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Progress report 2016

The report shows results up to 2015

IKEM
Innovations- och kemiindustrierna i Sverige

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Annual follow-up

Each year IKEM – Innovation and Chemical Industries in Sweden compiles a progress report over the chemical industry's commitment in the area of Responsible Care in Sweden. The progress report covers members that are manufacturers of chemicals. Responsible Care is the chemical industry's commitment for continuous improvements in the areas of health, safety and the environment. The commitment is based on openness and trustworthiness.
The programme was introduced in Sweden in 1991. Through various publications, seminars, etc, IKEM works for active Responsible Care efforts at the companies. However, it is important to note that the work is conducted individually at each company. The companies have also formed regional networks in order to exchange experiences in this area. To obtain an idea of the impact of the Responsible Care work on a national basis, a nationwide follow-up shall be carried out annually. This reflects the aim of openly reporting the results achieved.
The first report was published in 1996. It showed how some key indicators had developed between 1990 and 1994. From the survey concerning 1995 and onwards, the Key Performance Indicators (KPI) questionnaire has been sent to all companies committed to Responsible Care. To get a better basis for comparison we now compare data in a 10 year perspective. In this report we therefore compare the data from 2006 and onwards.

New indicators
During the years, a number of new indicators have been included. Examples are the companies' intentions concerning environmental management systems, if they actively inform their customers in safe handling of their products (a part of Product Stewardship) and about the distribution of men and women at the company. Other new indicators are the policies for child labour and human rights.

Data changes
The summary has no claim to be complete. This is due to a number of factors. In some cases, for example, a company's operations have changed so that comparisons between the years are impossible to make. In other cases information is lacking. Together, this means that comparisons between 2006 and the following years are sometimes based on a greater number of companies, and sometimes on only a small number of companies. It shall be emphasized that a direct comparison between reports from different years is not possible since the companies included are not always the same. Also, the quality of the data might have improved during the period which could lead to misguiding comparisons between years.

Reporting companies 2015
A total of 35 companies sent in KPI questionnaires for 2012. This is an increase of one company from the previous year. It should be made clear that for membership in the Responsible Care- programme, the company is required to report the key indicators.
The reporting companies have 12 867 employees and an annual production of approximately 9.64 million tonnes.
Companies of all sizes have reported but a majority of the companies, about 90%, have less than 500 employees. When it comes to production, 31% of the companies have a production of less than 10 000 tonnes, approximately 36% have a production between 10 000 and 100 000 tonnes and about 33% produce 100 000 tonnes or more per year.

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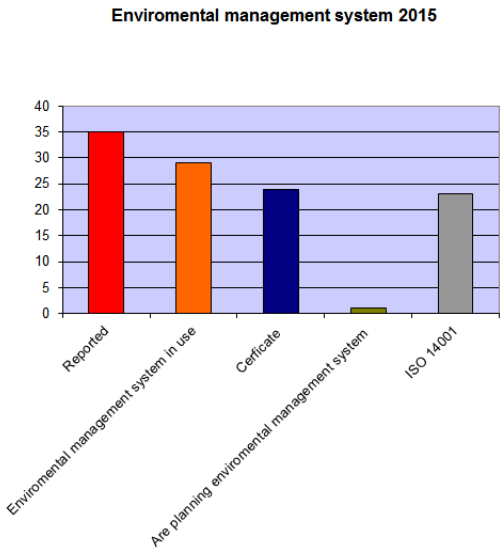
.....Report content

The summary is given under different headings in the form of descriptive text and diagrams. For some indicators the emissions are also compared to production. The presentation is done in two different ways. One shows the trends for companies where we have information for the years 2006 and onwards. We also give a summary concerning 2015 for all companies. For each section, there is also a description of the indicators in a national perspective, compared to the official figures that are available.

The following areas are reported in 2014:
Enviromental management systems
Emission to air
Emission to water
Energy
Working environment and education
Product Stewardship
Waste
Water consumption
Women and men
Social responsibility

.....Environmental management systems

As a consequence of the Responsible Care work, many companies within the chemical industry were well prepared and had already introduced management systems before the formalized systems such as ISO 14001 and EMAS were introduced. Of the 35 companies reporting for 2015, 29 companies state that a system already is in place. 23 companies are certified according to ISO 14001 and one company is also certified according to EMAS. Of the remaining six companies one state that they are planing to introduce an environmental management system.



Environmental reports
Many companies submit environmental reports to the authorities. These reports are intended for those authorities in particular and are therefore drawn up in a way that makes them not particularly suitable as general information on the company's environmental work. Moreover, these environmental reports comprise only issues relating to the external environment. One of the basic elements in Responsible Care is that a company should keep open accounts of its operations. The companies have therefore, to an ever increasing extent, drawn up special environmental reports, either as a part of their annual report or as a separate report. Several companies have shared reports(within the business group). For 2015 there are 21 companies that had a shared environmental report, 16 had a separate report and 12 companies had both shared and separate reports. The trend is at the moment an increase in shared reports.

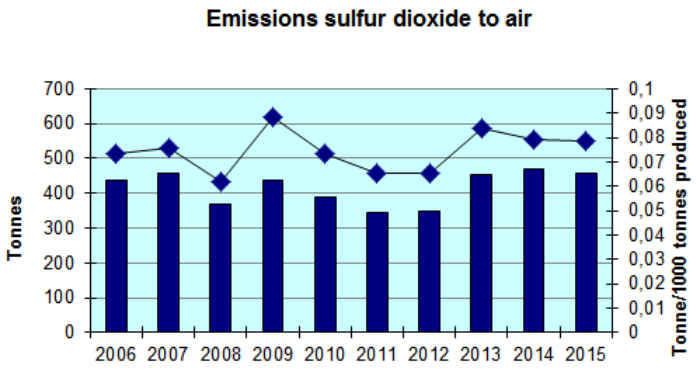
Emissions to air

Under this heading the emissions of sulphur dioxide, nitrogen oxides, carbon dioxide and Volatile Organic Compound (VOC) to air are reported. These are also the emissions you will find in the official statistics. In order to give a picture over the progress in this area on a national basis, a comparison between 2006 and the following years will be made. The reported volumes show the total emissions for the reporting companies. In the diagrams we also show how the emission relates to production volumes (the connected dots).

Sulphur dioxide
Sulphur dioxide emissions contributes to the acidification of soil and water. 29 companies have reported data from 2006 to 2015. During this period the emissions of sulphur dioxide from these companies increased by 5%. The emission/ production increased with 7 %. Total emissions in 2006 was 437 tonnes and 459 tonnes in 2015.

In 2006 the total emissions in Sweden were 36 270 tonnes and amounted to 23 960 tonnes in 2014. The total emissions in Sweden has decreased with 34% during the period.

For all companies reporting their emissions of sulphur dioxide for 2015, the total emissions were approximately 697 tonnes.

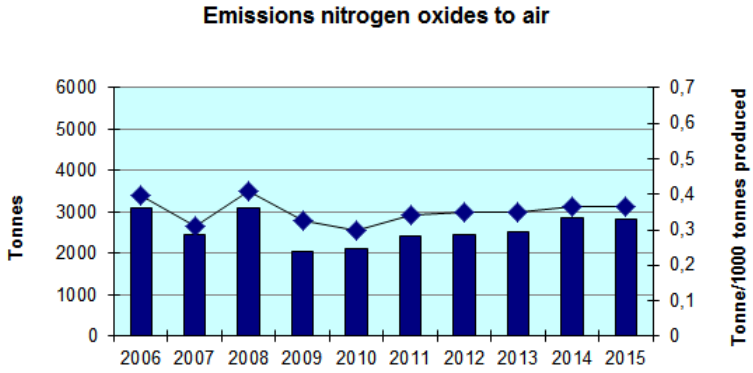


Nitrogen oxides

Also nitrogen oxides contribute to acidification. They also contribute to the eutrophication of soil. 24 companies reported data for 2006 to 2015. In 2006 the emissions amounted to around 3 092 tonnes and 2 821 tonnes in 2015.

In 2006 the total emission in Sweden was 373 563 tonnes and in 2014 the total emission was 330 408 tonnes.

For all companies reporting their emissions of nitrogen oxides for 2015, the total emissions were approximately 3 979 tonnes.



Carbon dioxide

Carbon dioxide is the most important greenhouse gas and combustion of fossil fuels gives the major contribution to the carbon dioxide increase in the atmosphere. Increased concentrations of greenhouse gases in the atmosphere are considered to contribute to increasing temperatures at the earth's surface.

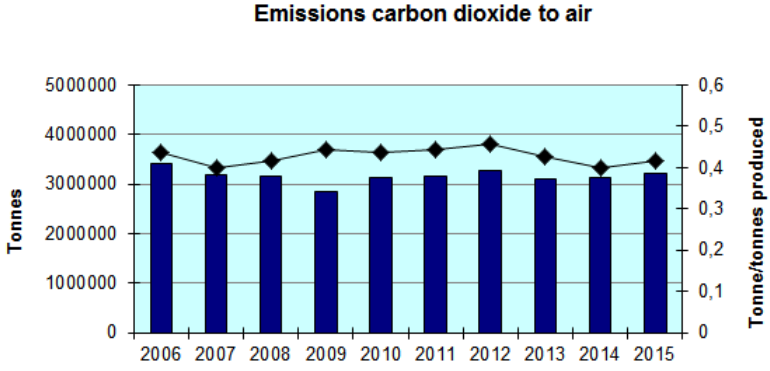
24 companies reported emissions of carbon dioxide for 2006 to 2015.

Their emissions have decreased 5 % during this period. The emissions went from 3.4 million tonnes in 2006 and are now almost 3.22 million tonnes.

For the whole period the emission/ produced tonne has decreased with 5%.

In 2006 the total emissions of carbon dioxide (bio fuels excluded) in Sweden were 51.3 million tonnes and in 2014 the emissions amounted to 41.6 million.

For all companies reporting their carbon dioxide emissions for 2015 the total emissions amounted to 3.72 million tonnes. 53 % is reported to come from fossil fuels.

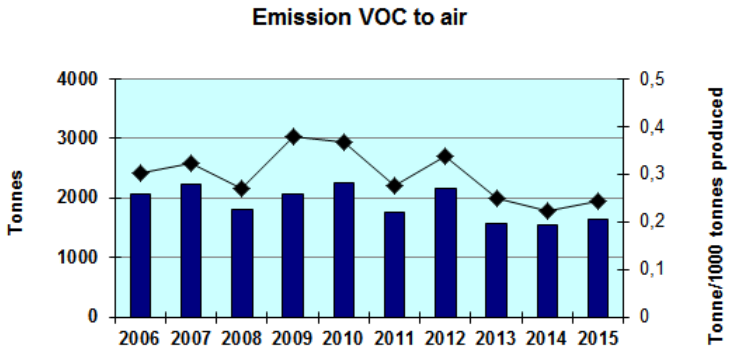


VOC, Volatile Organic Compounds
Emissions of VOCs contribute to increased concentrations of ozone. Ozone can be harmful to plants.

For the 23 companies reporting emissions of VOCs (excluding methane) for 2006 and onwards a decrease of 20% can be noted. In 2006 the emissons amounted to 2 065 tonnes and under 2015 the emissions of VOC amounted to 1 634 tonnes. Since 2006 the emissions related to the production volume have (tonnes VOC/1000 tonnes produced) decreased with 19 %

For all companies reporting their VOC emissions for 2015 the total emissions were about 2 658 tonnes.

In 2014 the total emissions in Sweden amounted to 184 460.



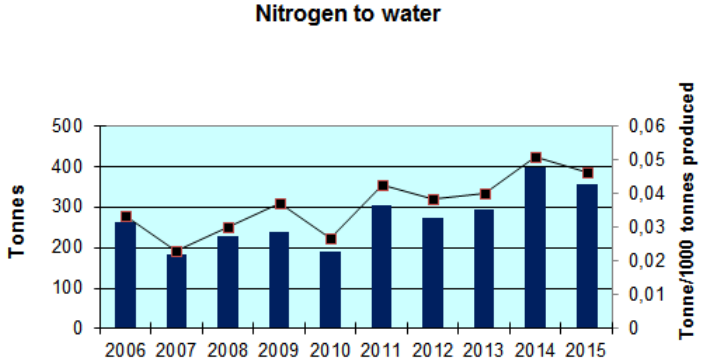
Emissions to water

Under this heading the emissions of nitrogen, phosphorus, COD, BOD and metals are reported.

Discharges of nitrogen
Discharges of nitrogen contribute to the eutrophication of rivers, lakes and the sea. Discharges of nitrogen were reported by 25 companies for 2006 and onwards. The discharges amounted 358 tonnes 2015. The total emission has increased with 36% and the tonnes nitrogen/1000 tonnes produced have increased with approximately 37%.

For all reporting companies the total emissions for 2015 were about 407 tonnes.

In 2014 the total emissions in Sweden amounted to 15 700 tonnes.



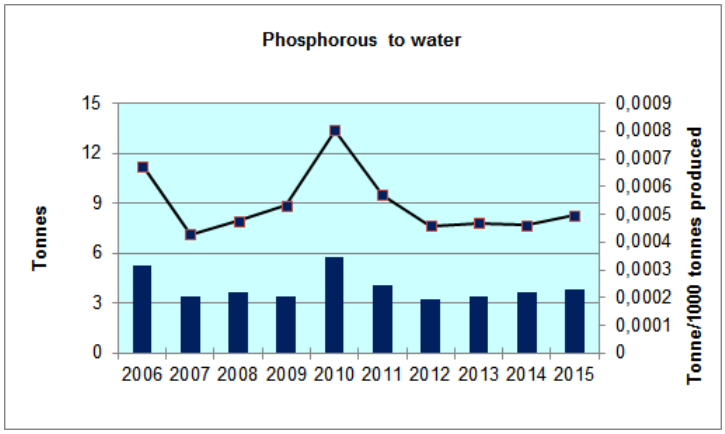
Discharges of phosphorus

Also phosphorous contributes to the eutrophication of rivers, lakes and the sea.

25 companies reported discharges of phosphorus from 2006 and onwards. The discharges decreased during this period from 5.26 tonnes to 3.85 tonnes, corresponding to a reduction of approximately 27%. Some companies have had malfunctions that have affected the results (especially 2006 and 2010).

The total discharge for all reporting companies in 2015 amounts to 4.6 tonnes.

In 2014 the discharge of phosphorous from municipal sewage treatment plants in Sweden amounted to roughly 260 tonnes.



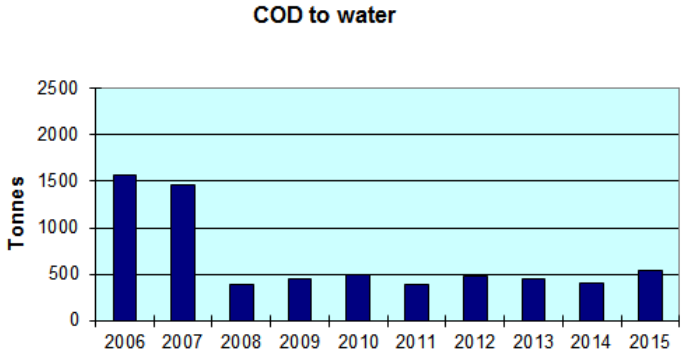
COD (Chemical Oxygen Demand)

COD is a measure of the amount of oxygen consumed to oxidize organic material in waste water. A high COD value will reduce the oxygen concentration in rivers, lakes and the sea.

25 companies reported discharges of COD for 2006 until 2015. During 2006 these companies discharges were approximately 1 567 tonnes. In 2008 the emissons decreased to 390 tonnes. Since 2008 the emissions have been between 390 and 540 tonnes.

During 2015 the COD value was 537 tonnes.

In 2014 the discharges from municipal sewage treatment plants in Sweden amounted to roughly 47 000 tonnes.



BOD (Biological Oxygen Demand)

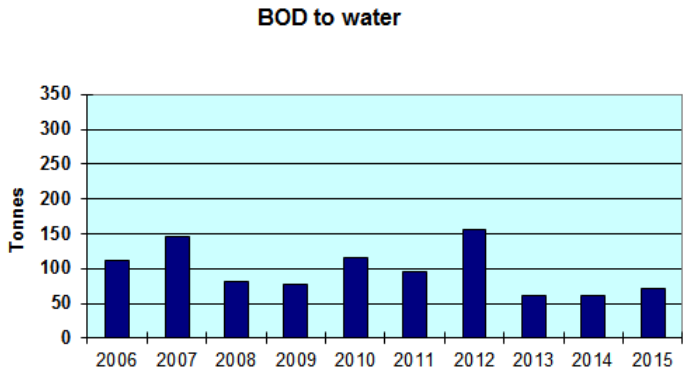
BOD is a measure of the amount of oxygen consumed when decomposing organic material in waste water. A high BOD value will reduce the oxygen concentration in rivers, lakes and the sea.

25 companies have reported in 2006 to 2015. 2015 the total discharge was approximately 71.6 tonnes.

For all reporting companies the total emissions for 2015 were about 125 tonnes.

Some companies stand for large parts of the total emission and the amount from these companies also fluctuates from year to year.

In 2014 the total discharges from the municipal sewage treatment plants amounted to 7 500 tonnes.



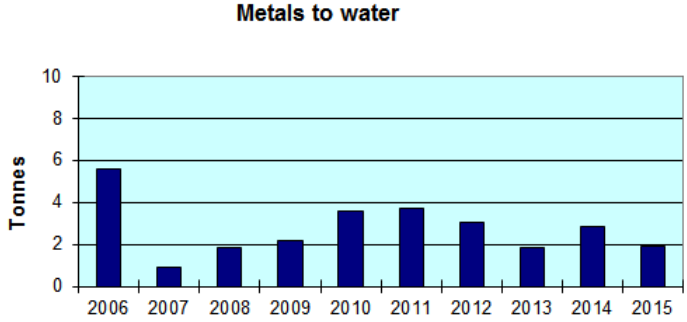
Discharges of metals

Metals can be harmful to plants and animals. If accumulated they can also be harmful to man.

Discharges of metals in 2006 through 2015 have been reported by 25 companies. Since individual companies have large effects on the total emission values and the emissions vary between years no real trend can be seen. The emissions are in the interval between 1 and 4 tonnes except for 2 years, namely 2006 (5.6 tonnes) and 2007 (just above 0.9 tonnes).

For all reporting companies the total emissions for 2015 were about 2.5 tonnes.

Metals included in the survey are, for example, Hg, Pb, Zn, Cr, As, Cd, Ni and Cu.

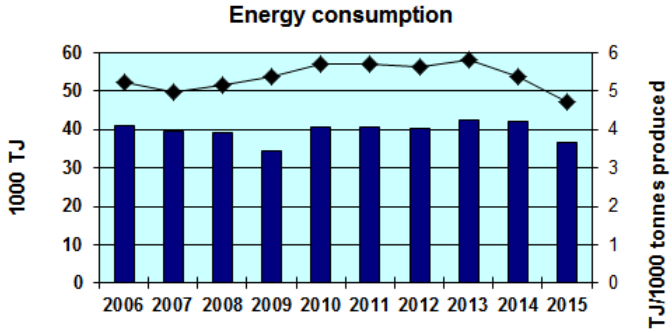


Energy

Energy consumption

24 companies have reported their energy consumption for 2006 and onwards. During this time, the energy consumption has decreased from 40 877 TJ (11.35 TWh) to about 36 579 TJ (10.16 TWh) that is 10.5%.

For all reporting companies the total consumption for 2015 were about 48 516 TJ (14.48 TWh).



Work environment and training

Staff training

Having a well-trained and skilled workforce is a fundamental requirement for the companies. It is also an important part of the Responsible Care commitment. The average number of days spent on staff training has been between 2 and 5 days and is approximately 3.99 days/employee for 2015 which is an increase from previous year with 0.7 units.

Turnover of staff

Turnover of staff at the reporting companies has been around 0 - 20% during 2006 to 2015. The average turnover of staff has been about 5.02% for the 35 companies that reported in 2015. There is a large difference between the companies. For about 3/4 of the companies the turnover of staff is between 0 - 6% and all other companies have less then 20%.

Work injuries

The concept of work injuries includes accidents at work and occupational diseases. The comparisons in the report below are made with the official statistics regarding ”Industy for chemicals, pharmaceuticals refined petroleum products, etc.”.

Fatal accidents

From 2006 until 2015 there have been 2 fatal accidents, namely in 2009 and 2010.

Many companies use contractors. We have also asked the number of fatal accidents among the contractors. During 2007, 2009 and 2010 there were one fatal accident/year.

Accidents at work

The companies that have reported their accidents at work during 2015 have 12 867 employees. The average for these companies is 2.88 reported accidents per 1000 employees. It must be emphasized that this figure includes all accidents reported within the companies, also those not resulting in any absence from work. This is not the case in the official statistics as described below. 60% of the companies stated that they did not have any accidents at work during 2015.

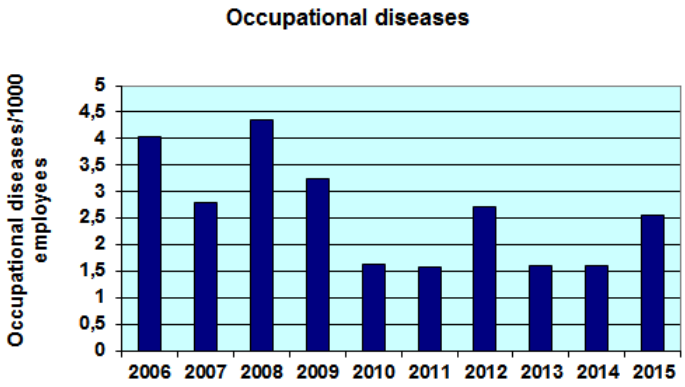
According to the official statistics an average of 5 accidents were reported per 1000 employees in the chemical industry. In general these figures do not include commuting accidents or accidents not leading to absence. Therefore a direct comparison between these figures and the figures above is not possible.

Occupational diseases

35 companies with 12 867 employees have answered the survey concerning their reported occupational diseases during 2015. On average these companies have 2.56 reported occupational diseases per 1000 employees.

There is mainly a decreasing trend during the period.

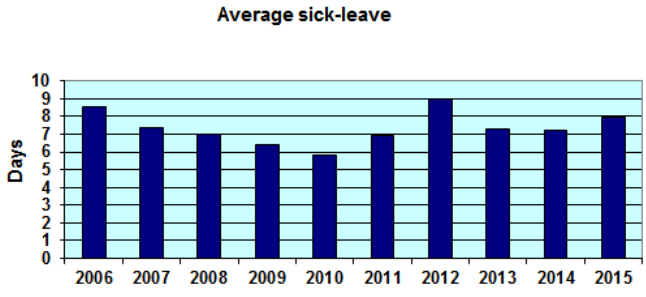
According to the official statistics for 2015, the chemical industry as a whole had an average of 3 reported occupational diseases per 1000 employees.



Sick-leave

For the 35 reporting companies the average sick-leave during 2015 was 7.96 days/employee.

During the period 2006- 2015 the value has been fluctuating between 6 and 9 days.



Transport

To ensure that the companies' products and raw materials are transported in a safe way is also a part of the Responsible Care work. We have looked at two different aspects concerning transport issues. One of them concerns how the companies use SQAS (Safety and Quality Assessment System) and the other concerns to what extent accidents occur during transport.

SQAS – a way to grade transporting companies
During the end of 1997 a pan-European work of compiling a checklist to grade transporting companies was completed. This work resulted in the SQAS. In 2015, 10 companies report that they use SQAS and another 6 companies plan to implement it.

Transport related accidents
The companies have also reported how their products are transported and accidents that have occurred related to these transports. In this context, accidents mean that the products get out of the packaging and into the surroundings. A traffic accident that does not involve spillage of the products is not defined as a transport accident. Transports are done by road, by railroad, at sea or by aeroplane. The largest volumes are transported by road. Below, the transported volume for each kind of transport and the number of transport related accidents is shown.

Kind of transport	Transported weight (tonnes)	Accidents (number)
At sea	1 172 697	1
Road	1 581 745	1
Railroad	503 657	0
Aeroplane	6 237	0

Product Stewardship

Product Stewardship is an important area of Responsible Care. In this report we cover different issues of Product Stewardship.

Training of customers
To train customers in handling the products creates the necessary conditions for safe handling of the companies' products. In 2006 approximately 69% offered this kind of training. This figure has been between 50-70% during the following years and in 2015 the figure is 71%. Several companies have natural reasons not to have any training of customers since their products doesn't require it.

Kemiakuten (earlier Emergency Response Centre, ERC)
Kemiakuten is an initiative from the Swedish chemical industry. Kemiakuten started in 1993. The commitment means that the companies give information to Kemiakuten concerning the contents of their chemical products. Should an accident happen, the rescue services or others can call Kemiakuten for information and advice on how to act. This is one example of Product Stewardship as expressed in Responsible Care. Physically Kemiakuten is situated at the Swedish Poison Information Centre. The amount of companies that had joined the Kemiakuten has during the last 10 years been between 50 and 70%. 62% of the companies reported membership to the Kemiakuten for 2015. The partitipation is free of charge for the membersof the IKEM. The reason for the decrease could be that the companies had to renew their "contract" with the "Swedish Poison Information Centre". In the updated

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"contract" the demand that companies send updates to Poison Information Centre has been emphasized. We can also establish that 60% of the members have updated information to Kemiakuten during 2015.

Waste

Waste from production is one of the indicators inquired for in the questionnaire. This report divides waste into four different categories: Total waste arising, the proportion of hazardous waste, waste deposited in landfills and waste recovery.

The total quantity of waste in Sweden was estimated to 167 million tonnes in 2014. The overwhelming share of this, approximately 139 million tonnes, comes from the mining industry. The Production industry stod for approximately 24 million tonnes. The same year, waste from households amounted to almost 4.2 million tonnes.

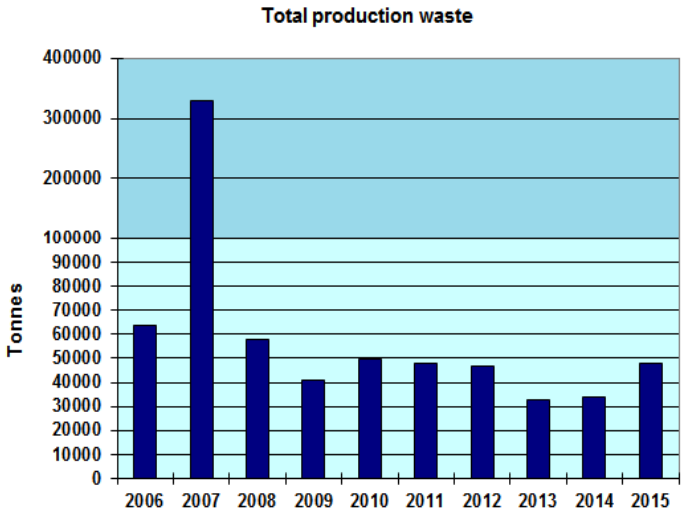
Observe that the numbers reported under production waste, hazardous waste and waste to landfills are not always gathered from the same company. E.g. a company can have reported waste to landfill for all years but not reported hazardous waste for the same years.

The report also shows in what extent the companies recycle waste.

Total waste from production

24 companies reported their waste from production for 2006 and onwards. Typical amount of waste has been around 30 000 – 65 000 tonnes with the exception of 2007 (328 000 tonnes). The figures can vary a lot between years and an explanation to this is that a company can have use of a by-product one year but not another (when it instead is defined as waste). This shows in the report considering waste to landfill.

The reported waste for 2015 amounted to 47 830 tonnes. This is a decrease of 25% over the period.



Hazardous waste

For the 24 companies that have reported their hazardous waste during 2006 and onwards, the amount has been around 10 000 to 17 000 tonnes. In 2015 the amount was 16 278 tonnes.

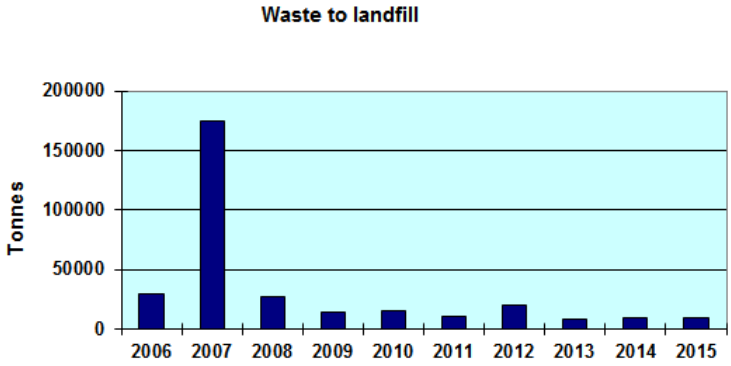
For all reporting companies the total amount of hazardous waste in 2015 amouted to 30 712 tonnes.

Waste to landfills

The quantity of waste deposited in landfills was reported by 24 companies for 2006 and onwards. Since 2008 a decreasing trend can be seen. The majority of the waste in 2007 comes from 2 companies.

In 2015 the total amount of waste to landfill was around 9 769 tonnes.

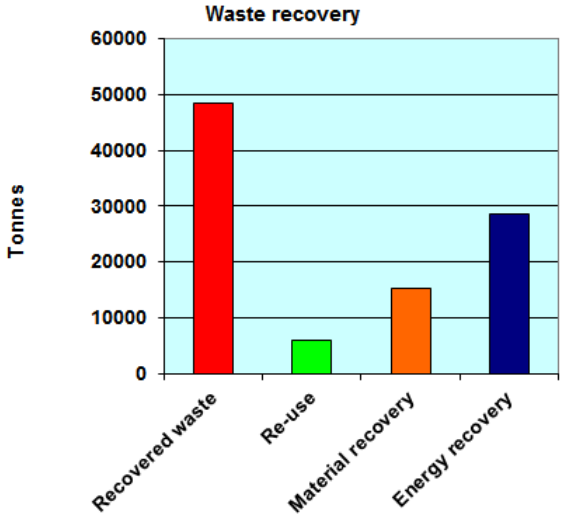
For all reporting companies reporting waste to landfill for 2015 the total amount was about 15 892 tonnes.



Waste recovery

Waste recovery consists of re-use, recovery of materials and energy production. About 51% of the total amount of waste is recovered in one way or another. 35 companies have given figures of their waste recovery.

Together they recover around 48 500 tonnes. Approximately 6 000 tonnes are re-used, 15 300 tonnes are recovered as materials and 28 600 tonnes are used for energy production

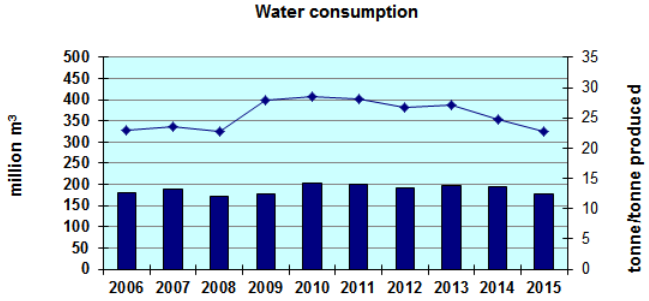


Water consumption

The consumption of process and cooling water in 2006 and onwards was reported by 25 companies. In 2015 the consumption amounts to some 176 million m^3. If comparing the used water/produced unit there is a decrease of 1% over the years.

A total of 33 companies reported their water consumption during 2015. The total consumption was almost 184 million m^3. It shall be noticed that most of this water is taken from lakes and rivers and is mainly used for cooling. A very small portion of the water consumption comes from municipal water. The companies reporting for 2015 consumed 3.8 million m^3, approximately 0.021 % of the total water consumption.

During 2010 was 2,3 billion m^3 of water used in the Swedish industy. 5% of this came from municipal water.



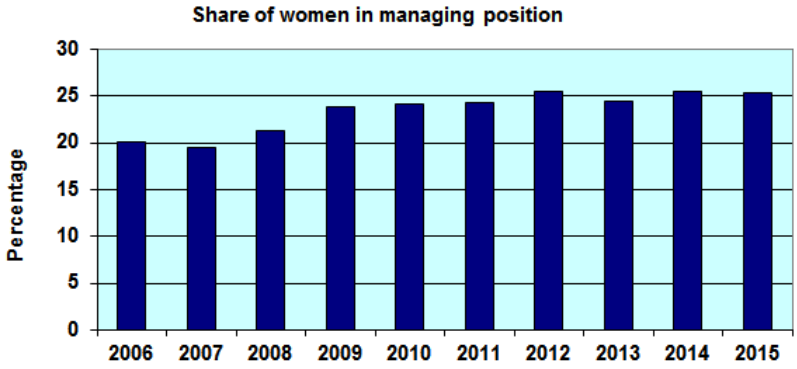
Women and men

The new indicators have been reported since 2003 and it seems that most of them show a positive trend. It should be noted that both the number of companies reporting differ and that it is not identical companies reporting.

Employees
The distribution women/ men during 2006-2009 vary a little over the years but seem to be around 35 to 40% when it comes to the share of women at the companies. Between 2010 to 2012 the amount of women is around 25-26%. Since 2013 a increasing trend can be seen.

In managing position
The amount of women in managing positions vary between the companies from a few percent to 50%. 93% of the companies had women in managing positions in 2015. It should also be noted that the average amount of women in managing positions have increased from 20% in 2006 to 25,3% in 2015.

In company boards
28 companies stated that they had women in the company board in 2006 (38% of the reporting companies). The corresponding figure for 2015 is 18 companies
51% of the reporting companies).



Child labour, integration issues and human rights

As with the indicators above (distribution women/ men) it seems that these indicators also have a positive trend. It can be noted that in the companies that have reported between 2006 and 2015 there is an increase in the share of companies that have a policy concerning child labour from about 37% to 62%. Policies about the integration issues has increased from 51% to 73% And when it comes to human right issues, the increase is from 39% to 68%.