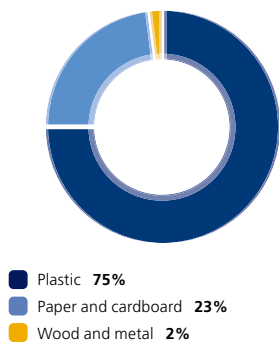
Water and energy consumption
1,000 m³ 1,000 GJ



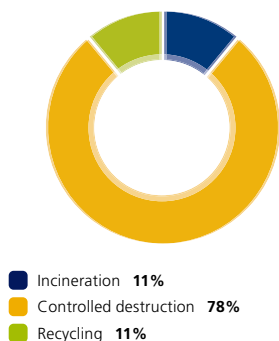
Breakdown of energy sources 2003



Breakdown of raw materials 2003



Waste disposal 2003



TREATMENT

Good results of wastewater trials in PSM

Together with the firm DownStreams we have carried out trials of an alternative treatment of our wastewater for hormones. The target is in principle to break down the hormones completely so that the wastewater can be discharged into the sewage system rather than being collected and sent for destruction at Kommunekemi as is the case today. The method involves an electric treatment combined with the addition of certain salts. The provisional results are positive, and we have high hopes for the method. There are still unresolved questions on management and analysis of the wastewater and approvals from the County.

The considerations include the fact that the new process is extremely power-intensive. In 2004 we will be continuing work on the project to find an alternative, safe solution.

CARE

Product development challenged by production

We think about health & safety and the environment when we choose substances for use in tablet production and in the development of new products. There is a big difference in how dusty the processes are, and the production employees often challenge us in our choice of materials. In research and development the actual environmental impact is not very high.

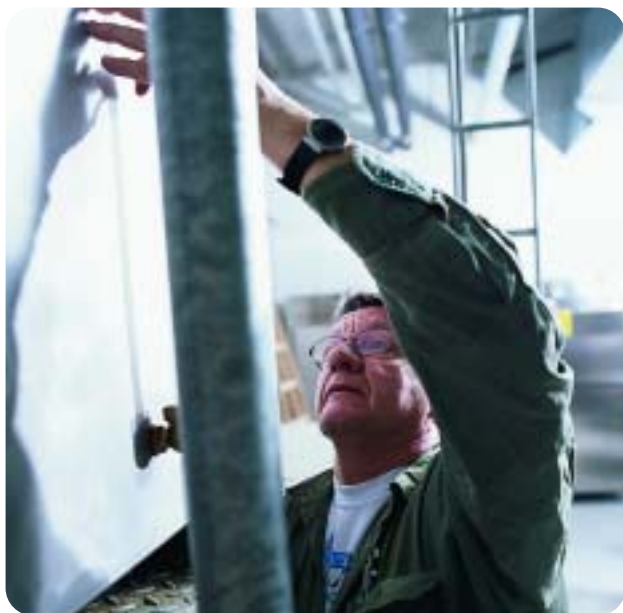


JOINT EFFORT

Cooperation between environment and health & safety

Following environmental certification we have worked extensively on extending and formalising the cooperation with our Health & Safety Organisation. There is a good deal of overlap, issues that could belong to both areas. We have defined the boundaries and drawn up a type of cooperation agreement for governing the responsibility and focus in

both areas without integrating 100%. Through the cooperation, we are inspiring one another; the Health & Safety Organisation is learning a lot from the environmental organisation's systematics, while the environmental organisation is drawing on knowledge of hazard marking, workplace instructions etc. Both groups are emphasising the need to be visible on the site with annual focus days, and we are also planning to carry out joint environmental preparedness exercises.



We have begun to collect hormone-containing wastewater from our laboratories because we think it is important not to subject the environment to such waste materials.

→ ing the limit for what the water may contain. However, we believe that it is so important not to subject the environment to hormone-containing material that we have instigated collection. We started with a mobile tank, which was transported through the building and then driven away on a lorry. Since then we have installed a stationary tank to eliminate the risks associated with the transport. Another advantage is that collection now takes place once a month compared to three to four times a month previously.

Targets for energy, water and hormone waste

In 2003 overall water consumption at Novo Nordisk in Måløv rose by 7% compared to 2002, while energy consumption rose by 13%. The main consumption in the production of hormone tablets is water and energy.

We failed to achieve the targets for energy and water consumption, which were reductions of 3% in energy consumption and 5% in water consumption per unit released for sale. These figures should show the annual progress in the efficiency of our production apparatus. Unfortunately, the actual results were increases of 28% for energy consumption and 15% for water consumption per unit released for sale.

There were many reasons why we failed to achieve these targets. Energy consumption basically increased as a result of the hard winter. We also had problems with the plants that produce clean water for production. For a time we had to operate with one plant less than normal, which meant that we had to use more steam, and hence more energy, to get the right quality of water. Before we could put the plant back into operation, we had to check and validate that it was working correctly. This requires a lot of water, steam and electricity. Finally, a major part of the explanation is that we did extremely well in 2002, and because the EPI target is calculated by comparison with the previous year, the basis for comparison was very demanding.

Next year we will be working with Novo Nordisk's External

Environment Department to make the basis for calculation fairer. This will ensure that the energy- and water-consuming plants involved in the calculation are actually linked to production so that the calculation is less vulnerable to winter cold.

In 2003 we had set a target to reduce solid hormone waste, ie waste from production, by 2% per marketed product compared to 2002. Unfortunately, it was not possible to monitor the specific development of the hormone waste since it is recorded together with other medical waste. Overall, the amount of medical waste from production fell.

Success in recycling plastic

In 2003 packaging control began to sift out hard plastic items that have not been in contact with hormone. It is impressive that up to now we have had no cases of erroneous sorting. In 2003 we sent 1,250 kg for recycling that previously would have been sent to Vestforbrænding I/S Incineration Plant. We are working on the possibility of doing the same in production and packing. A precondition – and the major challenge – is to achieve 100% assurance that the packaging has not been in contact with hormone-containing material.

Non-conformities

We had two incidents that gave rise to non-conformities in the Environmental Management System.

Every year we routinely test 65 HEPA filters, which are located on ventilation ducts to ensure a clean discharge of production air into the surroundings. The requirement is that these filters should catch 99.97% of the particles in the ventilation air. In two cases the result exceeded the requirement by just a few promilles. These filters were replaced, and we are now meeting the requirement again.

In another case, a routine video inspection and leak test of our sewage system showed displacements in our sewage pipes. Fortunately, a rubber gasket had held the joint intact and the wastewater had at no time contained female sex hormones. The authorities were informed of the given wastewater amounts and their contents. Production was stopped for a period, and while the repairs were being made we had high costs for slurry extraction. The sewage system has now been modified, and valves have been installed so that leak tests can easily be carried out, thus ensuring that the plant operates as it should.

Environmental targets 2004

- ◉ Maintain energy consumption per released unit in PSM compared to 2003.
- ◉ Maintain water consumption per released unit in PSM compared to 2003.
- ◉ Reduce the volume of PVC/aluminium waste by 2% per packed applicator compared to 2003.
- ◉ Survey an improved method for disposing of hormone-containing wastewater.
- ◉ Convert at least ten environment-improving ideas into mini-projects and carry out these projects.
- ◉ Carry out an environment awareness test on at least 200 employees in PSM, of which at least 80% should pass.
- ◉ Improve our preparedness by carrying out activities to minimise the risk of fire.

Environmental data for Novo Nordisk in Måløv 1999–2003

	Method	Unit	1999	2000	2001	2002	2003
Water							
Drinking water	M	1,000 m ³	31	35	37	44	48
Energy							
Energy (total)	M	1,000 GJ	102.0	99.5	108.8	111.5	125.7
External (subtotal)	M	1,000 GJ	40.7	41.3	42.8	46.5	48.0
Electricity	M	1,000 GJ	40.7	41.3	42.8	46.5	48.0
Internal (subtotal)	M	1,000 GJ	61.3	58.2	66.0	65.0	77.7
Natural gas	M	1,000 GJ	61.3	58.2	66.0	65.0	77.7
Materials							
Materials (total)	M	tons	761	923	959	1,135	1,247
Raw materials	M	tons	270	188	295	291	240
Packaging materials	M	tons	491	735	664	844	1,007
Wastewater							
Volume	B	1,000 m ³	25.3	29.3	29.8	37.3	39.2
Suspended solids	B	tons	4.5	7.0	9.3	7.3	9.7
BOD	B	tons	–	6.0	1.9	6.8	7.2
COD	B	tons	10	14	16	14	24
Nitrogen	B	tons	0.9	1.0	1.5	1.4	1.6
Phosphorus	B	tons	0.2	0.3	0.4	0.4	0.5
Waste							
Waste (total)	M	tons	1,593	1,902	1,860	2,166	1,791
Incineration	M	tons	114	165	166	220	204
Landfill	M	tons	3	4	2	5	5
Controlled destruction	M	tons	1,400	1,581	1,552	1,791	1,383
Recycling (subtotal)	M	tons	76	152	140	150	199
Chemical waste	M	tons	–	–	–	0.1	0
Construction waste	M	tons	0	0	0	0	0
Electronic equipment	M	tons	–	–	–	0.1	0.3
Glass	M	tons	0	0	0	0	8
Food	M	tons	11	10	9	11	13
Metal	M	tons	0	0	13	9	13
Paper and cardboard	M	tons	55	84	99	102	125
Plastic	M	tons	10	58	19	27	40
Wood	M	tons	–	–	–	1	0
Emissions to air							
Carbon dioxide (CO ₂) from energy production	A	1,000 tons	10	9	12	11	12
CO ₂ from external production	A	1,000 tons	6	6	8	7	7
CO ₂ from internal production	B	1,000 tons	4	3	4	4	5
Sulphur dioxide (SO ₂) from energy production	A	tons	13	13	15	7	6
SO ₂ from external production	A	tons	13	13	15	7	6
SO ₂ from internal production	B	tons	0	0	0	0	0
Nitrogen oxides (NO _x) from energy production	A	tons	18	18	11	15	15
NO _x from external production	A	tons	12	12	8	12	11
NO _x from internal production	A	tons	6	6	3	3	4
Environmental Impact Potentials							
Global warming	A	1,000 tons CO ₂ -eqv.	10	9	12	11	12
Ozone layer depletion	A	kg CFC ₁₁ -eqv.	0	0	0	0	0.4
Acidification	A	tons SO ₂ -eqv.	26	26	22	17	16
Eutrophication	A	tons NO ₃ -eqv.	35	38	35	39	44
Compliance and complaints							
Breaches of regulatory limits	M		0	0	0	0	0
Regulatory limits with repeated breaches	M		0	0	0	0	0
Accidental releases	M		0	0	1	1	0
Complaints	M		0	0	0	0	0
Stockpile of Ozone Layer-degrading Substances							
CFC	A	kg	30	30	30	30	0
HCFC	A	kg	1,432	1,432	1,432	1,432	1,344

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

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

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



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