

Cheminova A/S - Green Accounts 2005

Introductory particulars	Page	1
Statement by the management	-	3
Information about environmental issues	-	11
Summary of self-policing	-	15
Annex 1. Objectives, target and plan of action - Balance end 2005	-	21
Annex 2. Key figures for the environmental performance in 2005 (Input)	-	23
Annex 3. Key figures for the environmental performance in 2005 (Output).....	-	24
Annex 4. Statement from the County of Ringkjøbing concerning the green accounts	-	26

Introductory particulars

Name	Cheminova A/S
Location	Thyborønvej 78 DK-7673 Harboøre Denmark
Company mission	Cheminova's mission is to control unwanted insects, plants and fungi in order to secure adequate food and fibre production and to improve the living conditions of the world's population.
Telephone/Fax	96 90 96 90/96 90 96 91
Website	www.cheminova.com
Environmental supervision authority	County of Ringkjøbing.
Industrial sector	Chemical industry.
Primary activity	Manufacture of basic plant protection products.
Significant secondary activities	Manufacture of preservatives for food. Natural gas-fired CHP unit. Storage facilities for raw and finished products, waste-water treatment plant, laboratories for R&D and quality control, workshops and filling facilities.
Point in the list in Annex to Statutory Order from the Ministry of Environment and Energy No. 975 of December 13, 1995	D106. Enterprises engaged in the production of basic plant protection products or biocides.
Holding company	Auriga Industries A/S, P.O. Box 9, 7620 Lemvig, Denmark.
CVR no.	12760043

P no.	1.000.441.076
Most significant environmental approvals	<p>24.03.88 Total approval of production plants</p> <p>24.06.93 Glyphosate (herbicide)</p> <p>03.07.01 Pyrethroid part 1 (insecticide)</p> <p>05.02.03 Revision of basic production terms</p> <p>10.10.03 Pyrethroid part 2</p> <p>16.11.04 Diflufenican (herbicide)</p> <p>28.09.05 Fenoxaprop-P-ethyl (herbicide)</p> <p>01.07.05 Revised ruling concerning waste water</p> <p>14.11.05 Cloquintocet (herbicide)</p>
Recipient	The North Sea. The company is not connected to a public waste-water treatment plant as it has its own biological plant to treat the waste water.
Qualitative indication of resource and environmental parameters	<p>The company's most significant resource parameters concern the consumption of raw materials in the form of organic and inorganic chemicals, energy and water. Most of the resources are consumed in connection with the manufacture of plant protection products and intermediates thereof.</p> <p>The most significant environmental parameters concern the emission of solvents, CO₂, SO₂, NO_x and "odour" to the air and the discharge of nitrogen, phosphorus and combined organic carbon in waste water. Furthermore, waste is generated both in the form of hazardous waste and in the form of sludge from the company's biological treatment plant. Both types of waste are sent to approved waste-treatment facilities.</p> <p>The company's primary products, pesticides, are designed to have a biological effect on either insects (insecticides), plants (herbicides) or fungi (fungicides). The correct application of the substances is, of course, of material importance to preventing undesired environmental impacts. The products are therefore, in all the countries in which they are marketed, subject to statutory registration to ensure their correct application. The statutory limitations on their application are indicated on the product labels together with instructions for use.</p> <p>In connection with the production of pesticides, it is important that biologically active ingredients are not inadvertently spread to the surroundings. This is ensured through a combination of technical safety measures and a set of written procedures and instructions which employees must adhere to.</p>

Statement by the management

Information significant to understanding the environmental impacts of the company's activities

Against the background of an environmental-technical mapping, the most significant environmental impacts have been selected on the basis of the following criteria:

Resources:

The company's consumption of raw materials and auxiliary materials comprises a number of chemicals, some with potential environmental impacts. The consumption of raw materials and auxiliary materials has therefore been categorised according to the classification of the substances.

Energy has been included as it is a limited resource.

Water has been included as this resource is subject to attention by society.

Emissions to the air:

SO₂, NO_x and CO₂ are included on account of the attention generally given thereto by society. Furthermore, some specific chemicals are included according to demand from the Danish Environmental Protection Agency. Finally, odour is mentioned as being of local importance.

Discharges to water:

The company has its own biological waste-water treatment plant with microorganisms which are particularly suited to break down the specific chemical compounds present in the waste water.

Phosphorus, nitrogen and organic substances are included on account of the attention generally given thereto by society. Furthermore, the discharge of cooling water is mentioned as being of local importance.

Waste:

Commercial waste, hazardous waste and sludge from the company's biological waste-water treatment plant are mentioned. The responsible handling of these types of waste is of material environmental importance.

**The company's
environmental policy**

Unintended events:

In step with marked reductions in the overall environmental impacts of the company's activities on the air and water, "unintended events" which have an impact on the local environment for a short period have become the subject of increasing attention by society. Information about such events has therefore been included.

The environment, health and safety are important areas for Cheminova, and all the activities of the company are undertaken with due consideration being given to the fact that the company is endeavouring to continuously improve results within these areas.

Thus, the company is endeavouring to undertake all activities with due consideration being given to humans and the environment and to communicate openly, both internally and externally, about matters concerning the environment, health and safety.

This is achieved through:

- The company's compliance with all legislation, rules and regulations in force from time to time, including statutory requirements.
- The ongoing assessment of impacts and setting of targets for a reduction in emissions or the consumption of resources, including energy, with account being taken of the best available technology.
- The setting of targets within the areas of occupational health and safety.
- The maintenance of emergency services to reduce the consequences of any accidents.
- The choice of processes, raw materials and auxiliary materials in connection with the development of new products and the further development of existing products, taking account of their possible impacts on humans and the environment.
- Ensuring sufficient communication internally and in relation to the authorities.
- The maintenance of an open dialogue with cooperation partners and the public concerning the company's policies, targets and results.
- Ensuring that employees are able to meet the requirements made in respect of their work and that they are aware of their own impact on the environment and safety.

Cheminova has joined the Responsible Care programme, an agreement which lays down requirements concerning the company's work on, for example, its environmental policy and documentation.

Significant environmental aspects and targets

Legislation

Since 1988, Cheminova has had an overall environmental approval of its activities in Denmark. Since then, just under 200 supplementary approvals have been granted. The general environmental approval, which is very extensive, is currently under review. The review is divided into four main areas: General basic terms for the whole company, specific terms for the individual production plants, the discharge of waste water and gaseous emissions to the atmosphere. The review of "basic terms" was completed in 2003. A renewed waste-water approval based on EU's directive of October 23, 2000 concerning determination of conditions for the union's water political measurements the Water Framework Directive, has been granted in July 2005. The actual emission requirements have been settled according to the new EU direction "Technical risk assessment TGD 2003".

EU's Water Framework Directive has to be implemented in the member states before 2015. In this way, the new waste-water approval is an important securing of the future production as the aggravating demands to emission will be implemented about 10 years before it is demanded by the directive.

Revision of gaseous emissions to the atmosphere and specific conditions to some plants will be completed during the first half of 2006.

The company is subject to the EU Directive 96/82/EC on the control of major-accident hazards involving dangerous substances. Revised registration in pursuance to this legislation should have been implemented by the end of 2004, but due to changed classifications of some of the company's products the work has become more comprehensive than expected. A full updated registration was sent to the authorities in December 2005. An official approval of the risk registration is expected in the first quarter of 2006.

Certified management systems

Cheminova has an energy management system certified in accordance with DS 2403. Certification is required in order to be able to enter into an agreement concerning energy effectivisation with the Danish Energy Authority.

In 2004, Cheminova has been adapting an existing environmental and health and safety management system to comply with ISO 14001 and OHSAS 18001. A preaudit of the system has been carried out. In 2005, the new system has been fully integrated in the organisation, and a preaudit has been carried out. The management system is expected to be certified during 2006.

Status concerning objectives, targets and plans of action according to the certified management system for 2005 appear from enclosure 1.

Energy

Cheminova has entered an energy effectiveness agreement for the period March 2004 to July 2006 according to the Danish law about a government subsidy to some companies with a heavy consumption of energy. The benefit in this type of agreements is a reduced tax on the emission of CO₂.

In addition to the general demands on such agreements, the agreement includes actual energy savings, among others on the company's biological waste-water treatment plant which has a heavy consumption of energy. Further energy savings will be implemented on this plant in the coming years.

Energy policy:

Through its energy policy, transparency of its energy consumption, follow-up and assessment of results, Cheminova wishes to ensure continuous improvements to and the financially optimum utilisation of energy resources.

Cheminova's energy policy applies to all activities taking place at the factory on Rønland.

All the areas of the company which make use of energy-intensive processes (heavy energy) as well as other areas with considerable energy consumption are subject to an audited energy management system.

Against this background, the company endeavours to ensure:

- That the energy consumption in daily operations is assessed in the same way as optimum raw material utilisation and the environmentally sound and reliable operation of the process plants;
- That the energy consumption is made transparent through the measuring and calculation of energy key figures for relevant energy flows;

- That the energy consumption in connection with new plants and the expansion of plants is assessed in the same way as operating reliability and raw material utilisation;
- That employees are made energy-conscious through dialogue and supplementary training;
- That the company's energy consumption and energy policy are published in its green accounts.

Energy objectives and targets:

It is the objective of Cheminova, via its energy management system, to minimise the energy consumed per unit manufactured.

Energy-savings projects with a payback period of less than 4 years will be implemented.

Energy projects carried through in 2005:

- P-2 plant: Utilization of waste heat for heating of the chlorine hall.
- Fyfanon: Reduced rotations of condensations.
- Pilot plant: Frequency converters on ventilation.
- Biological waste-water treatment plant: Energy optimization of reactor 3400.
- Central brine plant: Energy optimization.
- Painter's cabin: Recirculation of ventilation.
- Compressed-air plant: New compressor and belonging control.
- Compressed-air plant: Recirculation of heat from compressor.

Obtained saving:

The consumption of electricity and steam at the whole factory has been reduced by 6.8% and 1.9% respectively in 2005 compared to 2004.

Special investigations carried through in 2005:

- Possibilities of reclaiming heat at the Claus plant in connection with demand on reduction of the emission of SO₂.
- Possibilities of replacing of the existing air compressors at the biological waste-water treatment plant by turbo compressors.

The possibilities of exploiting surplus hydrogen from the PMG plant for heating.

Waste	<p>Until mid-2002, a phosphorous by-product which is produced on the basis of sludge from the company's biological waste-water treatment plant was sold to the Danish agricultural sector for fertilisation purposes under the name "Cheminova Fosfat". However, the agricultural sector now has a very considerable own production of phosphorous manure, compared to the consumption permitted. Furthermore, the authorities in many counties in Denmark have been very unwilling to issue the necessary spreading permits. Consequently, Cheminova has sought alternative uses abroad, but it has not been possible to obtain the necessary permits for the exportation of Cheminova Fosfat. This has meant that the possibilities for selling Cheminova Fosfat are now so limited that alternative handling methods are required. Since mid-2002, the product has been sent to a special-purpose depot in Norway.</p>
Unintended events	<p>A future focus area will be the so-called unintended events, which are defined as operating disturbances which have an impact on the external environment for a short period of time as a result of human or technical errors. The impacts of such events will typically be of marginal importance, but may give rise to local inconveniences (odour, a visible cloud, etc.). It is the aim of the company to reduce the number of such events.</p> <p>Unintended events have been registered systematically for three years. The number of events has increased in 2005 compared to the level in 2003 and 2004. A number of initiatives has been initiated in order to reduce the number in the coming years.</p>
Transport	<p>Goods are transported to and from the company by road, rail and sea. In recent years, road transports have largely been replaced by rail and sea transport. Thus, 40 per cent of goods are now transported by rail or sea.</p> <p>Transport by sea and rail is financially attractive for the transportation of large volumes. Furthermore, this benefits the environment in the form of reduced energy consumption per tonne transported.</p>
Environmental requirements in relation to sub-suppliers	<p>The company engages in an ongoing dialogue with its suppliers concerning relevant areas in relation to the deliveries which take place, including environmental issues, but no specific environmental requirements are made.</p>
Involvement of employees	<p>All groups of employees are involved in the company's environmental activities. Project groups are formed in connection with the construction of new plants and major</p>

expansions. Compliance with environmental rules and regulations is a natural part of the daily work routines of the company's operating staff. This will be strengthened in connection with the current introduction of the environmental management system according to ISO 14001 and OHSAS 18001.

Occupational risks

The company handles a wide range of chemical substances, including some which may give rise to occupational impacts if they are not handled correctly. The company possesses long-standing experience with the responsible handling of such products. Furthermore, the company has its own occupational health service which performs inspections and offers advice and guidance to the rest of the organisation about these matters.

The number of accidents was the lowest for many years as only 6 accidents were reported. Normally, 20-25 accidents are reported every year. None of these accidents is expected to lead to permanent injury. There has been one accident involving chemicals.

With an absenteeism due to accidents of 0.5 hour per 1,000 hours worked, the company reached the lowest absenteeism for many years.

The number of reports concerning minor personal injury and near-accidents is on a level with the previous years. The company is pleased that there is continued focus on these reports as the increased attention can result in changes to plants or behaviour, which may mean that serious accidents are prevented.

By measurement on indoor climate, ventilation, laboratory fume cupboards and noise, the company follows the occupational health and safety environment.

A separate statement concerning occupational health and safety has been prepared.

Instances of non-compliance

There was two instances of non-compliance in 2005.

In one case an employee emptied a drum with process waste water to the system of surface water as the employee in question needed an empty drum. The waste water should have been treated at the environmental plant of the department before it was sent on to the waste-water treatment plant. The mistake was, however, discovered immediately and the system of surface water was then closed. The wasted water was collected and there was no emission to the surrounding water environment. The case is

considered to be an instance of non-compliance.

The other instance refers to the conditions for updated lists of chemicals in the warehouses which shall always be available in the gateway. At an inspection, the list of stock in one of the warehouses was two days old, and the list of another store was missing.

Deviations

Any deviations in relation to previous versions of the company's green accounts are stated in the individual sections.

Complaints

In 2005, there has been no complaints from neighbours or others concerning the environmental conditions of the company.

Information about environmental issues

Consumption of energy, water, raw materials and significant types and volumes of polluting substances

The information is given in “Key figures for the environmental performance of Cheminova in 2005” for input and output in Annexes 2 and 3, respectively.

Energy

The consumption of energy has been a little lower in 2005 than in the previous year. This is due to energy savings and a generally lower activity level in the production department compared to last year.

Raw materials, auxiliary materials and products sold

Cheminova has decided to categorise raw materials, auxiliary materials and products sold according to their classification. Where data are harmful to the environment, hazardous/toxic, corrosive/causing local irritation or inflammable, they have been included under the category harmful to the environment. Where data are hazardous/toxic, corrosive/causing local irritation or inflammable, they have been included under the category hazardous/toxic. Where data are corrosive/causing local irritation or inflammable, they have been included under the category corrosive/causing local irritation. The variations between the different categories in the five years period ascribe to random fluctuations in production according to the demand for the different products.

Substitution

The company is aware of the possibilities of substituting substances included in the “List of undesired substances” with other substances. In connection with the development of new processes, focus is on this issue. If a less dangerous substance can replace a more dangerous one, and the less dangerous substance has the same properties and is competitive as regards its quality and price, the least dangerous substance will be used.

Waste

The increase in the volume of waste deposited during a five year period is solely attributable to the changes in how sludge from the purification plant is disposed. For a period of more than ten years, the sludge was dried and reused as phosphorous fertiliser by farmers in Denmark. This problematic has been discussed in Statement by the management. As sludge accounts for by far the largest individual flow, this change has a material impact on the company’s overall waste hierarchy.

This year’s smaller volume of waste which has the greatest influence on the total generation of waste reflects the generally lower activity of the production department compared to the previous years.

At the beginning of 2002, efforts were launched to improve the sorting of the company's waste. These efforts have resulted in a halving of the volume of general household waste compared to 2001 plus an increase in the volume of paper for recycling. The statement of the waste flows since 2002 shows that the positive result of better sorting of waste is maintained within the company.

The volume of hazardous waste has doubled since 2002. This is especially due to a relatively large volume of hazardous waste from a new production that was started up during the last six months of 2002.

Emissions to water

The variations in emissions of BI₅, TOC, total P and total N must be characterised as fluctuations within a standard area, which has been stable over the last 5 years. It is necessary to add nutrients in the form of nitrogen to the microorganisms in the waste-water treatment plant. A certain level of nitrogen is therefore "the price" for the break down of the chemical substances in the waste water. A reduction of the nitrogen level will easily result in a lower efficiency of the waste-water treatment plant resulting in insufficient treatment and risk of instances of non-compliance.

The cooling water consists of two separate systems: Internal and external. The internal cooling water is circulated in a closed system, which indirectly cools current production processes. This cooling water flow is then indirectly cooled by the external cooling water (bay water), which is drawn from Nissum Bredning and pumped back into the bay.

In three cases, low concentrations of ammonia were found in the external cooling water. Most likely, there has been a spill-over from the cooling system that cools down brine. So it was not a question of the barrier between the chemical substances and the cooling water being exceeded.

The self-policing of the waste water shows that demands have been complied with.

Emission to air

Emissions of SO₂, NO_x and CO₂ have been slightly decreasing within the last five years attributable to lower fuel consumption.

Emission of substances included in EPA's annex A in the guidance on green accounts

Emissions of specific substances stated according to demands from the EPA are calculated according to the same principles since 2003. The new principle for calculation includes more specific substances than earlier. This applies for emissions to both air and water.

Dust Dust emissions from one waste-water incineration furnace are being monitored continuously. Measurements show that the levels of dust are well below the statutory levels. Dust is not regarded as causing significant environmental impacts.

Noise The company's noise levels are well below the statutory requirements applicable at boundaries and in open countryside with 5 kilometres to the nearest neighbour, the company causes no inconvenience due to noise.

Odour Air extracted from production and tank plants is incinerated in an air-incineration plant, causing the destruction of all odour substances. Air, which is not deemed to involve any health hazards, e.g. from room ventilation, is discharged directly into the open. Diffuse sources occasionally cause odours to be emitted from the company.

Unintended events The unintended events are registered and divided into three categories. Categories 1 and 2 describe events, which have caused some environmental impact, while category 3 comprises events, which have had no environmental impact. "Key figures for the environmental performance of Cheminova in 2005" include events in categories 1 and 2. Most events are caused by technical errors.

The number of events has increased in 2005 compared to the previous years.

There has, however, not been any events in category 1 where events causing essential environmental impact are assigned. All the reported events can be placed in category 2 comprising events causing pollution on the level of inconvenience.

There have been 4 events concerning handling of chemicals which have resulted in reporting to the authorities. Due to a human error, chemicals were in one case lead to the system of surface water. In this way there was a risk that the chemicals could have caused increased emission to the recipient through the waste water. However, this situation was avoided as the error was detected. The event caused a more precise formulation of basic conditions concerning proper handling of chemicals.

In 2005, there were 3 events that caused increased emission to the waste-water but none of these events resulted in non-compliance. There were 2 similar events in 2004.

Emissions to the soil

In 2005, there have been 13 unintended events resulting in spillage to unfortified areas. This is a considerable increase compared to the year before, where there were 4-5 of these events.

This development has resulted in a more explicit analysis of the events, and it has turned out that most of the events are due to leakages on the tubular bridges. Therefore the management of the company has started some initiatives which are expected to stop this development.

Thus it will be estimated if it is possible to find technical and financial manageable solutions to better secure the tubular bridges against leakages.


In addition, the management will bring unintended events more into focus just as in the future they will be followed up by a more specific analysis and assessment in each case.

In the event of spillages to the soil, the contaminated soil is removed and disposed of as contaminated soil. In instances where it is deemed to be environmentally beneficial, emergency pumping is established in order to contain the spillage.

Summary of self-policing

This section contains conclusions concerning Cheminova's own measurements in 2005 on significant emissions. For each site, a conclusion and a table with measurement results and requirements have been prepared

Summary of own measurements of emissions to the air in 2005

<p>Process emissions from production plants are cleaned in the central air-incineration plant.</p>	<table border="1"> <thead> <tr> <th>Parameter</th> <th>Unit</th> <th>Requirement</th> <th>Results</th> <th>No. of measurements</th> <th>Instances of non-compliance</th> </tr> </thead> <tbody> <tr> <td>Odour</td> <td>OU/s</td> <td>450,000</td> <td>359,630</td> <td>11</td> <td></td> </tr> <tr> <td>Out time</td> <td>%</td> <td>5</td> <td>2.3</td> <td></td> <td></td> </tr> <tr> <td>Class I subst.*</td> <td>mg/m³</td> <td>5</td> <td>0.1 - 0.9</td> <td>6</td> <td></td> </tr> <tr> <td>Class II subst.</td> <td>mg/m³</td> <td>100</td> <td>1 - 13</td> <td>6</td> <td></td> </tr> <tr> <td>Class III subst.</td> <td>mg/m³</td> <td>300</td> <td>3 - 60</td> <td>6</td> <td></td> </tr> <tr> <td>Sum I + II + III</td> <td>mg/m³</td> <td>300</td> <td>5 - 74</td> <td>6</td> <td></td> </tr> <tr> <td>Hydrogen bromide</td> <td>mg/m³</td> <td>5</td> <td>1.1</td> <td>3</td> <td></td> </tr> <tr> <td>Hydrogen phosphate</td> <td>mg/m³</td> <td>30</td> <td>0.5</td> <td>3</td> <td></td> </tr> <tr> <td>Hydrogen chloride</td> <td>mg/m³</td> <td>100</td> <td>2.0</td> <td>3</td> <td></td> </tr> <tr> <td>Hydrogen sulphide</td> <td>mg/m³</td> <td>5</td> <td>0.7</td> <td>6</td> <td></td> </tr> <tr> <td>Sulphur dioxide</td> <td>mg/m³</td> <td>400</td> <td>12 - 41</td> <td>3</td> <td></td> </tr> </tbody> </table>						Parameter	Unit	Requirement	Results	No. of measurements	Instances of non-compliance	Odour	OU/s	450,000	359,630	11		Out time	%	5	2.3			Class I subst.*	mg/m ³	5	0.1 - 0.9	6		Class II subst.	mg/m ³	100	1 - 13	6		Class III subst.	mg/m ³	300	3 - 60	6		Sum I + II + III	mg/m ³	300	5 - 74	6		Hydrogen bromide	mg/m ³	5	1.1	3		Hydrogen phosphate	mg/m ³	30	0.5	3		Hydrogen chloride	mg/m ³	100	2.0	3		Hydrogen sulphide	mg/m ³	5	0.7	6		Sulphur dioxide	mg/m ³	400	12 - 41	3	
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<p>Separate process emissions from the first and second process stages of the production of phosphorous insecticides.</p>	<table border="1"> <thead> <tr> <th>Parameter</th> <th>Unit</th> <th>Requirement</th> <th>Results</th> <th>No. of measurements</th> <th>Instances of non-compliance</th> </tr> </thead> <tbody> <tr> <td>Hydrogen sulphide¹</td> <td>g/h</td> <td>4</td> <td>0.1 - 7.0</td> <td>45</td> <td>1*</td> </tr> <tr> <td>Hydrogen sulphide²</td> <td>g/h</td> <td>**</td> <td>0.7 - 141</td> <td>11</td> <td></td> </tr> </tbody> </table>						Parameter	Unit	Requirement	Results	No. of measurements	Instances of non-compliance	Hydrogen sulphide ¹	g/h	4	0.1 - 7.0	45	1*	Hydrogen sulphide ²	g/h	**	0.7 - 141	11	
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<p>The measurements in 2005 show that the requirements has been exceeded 1 time.</p>	<p>*) If a measurement value exceeds the required value, the cause must be identified and emissions must be reduced. Thus, a measurement value in excess of the requirement value does not amount to an instance of non-compliance.</p> <p>**) In the event of significant emissions, the county can require purification.</p> <p>¹ The first process stage of the production of phosphorous insecticides.</p> <p>² The second process stage of the production of phosphorous insecticides.</p>																							

Waste water from glyphosate is incinerated in the waste-water incineration plant.



Measurements in 2005 show that requirements were complied with.

Parameter	Unit	Requirement	Results	No. of measurements	Instances of non-compliance
Hydrogen chloride	mg/Nm ³	50/150**	2 - 5	2	
Metals	mg/Nm ³	5	0.002 - 0.2	2	
TOC	mg/Nm ³	20	<1 - 9	2	
Dust	mg/Nm ³	30	3 - 6	*	
NO _x	mg/Nm ³	500	104 - 229	*	
CO	mg/Nm ³	100	15 - 58	*	

* Measured continuously
 ** Middle/max

At the Claus plant, sulphur from the process air from the P-1 plant is recovered.



Measurements in 2005 show that requirements were complied with.

Parameter	Unit	Requirement	Results	No. of measurements	Instances of non-compliance
SO ₂ *	kg/h	78	15 - 71	300	

* At the beginning of January there were technical problems at the plant. This resulted in the fact that the plant was running on the additional incinerator for 5 days which gives an essentially higher SO₂ emission than under normal circumstances, 300 - 500 kg SO₂/h. This method of operation is characterized as interruption 1 and is included in the environmental approval.

Air emissions from the biological purification plant.



Measurements in 2005 show that requirements were complied with.

Parameter	Unit	Requirement	Results	No. of measurements	Instances of non-compliance
Odour	OU/s	500,000	40,000	6	
Class I subst.	mg/m ³	5	3-5	6	

Emissions from the CHP plant.



Measurements in 2005 show that CO and NO_x requirements were complied with.

Parameter	Unit	Requirement	Results (measuring intervals)	No. of measurements	Instances of non-compliance
NO _x	mg/Nm ³	650	110*	1	
CO	mg/Nm ³	650	3	1	

* One of the three turbines has been changed to a low-NO_x turbine.

Summary of own measurements of cooling water discharges in 2005

The cooling water consists of two separate systems: Internal and external. The internal cooling water is circulated in a closed system, which indirectly cools current production processes. This cooling water flow is then indirectly cooled by the external cooling water (bay water), which is drawn from Nissum Bredning and pumped back into the bay.

Requirements:

- No substances injurious to the environment must be added to external cooling water.
- The cooling water temperature must, as an annual average, not be raised by more than 9°C and never by more than 15°C.

Results in 2005:

- No substances injurious to the environment have been added to the external cooling water.
- The average temperature increase was 4.6°C. The max. temperature increase measured was 6°C. A total of 12 measurements were carried out.

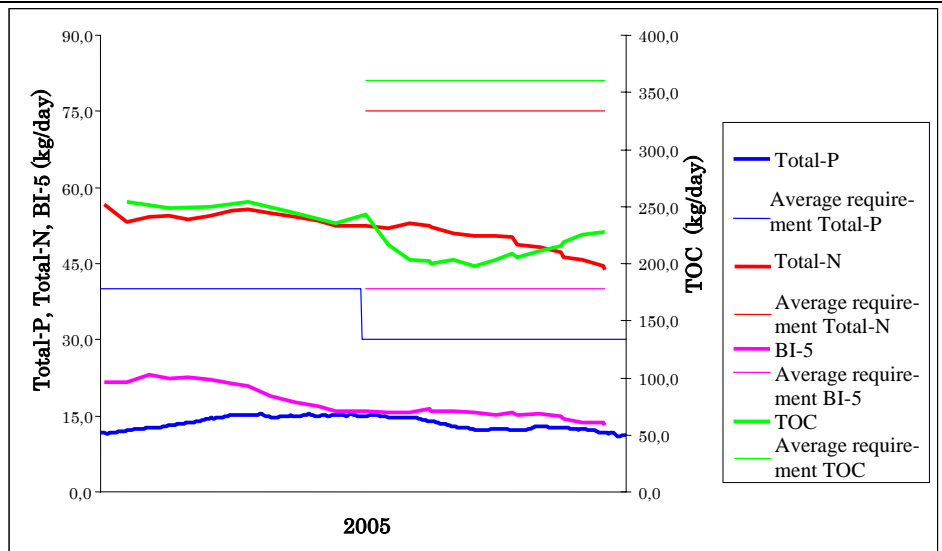
Summary of own measurements of waste-water discharges in 2005

The waste water is purified in the biological treatment plant. Here, organic phosphorous compounds are converted into inorganic phosphorus by means of microorganisms. Following sedimentation, the purified water is pumped into the North Sea. The sludge is deposited.



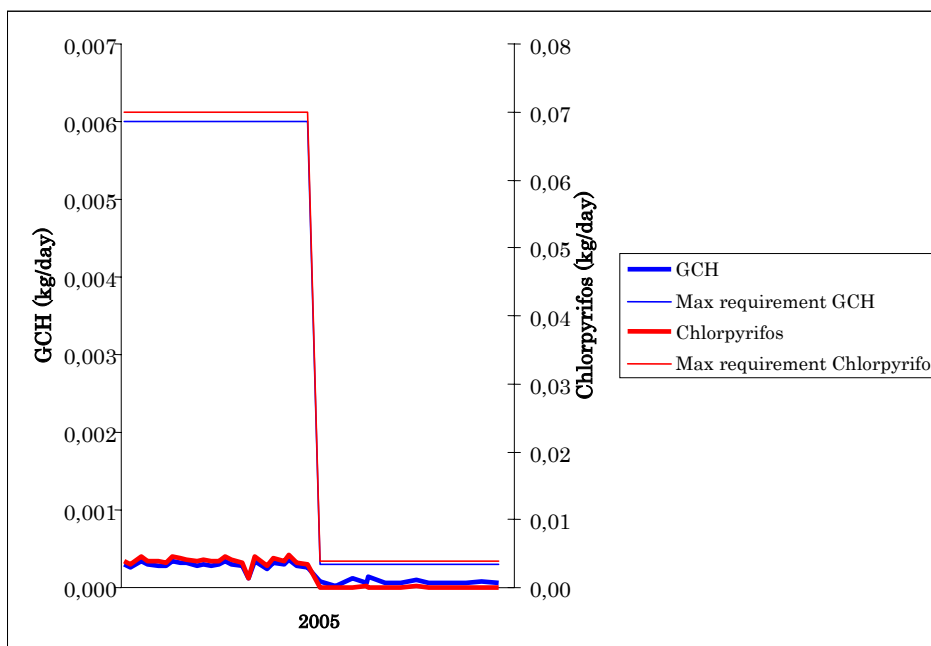
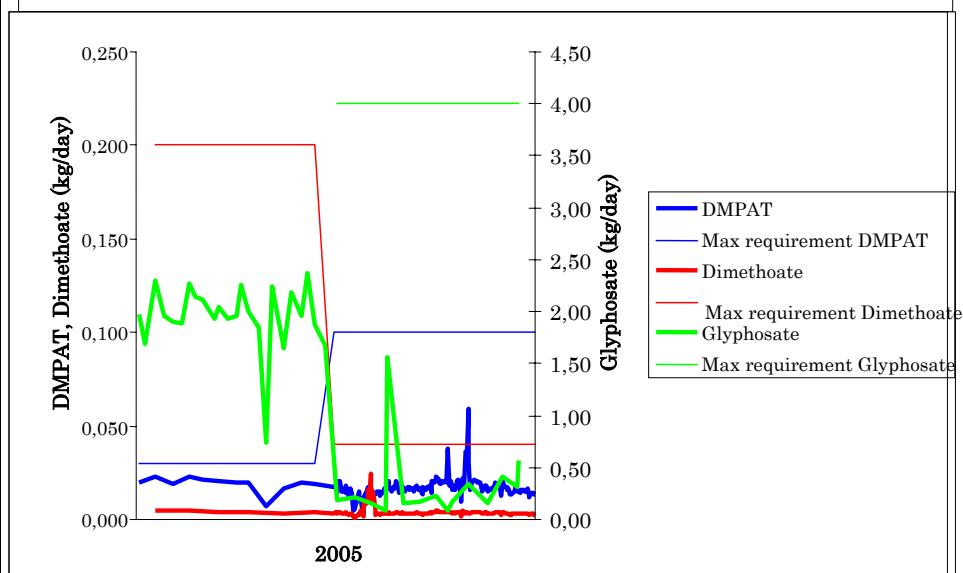
Measurements in 2005 show that requirements were complied with.

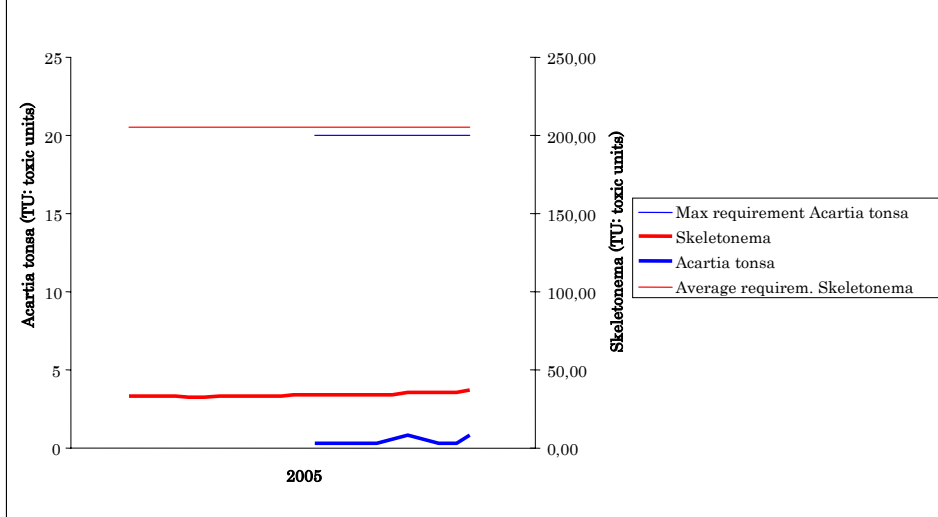
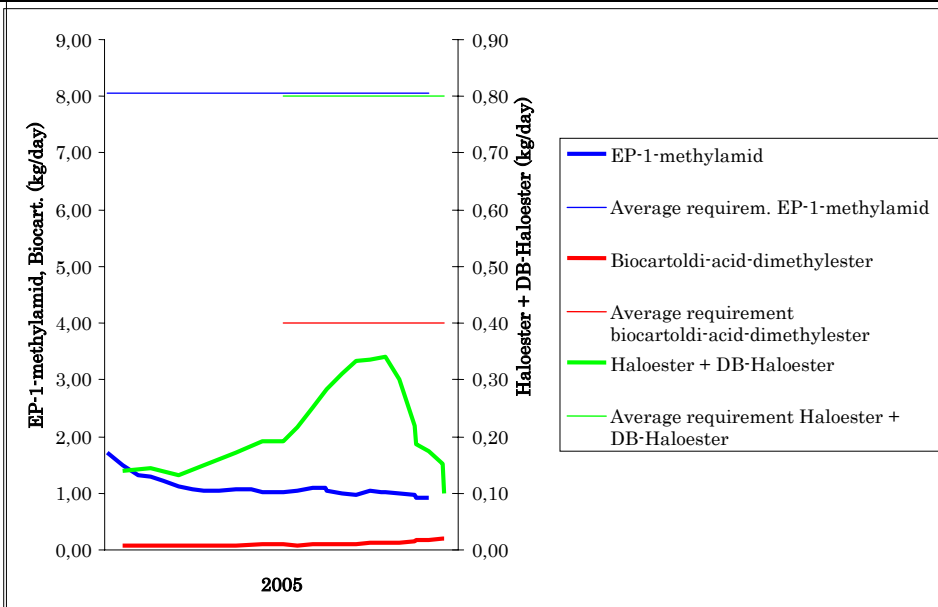
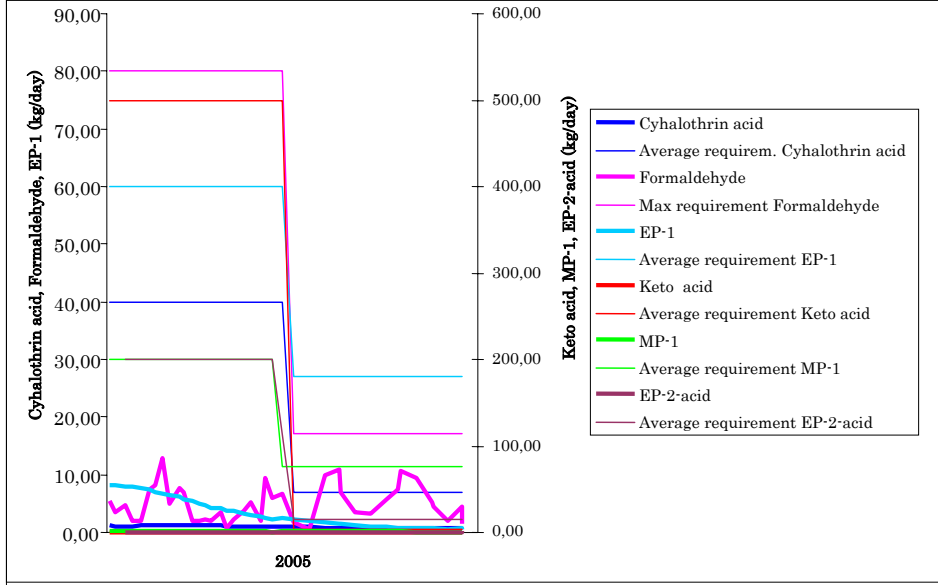
The environmental permission for the discharge of waste water was revised as per July 1, 2005.



At the revision, EU's Water Framework Directive was incorporated. This has meant that at the evaluation of the impact of the single compounds on the receiver larger safety margins than so far have been put in.

The result is that a number of requirements has been sharpened quite a lot. Therefore the curves for maximum requirements show a sudden drop in the middle of the year on the shown graphs.





Annex 1

Objectives, targets and plan of action - Status at the end of 2005 according to the certified management system

Objective: The company will comply with all legislation and rules, including statutory requirements.			
Target/Activity	Schedule	Control criteria	Status
Preparation of procedure for updating of the workplace instructions for the workshops	End 2005	Agreed procedure is certified	Started but not yet concluded
Introduce control of working environment according to the decision of the safety organisation	End 2005	Decisions are certified and observed	Started but not yet concluded

Objective: Continuously to evaluate the environmental impact and set up targets for reduction of emissions or consumption of resources, including energy, with regard to the best technology available			
Target/Activity	Schedule	Control criteria	Status
Compliance of the revised conditions concerning emission of waste water	Currently	Emission requirements are complied with	
Revision of the conditions concerning emission of gasses	According to the schedule of the county	Emission requirements are changed where it is on an environmental basis After more than 10 years of operation, requirements for control are reduced according to experience	Executed
Revision of plant specific conditions	According to the schedule of the county	Plant specific conditions for max. 2 process plants	Partly executed, expected to be completed by the middle of 2006
Maintain the energy agreement with the Danish Energy Agency	Currently	Comply with the energy agreement with the Danish Energy Agency including acceptance of the energy management system by annual auditing	
Reduce waste by improving output of raw materials at the production of PMIE with 1-2%	End 2006	Improved output has been demonstrated	Tests made in 2005 with a positive result
Reduce the emission of SO ₂ from the Claus plant in proportion to the produced quantity of P-1 with more than 90%	End 2006	Reduction has been demonstrated	Project initiated to be completed in 2006
Reduce the consumption of bromoform on the GCH plant with more than 1.5% and the consumption of DMS with more than 10% by establishing a regeneration plant	End 2005	Reduction has been demonstrated	Project completed, but savings not yet verified
Examine the possibility of adding waste hydrogen from the PMG plant to the natural gas	End 2005	Examination has been completed	Executed. Project for burning in separate boiler has been decided

Objective: To set up targets for working environment and safety			
Target/Activity	Schedule	Control criteria	Status
Safety against accidents is improved by introducing 5S in the whole production department	End 2005	5S has been introduced	Executed
Safety in connection with storage and use of chemicals is improved by introducing more stringent rules for marking and labelling	Mid 2006	Instructions have been updated and rules are complied with	Executed

Safety against ammonia leaks on receipt of tank trucks is improved		Movement sensor and automatic valves have been installed	Not executed
Attempts to reduce the strain of noise in the PMG plant by changing the steam reduction valves	End 2005	Another valve type is used	Executed
Health is improved by offering courses to stop smoking every year	Currently	Invitations are sent out every year	Executed

Objective: During development of new products and further development of existing products, to choose processes, raw materials and auxiliary substances with regard to their possible impact on humans and the environment.			
Target/Activity	Schedule	Control criteria	Status
Raw materials and auxiliary substances used in connection with new products and formulations are currently evaluated	Currently	Documentation is available	
Possibilities of minimising the use of hazardous auxiliary substances in the production is examined every second year	Beginning 2007	Result is available	
Prepare a common search system for instructions of workplace	End 2005	Search system has been established	Executed

Objective: To maintain an open dialogue with collaborators and the authorities concerning the company's policies, targets and results			
Target/Activity	Schedule	Control criteria	Status
Green accounts are prepared every year	Annually in April	The accounts are available	
Focus leaflet concerning waste water is prepared	End 2005	Leaflet is available	Not executed
Focus leaflet concerning environmental approval is prepared	Will be made when new total environmental approval is available	Leaflet is available	
Focus leaflet concerning air is prepared	Will be made when new total environmental approval is available	Leaflet is available	
Focus leaflet concerning working environment and safety is prepared	End 2005	Leaflet is available	Not executed
Focus leaflet concerning waste is prepared	End 2006	Leaflet is available	
Focus leaflet concerning the subsoil is prepared	End 2006	Leaflet is available	

Objective: To secure that all employees are qualified to meet the demands made to their work, and that they are conscious about their own influence on environment and safety			
Target/Activity	Schedule	Control criteria	Status
Introduction of log books for process operators and bottlers	End 2005	The log books have been handed over and gone through with all relevant employees	Executed
Offer safety course, modulus 2, as a refresher course to relevant employees in production/logistics and the pilot plant department	2005-2008	The courses have been held	Started

Annex 2

Key figures for the environmental performance of Cheminova in 2005

Input	Method	Unit	2005	2004	2003	2002	2001
Total energy	M	MWh	563528	581490	574183	586184	602178
• Natural gas	M	MWh	480359	489986	488030	504405	519188
03 Electricity consumed	M	MWh	81179	87414	82125	80802	82217
• (Oil, diesel, petrol)	M	MWh	1990	4090	4028	977	773
Water							
• Waterworks water	M	1,000 m ³	842	844	844	871	899
• Cooling water (bay water)	M	millions m ³	54	57	51	49	47
Total raw materials	M	Tons	136114	132824	125008	126157	124589
• Unclassified	M	Tons	15113	14213	13660	14400	14642
• Corrosive/causing local irritation	M	Tons	34026	26765	30410	31715	32217
• Hazardous/toxic	M	Tons	53093	53670	49183	47252	45803
• Inflammable	M	Tons	15530	16604	13807	14692	14170
• Harmful to the environment	M	Tons	18352	21572 ¹	17948	18098	17757
• Substances on the "List of undesired substances" ²	M	Tons	3931	3996 ³	6880	7214	8436
Total auxiliary substances	M	Tons	53623	64929	51699	53774	55039
• Unclassified	M	Tons	2443	1625	1725	2313	2505
• Corrosive/causing local irritation	M	Tons	27785	39075	27643	27608	27787
• Hazardous/toxic	M	Tons	22740	23574	21645	21922	22984
• Inflammable	M	Tons	370	273	349	607	292
• Harmful to the environment	M	Tons	285	382	337	1324	1471
• Substances on the "List of undesired substances" ¹	M	Tons	521	648	490	656	869
Total packaging	M	Tons	5754	6295	5359	5505	6000
• Metal (drums)	M	Tons	1807	1815	1550	1649	
• Plastics (pallet tanks/drums/containers)	M	Tons	2148	2661	2746	2688	
• Cardboard	M	Tons	433	563	426	455	
• Wood	M	Tons	1366	1256	637	713	

M: Measured. C: Calculated

¹ The increase compared to 2003 is due to a new and more fine-meshed principle of calculation.

² Substances listed on the "List of undesired substances" are also included in the categorisation by classification.

³ The "List of undesired substances" has been revised in 2004. The decrease compared to 2003 is due to the fact that more of the substances previously added up are not included in the list any more.

Annex 3

Key figures for the environmental performance of Cheminova in 2005

Output	Method	Unit	2005	2004	2003	2002	2001
Energy							
• Electricity sales	M	MWh	101918	104907	109714	115527	119194
Products							
• Product sales, total	M	Tons	53504	65310	52849	55464	60376
• Unclassified	C	Tons	71	25	120		
• Corrosive/causing local irritation	C	Tons	6300	6334	7521 ⁴	19793	16724
• Hazardous/toxic	C	Tons	32184	39508	30283	32592	41427
• Harmful to the environment	C	Tons	14949	19443 ⁵	14925 ⁵	3079	2225
Waste							
• Waste for recycling, total	M	Tons	3364	3230	5165	17447	28850
• Paper and cardboard	M	Tons	159	128	156	111	99
• Packaging materials	M	Tons	158	96	153	317	
• Metal	M	Tons	342	419	318	246	381
• Organic waste from canteen	M	Tons	13	13	14	16	12
• Recyclable oil waste	M	Tons	6	13	5	13	11
• Sand-blasting agent	M	Tons	25	15	15	17	32
• Recovered raw sulphur	M	Tons	2661	2546	2338	2518	2499
• Cheminova Fosfat (dried sludge)	M	Tons			2166	14209	25816
• Waste for incineration, total	M	Tons	931	942	970	1093	1273
• General household waste	M	Tons	63	60	58	56	113
• Industrial waste	M	Tons	83	80	72	89	52
• Active coal	M	Tons	755	766	817	911	1030
• Crushed wood	M	Tons					58
• Building waste	M	Tons	18	24	15	25	12
• Confidential papers	M	Tons	12	12	8	12	8
• Total depositing	M	Tons	41071	46318	43168	16797	66
• Building waste	M	Tons	28	28	41	34	54
• Industrial waste	M	Tons	3	15	38	7	12
• Sludge from purification plant (wet)	M	Tons	41040	46275	43089 ⁵	16756 ⁶	
• Hazardous waste ⁷	M	Tons	2661	3286	2752	1563	1381
• Total waste	M	Tons	48027	53776	52055	36900	31570

M: Measured. C: Calculated

⁴ A reclassification of a product, which has been produced in Cheminova for many years, has caused a displacement of a large amount from "Corrosive/causing local irritation" to "Harmful to the environment".

⁵ The increase is primarily due to increased sales of a single product.

⁶ Sludge from the biological waste-water treatment plant which can no longer be sold as fertiliser.

⁷ Dangerous waste is destroyed by approved facilities.

Output	Method	Unit	2005	2004	2003	2002	2001
Emissions to water							
• Cooling water	M	millions m ³	54	57	51	49	47
• Waste water	M	millions m ³	1.3	1.3	1.3	1.3	1.4
• Biological oxygen consumption, BI ₅	C	Tons	6	9	11	10	6
• Total organic carbon, TOC	C	Tons	97	109	127	180	118
• Total phosphorus, P	C	Tons	5	5	5	9	6
• Total nitrogen, N	C	Tons	19	22	35	22	25
• Chrome	C	kg	11	8	29	32	
• Metal H1	C	kg	32	49	81	90	
• Mercury	C	kg	< 0.9 ⁸	< 0.12 ⁸	< 0.65 ⁸	< 0.65 ⁸	
• Arsenic	C	kg	70				
• Cadmium	C	kg	< 0.4				
• Nickel	C	kg	58	10	61	67	
• Zinc	C	kg	< 70	19	< 84	< 84	
• Halogenating organic compounds	C	kg	1208	2534	2700 ⁹	< 113	
• Phenols	C	kg	372	366	331 ¹⁰	< 113	
Emissions to air ¹¹							
• Flue gas	C	1000 tons	1607	1506	1554	1701	1729
• Sulphur dioxide, SO ₂	C	Tons	403	341	322	437	450
• Nitrogen oxide, NO _x	C	Tons	128	132	139	182	168
• Carbon dioxides, CO ₂	C	1000 tons	116	116	116	121	125
• Chrome	C	kg			< 0.26	< 0.26	
• Metal H1	C	kg	0.30	0.24	< 0.26	< 0.26	
• Nickel ¹²	C	kg			< 0.26	< 0.26	
• Cadmium	C	kg	0.08	< 0.1			
• Arsenic	C	kg	1.01				
• Halogenating organic compounds	C	kg	4680	5692	5620 ⁹	3386	
• PCDD + PCDF ¹³	C	mg				2	
• PAH ¹⁴	C	kg				0.36	
• Chlorine and inorganic chlorine compounds	C	kg	765	1654	1791 ⁹	742	
• PM10 (dust)	C	kg	598	450	300	630	
Noise ¹⁵							
	M	dB(A)					45-59
Odour							
	C	1000 OU/sec.	191	191	210	163	426
Unintended events ¹⁶							
• Emissions to soil	M	No.	13	4	4	5	
• Other unintended events	M	No.	33	20	21	28	

M: Measured. C: Calculated

⁸ Where the volume is stated as being < a figure, the value is calculated as ½ x the detection limit x the volume of water or air.

⁹ A new production started up in 2003 has caused this increase.

¹⁰ New principle for calculation.

¹¹ Emissions to air are inclusive of the emissions caused by the electricity sold.

¹² Chrome and nickel have not been measured in 2004 and 2005.

¹³ Measured on air incineration plant in 2001.

¹⁴ Measured on waste-water incineration furnace 1 in 1995. Conversion to annual quantity gives 0.36 kg.

¹⁵ Noise has not been measured since 2001. There is no noise nuisance from the company.

¹⁶ The systematic registration of unintended events started in 2002.



Ringkøbing Amt

Teknik og Miljø

Cheminova A/S
P.O. Boks 9
7620 Lemvig
Denmark

Damstrædet 2
Postboks 154
6950 Ringkøbing
Tlf. 96 75 30 00
Fax 96 75 35 35
www.ringamt.dk
tm@ringamt.dk

Date 6 April 2006
Journal no. 8-76-2-673-5-04
Handler Dorte Ravnsbæk
Direct phone 96753616

Company CVR No. / P. No.: 12760043/1.000.441.076

Statement concerning Green Accounts 2005, Cheminova A/S

On March 17, The County of Ringkøbing has received the company's Green Accounts by letter/mail.

In pursuance of Section 12, Subsection 2 of the statutory order from the Ministry of Environment and Energy on the duty of certain listed activities to draw up green accounts (Statutory No. 594 of July 5, 2002) the County of Ringkøbing shall comment on the accounts:

The County of Ringkøbing has no information on the company, which deviates from the information contained in the accounts (cf the standing points included in the comments). Nor does the County of Ringkøbing have information on any other material matters, which should have been disclosed.

It shall be mentioned that the County of Ringkøbing has received no complaints of the company during the period covered by the accounts.

Yours sincerely

Dorte Ravnsbæk

Enclosure 1

The County's comments on the Green Accounts 2005 for Cheminova A/S

Information, which the County is obliged to take a position on according to the guidance on green accounts¹, is written in the white fields. Additional comments are given in the hatched fields.

Introductory particulars (§5)

Points (§) with belonging text from the statutory order for working out green accounts		County's comments
5.1.	Name and address, CVR and P number of the company plus controlling authority.	OK
5.2.	The point(s) in the list under which the company has been environmentally approved.	OK
5.4.	Information on most significant environmental approvals granted to the company including information about the recipient for the direct discharge of waste water and permit for connection to public waste-water treatment facilities:	OK
	a) Information on most significant environmental approvals granted to the company.	OK
	b) Information on the recipient for the direct discharge of waste water.	OK
	c) Permit for connection to public waste-water treatment facilities.	OK
5.5.	Date of the latest revision of the company's environmental approval(s).	OK
5.6.	The brief qualitative indication of most significant resource and environment parameters characterizing the primary activities of the company and the secondary activities, where relevant.	OK

Statement by the management (§6)

6.6.	Information on whether there have been any instances of non-compliance in the accounting period, and if so, an explanation on what the company has done to meet the non-compliances and to prevent possible recurrences.	OK
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¹ Guidance on green accounts - for companies and environmental authorities, No. 2 of 2003.

Information on environmental issues (§7)

7.1.1 Subj.1	Information on the company's significant consumption of energy, water and raw materials.	Information is available.
7.1.1 Subj.2	Information on significant types and volumes of polluting substances which	
	d) are used in production processes (§7, item 1 No. 1a).	Information is available.
	e) are emitted by the company to air, water and soil (§7, item 1 No. 1b).	Information is available.
	f) form part of the company's products (§7, item 1 No. 1c).	OK
	g) form part of the company's waste (§7, item 1 No. 1d).	OK
7.1.3	Information on the company's waste production and handling, including information on:	
	a) the total volume of waste (§7, item 1 No. 3a).	Information is available.
	b) the volumes (out of the total volume) destined for recycling, incineration or depositing (§7, item 1 No. 3b).	OK
	c) distribution of waste volume into significant fractions (§7, item 1 No. 3c).	OK
	d) the company's efforts within the field of waste-sorting (§7, item 1 No. 3d).	OK
7.1.4	Information on noise, dust and odour (§7, item 1 No. 4).	Information is available.
7.2.	Information that more items of the accounts in §7, item 1 are not relevant because they are not found or the like (§7, item 2)	The company has included the mentioned types of emissions as they are found at Cheminova A/S.

Summary of own measurements (§9)

9.	A summary of the results of the company's own measurements which shows in outline the correlation between the company's measurement results and the terms of the approval (§9).	<p>Emissions to water: OK</p> <p>Emissions to air: OK</p> <p>Emissions to dust: OK</p> <p>Emissions to odour: OK</p> <p>UIE: The company has not yet succeeded in "breaking the curve" in spite of increased attention on this area. So the county agrees that the efforts should be further intensified in order to reduce the number of UIE in the company.</p> <p>Emissions to soil: It is stated in the accounts that there have been 13 unintended events with spillage to unfortified areas. This is correct. The county assesses that in 2005 Cheminova has increased the efforts concerning clearing after</p>
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		<p>spillage to unfortified areas. The county has currently asked for additional information on placing of spillage and results of clearing. Only to a limited extent, Cheminova has responded to these requests which means a reduction of the county's possibilities to evaluate whether the clearings have been made satisfactorily so that in the long term they will not form any risk for people and the environment.</p>
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Complaints received by the County

6.7.	Complaints to the County in the financial year about the company.	In 2005, the County has received no complaints about the company.
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Dorte Ravnsbæk
Dorte Ravnsbæk