

Environmental report 2006 for  
Kraft Foods Norway, plant Disenå  
Safety – Security – Environment



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## **SAFETY, SECURITY AND ENVIRONMENT**

### **Environmental report 2006**

As a part of the environmental commitment it is the 12th time Kraft Foods Norway, plant Disenå is publishing an environmental report. The report is documenting the raw material and energy usage, waste production, environmental effects, actions and emissions. The report is also covering safety and security topics.

Kraft Foods Norway, plant Disenå is certified according to the standards ISO 14001, ISO 9001, BRC (British Retail Consortium) and is registered in EMAS (ECO Management and Audit Scheme).

### **Plant Disenå**

Kraft Foods Norway is a part of Kraft Foods Inc. an international food company. Kraft Foods in Europe is producing e.g. cheese, chocolate, coffee and salty snacks. Kraft Foods has two salty snacks facilities in Nordic, one in Lithuania, one in Ukraine and one in Turkey.

Kraft Foods, Disenå, located in Sør-Odal is producing chips and kettlechips from fresh potatoes, snacks from pellets e.g. "Potetskruer, Potetringer and Superchips", and peanuts and popcorn. The product portfolio is also including imported brands like "Old El Paso", "Solletti Saltstenger" and Tortillachips. The facility in Disenå has approximately 140 employees.

### **Processes**

The production is build around seven production lines, mainly following the same principle. The products are fried, added seasoning or salt and packed. The exception is the popcorn line where raw corn is being popped to popcorn. Two of the lines are producing the company's well known brand "Potetgull". The processes are requiring water and energy. Waste, as potato peel, starch, process water, vegetable oil, plastic and paper, is produced.



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## ENVIRONMENTAL POLICY

### Kraft Foods, Disenå' Policy

- Our products shall satisfy the consumers high expectations to composition, taste and appearance and our products shall be safe to eat.
- Our customers and consumers wish and needs for information and service shall be complied. Our products shall be delivered at the right time and place.
- To be able to live up to our high goals we are aiming to create motivated, conscious and committed employees through development and training of people. Our employees shall be included in a safe working environment preventing any damage to humans, environment or machines.
- Our company shall be base on a high ethical standard towards suppliers, customers, authorities, owners, own employees and others interests. We aim to be a reliable company in compliance with law and regulations applicable for company. We are aiming for an open dialogue based on mutual respect.
- We aim to produce high quality snack products in an environmental safe way. We are working for a sustainable growth, and aim to be a reliable and compliant company with respect to all matters in a way that we are not causing any harm on human, animals and plants in our environment. We will not use more resources than necessary and we are aiming to work continuously to reduce our influence on the environment.
- We are always aiming to improve our selves with respect to results, environment, quality, health and security.

### The facilities environmental commitment and environmental management system

The production unit in Disenå has been committed to environmental issues for years before the facility was EMAS registered. There were already well organized solutions on how to handle waste when the factory started the environmental registering work. Our wastewater treatment plant was also build a few years earlier and has been functioning very well.

The production unit was EMAS registered in June 1996, showing a continued commitment for environment in our daily work. EMAS stands for ECO Management and Audit Scheme.

The goal of EMAS is a sustainable growth in terms of preventative actions, reducing and best of all removing pollution. The industry itself is responsible for it's owns actions; it must pay for the environmental actions required, and need to be leading in the environmental area.

Kraft Foods, Disenå takes part in the national material collection company "material retur" working to collect, recover and recycle packaging. In this way we are also taking responsible for the packaging waste outside the area of the factory.

The management system at Kraft Foods Disenå is covering product quality, environment, foods safety and workers environment. In 2006 the scope of the management system was including production and packing. The consideration to environmental impacts is covered in the



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production process, raw material and packaging material selection and buying of new machines and equipment.

The Disenå plant is working active with Kraft Foods's SSE (safety, security and environment) requirements. These are comparable with the Norwegian regulation for internal control on safety security and health, except the requirements are more detailed.

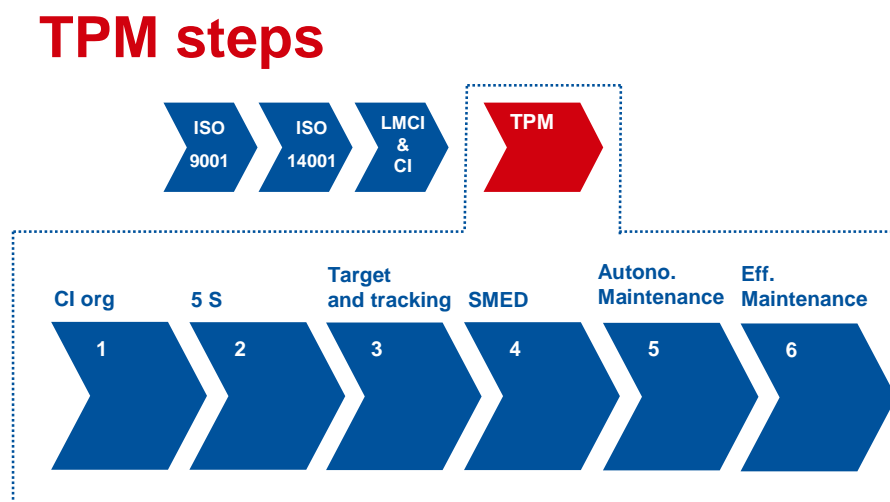
EPI (Environmental performance indicators) – is being reported to Kraft Foods centrally every year. The EPI's are including e.g produced volume, water usage, energy usage, waste, hazardous waste and processed water. The facility has internal environmental goals and is being followed up annually by the Company centrally.

After an introduction of Kraft Foods Continuous Improvement (CI) program in 2001, the work with Total Productivity Management (TPM) was started in 2005. Implementation of TPM goes through 6 steps (figure 1):

- CI organization of employees
- 5S (Systematizing, Shine, Sort, Standardize and Secure)
- Key performance indicators (KPI's)
- SMED - Single Minute Exchange of Die
- Autonomous Maintenance
- Effective Maintenance

During 2006 most of the production lines were 5S certified. The active follow up of KPI's for the production, quality and environment in all parts of the organization has given a positive effect to be able to reach our goals.

**Figure 1.** Total Productivity Management (TPM) implementing steps.



## RAW MATERIAL USAGE AND PRODUCTION VOLUME

The facility's raw material usage and permits for 2006 are shown in table 1. The permits are given by SFT (Norwegian pollution control authority).

**Table 1.** Raw material usage and production volume in 2006.

Raw material / finished product	Volume 2005 (tons)	Volume 2006 (tons)	Change in %	Permits (SFT)
Potatoes	24 211	23 491	- 3	45 000 Tons
Pellets, peanuts, corn	3 723	3 869	+ 4	-
Total raw material usage	27 934	27 360	- 2	

Potato usage was reduced as a consequence of lower production volume for chips. Changed production pattern has resulted in lower consume of pellets, while production and sale of peanuts increased in 2006.

The total production volume in 2006 is shown in table 2. The permits are given by SFT and are independent of production volume.

**Table 2.** The production volume in 2006.

Production volume	Volume 2005 (tons)	Volume 2006 (tons)	Change %	Permits (SFT)
Potato chips	6 923	6 490	- 6	12 000 tons
Snacks	4 129	4 622	+12	7 000
Total production volume	11 052	11 113	+0,5	-

Total production volume in 2006 increased slightly compared to 2005. This is due to slightly higher demand.



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## ENVIRONMENTAL IMPACTS FOR SNACKS PRODUCTION

The facilities environmental aspects and impacts are evaluated annually by the facilities management group.

The environmental aspects are separated in two categories: The significant aspects, which should be addressed as a priority to the organizations environmental management system, and the non-significant aspects. The environmental aspects may change status when goals are fulfilled.

For every environmental aspect a risk assessment is to be prepared and the environmental aspects are graded according to the risk. Parameters evaluated in these risk assessments are e.g. environmental compliance with regulations, if control mechanisms to reduce and control the environmental risk are in place or other parameters as reduction of product quality, customers or governments concerns.

### The facilities direct and indirect significant environmental aspects are

**Releases to water** as COD (Chemical oxygen demand), SS (suspended solids) and Tot-P (total phosphor) are contributing to algae growth and higher oxygen demand when the algae's are broken down. Releases to water are way below the facilities permits for releases to water.

**Water usage** is not polluting, but water as a resource need to be controlled as water going into the process is the same as processed water going back through the waste water treatment plant, generating releases to the recipient.

**Sludge as soil fertilizer** is considered a risk for distribution of diseases when the sludge is not heat treated. Kraft Foods in Disenå has an installation for stabilization and sanitation of sludge.

**Energy usage – Emissions to air** Oil heating is giving emissions to air contributing to acid rain and global warming. During the last years the facility has replaced oil heating by gas, having a cleaner combustion and totally giving a lower environmental impact.

**Energy usage – Electricity** Usage of electricity is under continuous evaluation and actions to reduce usage are implemented wherever possible.

**Waste** Organic waste is used as animal feed, starch is delivered for production of spirits, oil and fat, glass, plastic, iron and metal are recycled, concretes, stone and soil is going to an approved internal deposit. Hazardous waste is sent to an approved waste collector. Unsorted mixed waste is sorted at the waste collecting company into fractions for energy recovery, material recycling and landfilled waste.

**Transport** From 1996 the customers took over the responsibility for distribution of finished goods. Kraft Foods in Disenå do not have any direct impact on the transport. The facility is involved in development of optimal packaging giving an effective transport for the whole value chain.



### Releases to water

All releases to water are being treated at the facilities own waste water treatment plant. The releases to water are well below the Norwegian pollution control authorities permits, still an ongoing effort to reduce the releases are continued. Compared to the releases from the agricultural production, Kraft Foods has a minor impact on the river Glomma, flowing close to the plant.

The facility is cleaning the process water in a modern wastewater plant with an average cleaning effect of 97% for COD, Total-P, and SS. Cleaned water is released to the river Glomma. Heat treated sludge from the cleaning process is used as soil fertilizer. From 2002 fiber produced from newspapers has been added to the sludge. This has resulted in reduced chemical usage and sludge volume. This also improved the working environment on the waste water treatment plant, as the odor in the working environment has been considerably reduced.

The permits from SFT are giving strict requirements to water treatment and control. The releases are controlled by the facility every week against given limits. Any unintended releases have to be immediate reported to SFT. The facility had no unintended releases in 2006. Figure 2 shows a graphical overview over releases from the wastewater treatment plant. Table 3 shows the total release to water in 2006.

**Table 3.** Total release to water in 2006.

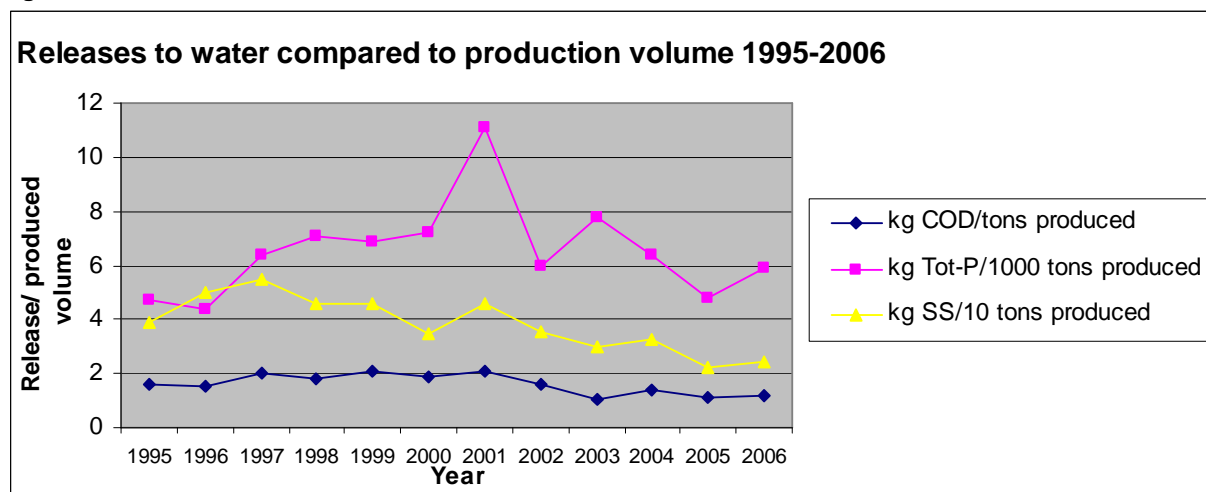
Release to water	Total release in tons		Change in % total release	Permits, SFT tons/ year
	2005	2006		
COD: Chemical oxygen demand (suspended nutrition in water)	12,6	12,8	+1	68
Tot-P: Total phosphor content in water	0,05	0,06	+24	0,2
SS: Suspended solids (unsolved particles in water)	2,2	2,4	+9	15

Releases of COD, SS and Tot-P have increased from 2005 to 2006 both in absolute values (table 3) and per ton produced volume. The increase is due to variations in potato quality which gives an uneven input to the wastewater treatment plant from year to year. The releases are well below the permit limits for COD, SS and Tot-P. In 2006 the increase in release per tone produced volume was for COD 1%, Tot-P 23% and SS 9% (table 4 and figure 2).



**Table 4.** Releases to water per ton produced volume.

Release to water	Release per tone produced volume		Change in % per tone produced volume
	2005	2006	
COD: Chemical oxygen demand (suspended nutrition in water)	1,1	1,2	+ 1 %
Tot-P: Total phosphor content in water.	4,8	5,9	+ 23 %
SS: Suspended solids (unsolved particles in water)	2,2	2,4	+ 9 %

**Figure 2.** Release to water from 1995 to 2006.

## Solid Waste

The production facility in Disenå is continuously working to develop well functioning waste collection and handling routines.

Heat treated sludge from the waste water treatment plant is used as soil fertilizer. Starch from the potato production processes are sold as raw material for spirits. Potato peel and waste from other snacks production are delivered for animal feed.

The facility has an agreement with the waste collection and disposal service company, "Veolia" regarding a green responsibility program called "Grønt ansvar". This agreement ensures an innovative approach to environmental friendly, practical and sustainable waste management solutions. Most of all waste is sorted internally (plastic, paper, carton, metal etc), while the waste collection and disposal company is sorting mixed waste.

99% of all waste from the facility is recycled or energy recovered or used as soil fertilizers, see figure 4. In 2006 approximately 50% of mixed, unsorted waste from production was energy recovered and 35% was recycled.

Our production is resulting in packaging waste at the end consumer. The packaging at the consumer will mainly go to municipal deposit or energy recovery.

Kraft Foods in Disenå is a member of an organization called "Materialretur", which is a business community organization for waste packaging. This organization has the responsibility to collect and recycle cardboard, plastic, paper, glass and metal. The arrangement is founded by a fee all members are paying per unit packaging used.

The amount of waste depends widely on the raw material quality of the potatoes used in the production. The potato quality depends on the growing season and will vary from year to year. Due to this relative amount of production waste is not giving an unambiguous picture. Kraft Foods in Disenå is working continuously to secure as high potato quality as possible. There are high quality measures required on potatoes going into the factory. The facility has hired own agro advisers to guide and follow up the farmers.

The facility is generating relative low amounts of hazardous waste. There are only chemicals and oil-residues from the laboratory and maintenance & repair department and fluorescent tubes. All hazardous waste is stored according to regulations and delivered to an approved waste collection and disposal service company.

In below table, table 5, fraction and amount of waste produced at the facility in 2006 are listed. Figure 3 shows generated waste compared to produced volume.



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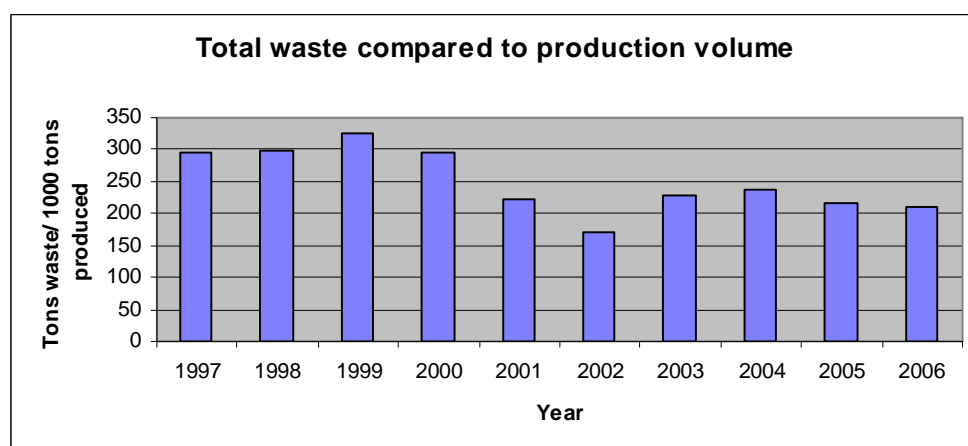


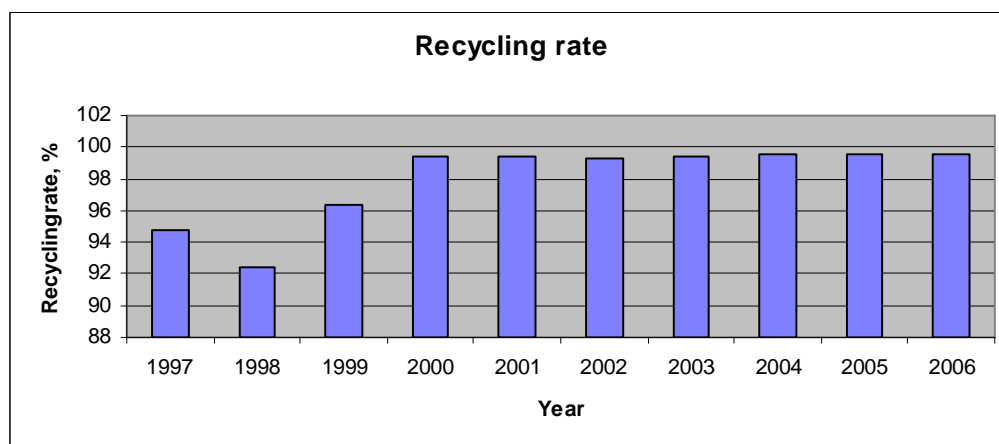
**Table 5.** Total solid waste in 2006 divided in separate fractions

Waste fraction	Amount, tons	Material recycling, tons	Energy recovery, tons	Landfilled, tons	Approved waste collector
Paper	0,7	0,7			
Cartoon	246	246			
Plastic	22	4,0	18		
Glass	2,5	2,5			
Iron and metal	11	11			
Treated wood	70		70		
Potato waste*	591	591			
Vegetable oil	308	308			
Starch*	499	499			
Wet organic waste	19	19			
Sludge from wastewater treatment plant	193	193			
Landfilled waste	41	13,5	20	7,4	
Mixed, unknown, reconstruction waste etc.	0	0	0	0	
Hazardous waste	2,6				2,6
Wheels (rubber)	0				
EE-waste	5,0	5,0			
Soil sorted	439	439			
<b>Total 2006</b>	<b>2448</b>	<b>2330</b>	<b>108</b>	<b>7,4</b>	<b>2,6</b>
<b>Total 2005</b>	<b>2449</b>	<b>2371</b>	<b>67</b>	<b>9</b>	<b>1,5</b>

\* Calculated as dry mater (DM)

The total amount of waste in 2006 was approximately the same as in 2005. This is corresponding to relatively stable volume and production in the facility.

**Figure 3** Total amount of waste in relation to production volume.

**Figure 4.** Recycling rate of generated waste from 1998-2006.**Emissions to air:**

The facilities emissions to air (table 6) are mainly coming from oil and gas heating. The emissions to air are reduced compared to 2005 both total and per ton produced volume. Better efficiency on the lines can be a contributor to reduce usage of oil and gas.

Kraft Foods in Disenå has a minimal transportation of finished goods as the customers are responsible for distribution and type of transport. The company is cooperating with the customers to develop optimal packaging solutions and to enable efficient and rational handling of pallets and boxes. Finished goods is picked up at Disenå and distributed directly to the east part of the country. Finished goods going to the north of Norway is mainly transported by train from Oslo. Finished goods going to mid, west and south of Norway is transported partly by train and partly by car directly to the customer. The facility has only one truck delivering goods in the surroundings of Oslo.

Emissions to air are a contributor to the greenhouse effect and acid rain.

The production unit has six cold storage units. In one of the units the refrigerant liquid was changed in 1998 from Freon R-12 to R 134A, which does not have any ozone-destructive effect. All other cold storage units are still using Freon R-22.

**Table 6.** Total emissions to air in 2005 and 2006 (absolute numbers).

Type of emissions to air	Emissions 2005, tons	Emissions 2006, tons	Change %
SO <sub>2</sub> (Sulphure dioxides)	0,24	0,19	-21
CH <sub>4</sub> (methane)	0,11	0,10	-8
CO <sub>2</sub> (carbon dioxides)	5309	5083	-4
N <sub>2</sub> O (nitrogen oxides)	0,015	0,013	-11
NO <sub>x</sub> (nitrogen oxides)	5,2	5,1	-4
VOC (volatile organic compounds)	0,10	0,08	-21

By calculating emission to air against produced volume the same reduction trend is found as for absolute numbers.



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## WATER AND ENERGY USAGE

The facilities water and energy usage and SFT's permits are shown in table 7 and 8.

**Table 7.** Total water and energy usage in 2006.

Water / energy	Total usage 2005		Total usage 2006		Absolute change in usage (%)	Permits
Light oil	216	Tons	188	Tons	- 13	2 700 Tons
Electricity	7227 780	KWh	7175 465	KWh	- 1	-
Propane/ butane	1 651	Tons	1 496	Tons	- 9	-
Water	130 246	m <sup>3</sup>	143 555	m <sup>3</sup>	+ 10	-

**Table 8.** Water and energy usage per ton produced product.

Water / energy	Total usage per ton produced volume 2005		Total usage per ton produced volume 2006		Change from 2005 pr ton produced volume (%)
Light oil	20	Tons	17	Tons	- 14
Electricity	654	KWh	646	KWh	- 1
Propane/ butane	149	Tons	135	Tons	- 10
Water	12	m <sup>3</sup>	13	m <sup>3</sup>	+ 10

Usage of light oil per produced volume is reduced by 14%. This is a result of the change from light oil to gas as energy source in the production. During this period the usage of gas has correspondingly increased. Usage of gas was also reduced both in absolute numbers and per ton produced volume. This can be due to higher line efficiency (same production in shorter time) and well functioning adjustments of burners and heat recovery units. Usage of electricity was also reduced in 2006, both in absolute numbers and kWh per produced ton products. Water usage increased in 2006. This is due to process and potato quality variations. There is a high focus within the plant to keep the usage of water and energy as low as possible in all processes. This is followed up by the KPI's. Absolute numbers are showing the same trends as for relative usage.

## INFLUENCE ON NEIGHBORS

The most important aspects that can affect our neighbors are noise from the waste water treatment plant and frying odor from the production. Measurements done in 2004 showed that noise from the waste water treatment plant is compliant with guidelines from SFT. This is also in accordance to previous measurements. The facility has a good dialogue with the neighbors and other interested parties regarding environmental issues.

New measurements of noise emissions are planned in spring 2007.



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## ENVIRONMENTAL GOALS

Facility reached the following from 2005 to 2006

Goal	Results
<b>Reduce the relative water usage by 5 %</b>	Water usage increase by 10% compared to 2005, both measured in absolute numbers and compared to production volume. This is due to higher water usage in the potato handling process on the chips lines.
<b>Reduce the relative energy usage by 5%</b>	Usage of light oil was reduced by 14%. Usage of electricity was reduced by 1%. Usage of gas (propane) was reduced by 10% per ton produced volume in 2006. Continued focus on energy reduction projects will continue where possible.
<b>Sanitation and stabilization 93 % of all sludge.</b>	Result was 51 % and target was not achieved. This was due to malfunctioning in the installation for sanitation and stabilization of sludge.
<b>Reduce waste by 5 %</b>	Amount of waste per produced volume was reduced by 1,5% compared to 2005.
<b>Reduce releases of COD, Tot-P and SS to water by 2 %</b>	Amount of COD increased by 1%, SS increase by 23% and Tot-P increased by 9%.
<b>Continue working to reduce number of work related accidents</b>	Number of accidents was 2 in 2006. This is equal to 2005.
<b>Continued focus to keep and develop a well working environment</b>	A Global employee survey was carried out within Kraft Foods in 2006.



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## ENVIRONMENTAL GOALS

The facility is aiming to reach the following goals in 2007 in relation to 2006.

Goal	Action
<b>Avoid increased relative water usage in 2007 (despite more water demanding production).</b>	More focus on water usage in the production processes. Create working groups and register specific water usage.
<b>Reduce the relative energy usage by 1%</b>	Continue energy reduction projects wherever possible and follow up usage closely.
<b>Sanitize and stabilize 93 % of all sludge</b>	Add fibers in sludge silo to improve the process.
<b>Reduce waste by 1 %</b>	Optimize the peeling and sorting process. Continuo to follow up of waste volumes.
<b>Keep the waste recycling rate on 99,5 %</b>	Continued focus on waste sorting and handling.
<b>0 working accidents in 2007</b>	Focus on everyday routines and preventative program.
<b>Behavior observation</b>	Execute 52 behavior observations during 2007.
<b>Safety scan</b>	Execute 104 safety scan during 2007.



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## HEALTH AND SECURITY

### Health

Kraft Foods Disenå was in 2006 working with the company health service called "Odal Felles Bedriftshelsetjeneste" (OFB). In the beginning of 2007 OFB joined another health service called "HMS Øst" which will function as our health service company for the future. The company health service can offer training, noise measurement and other measurements and follow up the workers health.

The facility has also signed an national agreement initiated by the Norwegian authorities to focus on an "including working environment" The agreement is called "inkluderende arebidsliv, (IA)". The absenteeism rate increased from 7,6% in 2005 to 9% in 2006.

### Security

In 2006 two accidents were registered leading to lost working days. The total number of accidents became the same as in 2005.

The company is highlighting preventative work and has a strong focus on safe working routines to avoid accidents. To increase this focus two new preventative safety and security programs were implemented during 2006.

**Behavior observation Program** - A systematic method leading to a reduction in accidents and improved security, by strong focus on observations, identifying, measurement and correction of negative working routines in the working environment.

**Safety Scanning** – A short safety inspection (15 minutes observation/ 10 minutes discussion) involving all functions including the plant management.

Additionally the use of "near miss reports" has been improved. For all incidents a follow up and implementation of actions are a part of the work for all lines and working stations.

### Inspection and instruction

In 2006 the facility were audited by the Norwegian Veritas (DNV) after the EMAS regulation. Non conformities found were easily closed.

In 2005 Kraft Foods in Europe signed a new contract with DNV regarding an umbrella certification for the central unit together with all the European facilities. This certification is valid for ISO 9001 and ISO 14001. In 2006 plant Disenå was for the first time audited against this umbrella certification. No serious nonconformities were found.

A control from the county governor was performed at the facility in 2006. No decisions from the authorities were given related to the audit, only an observation.

The facility has been in compliance with all permits given by the authorities in 2006.



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**Other information**

- Factory address: Kraft Foods Norge AS, 2114 Disenå
- Environmental controller: Det Norske Veritas Certification AS, Veritasveien 1, 1322 Høvik
- Next environmental report is to be prepared at latest: 01.06.2008.

**Disenå,  
Report is made by:**

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Kraft Foods Norway, plant Disenå

**Report is approved by:**

**Stefan Granlund**  
General Director  
Kraft Foods Norway AS



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