



Responsible Care

SETTING GLOBAL STANDARDS TO IMPROVE THE CHEMICAL INDUSTRY

Responsible Care 2002

STATUS REPORT: EUROPE

Responsible Care is a unique initiative of the chemical industry extending across Europe and the world.

It drives continuous improvement of safety, health and environmental performance, and contributes to sustainable development through networking and sharing best practices.

Responsible Care® is an initiative of the global chemical industry in which companies, through their national associations, commit to work together to continuously improve the health, safety and environmental performance of their products and processes, and so contribute to the sustainable development of local communities and of society as a whole.

Responsible Care is managed by industry, and focuses on improving performance, communication and accountability.

By identifying and spreading good management practices through the publication of codes and guidance documents Responsible Care improves performance.

Responsible Care promotes mutual support between companies and associations through experience sharing and peer pressure, replacing the competitive approach of the past in health, safety and environmental areas.

It encourages companies and associations to inform their publics about what they make and do, about their performance including reporting performance data, and about their achievements and challenges.

Responsible Care helps the industry to engage and work with stakeholders at local, national and international levels, to listen to and address their concerns and aspirations.

It promotes co-operation with governments and organisations in the development and implementation of effective regulations and standards, and helps companies to meet or exceed these requirements.

Responsible Care brings accountability through its requirement that chemical associations develop credible processes to verify that member companies are meeting its expectations.

Starting in 1985 in Canada, Responsible Care is now in 47 countries where more than 85% of the world's chemicals (in volume) are manufactured.

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Examples of Responsible Care in action from member companies are highlighted as case studies throughout the report.

Responsible Care®

The International Programme

Responsible Care® is a unique and defining initiative of the global chemical industry. Since its launch in 1985, Responsible Care helps drive continuous improvement in the safety, health and environmental performance of its manufacturing processes and products to protect people and the environment, underpinning the industry's contribution to sustainable development. It also commits the industry to dialogue and working with stakeholders at the local, national and international levels.

National chemical industry associations around the world are responsible for the detailed implementation of Responsible Care in their own countries. Responsible Care is currently run in 47 countries, the latest addition being Venezuela in 2002. Further nations are likely to seek adoption of the programme in future years.

Each Responsible Care programme incorporates eight fundamental features.

- A formal commitment on behalf of each company to a set of Guiding Principles signed, in the majority of cases, by the Chief Executive Officer (CEO);
- A series of codes, guidance notes and checklists to assist companies to implement the commitment;
- The progressive development of indicators against which improvements in performance can be measured;
- An ongoing process of communication on Health, Safety and Environment matters with interested parties inside and outside the industry;
- Provision of forums in which companies can share experiences on implementation of the commitment;
- Adoption of a title and a logo which clearly identify national programmes as being consistent with and part of the concept of Responsible Care;
- Consideration of how best to encourage all member companies to commit to and participate in Responsible Care;
- Systematic procedures to verify the implementation of the measurable (or practical) elements of Responsible Care by the member companies.

Implementation of the fundamental features is measured regularly. Latest figures generated in 2002 demonstrate that Responsible Care programmes are at different stages of development and have different emphases. In many countries, Responsible Care programmes have matured, while in others where Responsible Care has been taken up more recently there is greater scope for further development.

Further information on the global implementation of Responsible Care can be found in the fourth Responsible Care Status Report which was issued in 2002 to coincide with the World Summit on Sustainable Development in Johannesburg, South Africa. This can be found on www.icca-chem.org

At the WSSD, the United Nations Environment Programme (UNEP) and the International Chamber of Commerce commended the Responsible Care initiative for making a significant contribution towards sustainable development.

The industry recognises that Responsible Care must continue to evolve to meet the current concerns and expectations of its stakeholders. Leaders of the global chemical industry have therefore announced a major strategic review to re-vitalise and strengthen Responsible Care.

The strategic review will focus on enhanced industry performance, sustainable development and reputation, and will be driven by global chemical industry chief executive officers, assisted by the International Council of Chemical Associations (ICCA). One expected outcome of the review is the development of more consistent core commitments that can be implemented at the same level by all nations that adopt Responsible Care. The review will conclude in 2004.

At the WSSD, the United Nations Environment Programme (UNEP) and the International Chamber of Commerce commended the Responsible Care initiative for making a significant contribution towards sustainable development.



The importance of Responsible Care



EGGERT VOSCHERAU

Thanks to Responsible Care, the chemical industry in Europe has built up a solid foundation for its health, safety and environmental activities for more than a decade. Our record is envied by many other industry sectors, but we still strive for further performance enhancements in line with our commitment to continuous improvement.

When the industry is under a lot of pressure, as it is now, the need for such a solid foundation is imperative. Even as our member companies are struggling with the challenges posed by the EU chemicals policy, and with considerable economic pressures, they have given full support to Cefic's decision to launch a Europe-wide review of Responsible Care, aimed at further strengthening the initiative.

The recognition given to the chemical sector's contribution to sustainable development at last year's World Summit in Johannesburg is due in no small part to Responsible Care, and we should take pride in that. Sustainable development is something our industry must aspire to in order to ensure progress, and I am in no doubt that Responsible Care is helping us towards that goal. We spent a lot of time consulting our stakeholders during our preparations for WSSD, and we continued to develop existing and new relationships during the Summit.

Year after year, we have seen the industry's dialogue with stakeholders strengthen as a direct result of our promise to be more open and transparent. Another positive example of these dialogue efforts is Cefic's recent signing of a Memorandum of Understanding, with the European Mine, Chemical and Energy Workers' Federation (EMCEF). This Memorandum extends our existing cooperation with this important federation of trade unions to include Responsible Care issues.

The public's focus on products is reflected in our continuing efforts to extend Responsible Care through the supply chain. This involves developing real partnerships between suppliers and customers, with transporters, and with user groups. The joint publication earlier this year of Product Stewardship Guidance for suppliers and distributors with European distributors association, FECC, is another step in the right direction.

As President of Cefic, I would like to congratulate all those who are working hard to ensure Responsible Care continues to improve, and to influence more and more companies. Their efforts are making our industry and our wider environment better for all our stakeholders, now and in the future.

Eggert Voscherau

CEFIC PRESIDENT

Reviewing Responsible Care



JOSÉ MARIA BACH

When I was approached to take over from Jim Whiston as Chairman of Responsible Care at Cefic, I did not hesitate in accepting this challenging role. Our industry and its stakeholders have benefited tremendously from Responsible Care over the years, and I am proud to be leading the Council's efforts to renew and revitalise the initiative in Europe.

These efforts, of course, need the whole-hearted support of member companies, and I have already been reassured by the many company executives I have met over the past few months that we will get that support.

Our review has, in part, been spurred by the activities taking place in other parts of the world. The American Chemistry Council carried out its own review of Responsible Care last year, and implemented a series of improvements as a result. Working with the 22 member federations in Europe makes our task somewhat more challenging, but nevertheless I am confident that we will achieve our long-term goals.

Those goals are embodied in our vision of 'Responsible Care 2010' which seeks to ensure that, by this date, the initiative will have full participation and involvement by all companies, CEOs and staff; a clear, strong and recognised "brand"; an effective improvement regimen based on self help and networking; high credibility with the authorities and the public; and a continuing and important role to play in achieving sustainable development.

The CEO-led global review of Responsible Care that is taking place throughout 2003 will complement our efforts to bring greater harmonisation to the initiative within Cefic's member federations.

There is a real determination at the most senior level to give renewed vigour to Responsible Care in Europe, and to achieve wider recognition and appreciation for our industry's achievements. I have every confidence that we will achieve this objective because so many people have already invested so much in Responsible Care. I believe this next phase will take it to a new level, and by this time next year I look forward to bringing you good news on the results of our work.

This report highlights the performance of the European chemical industry against a set of 15 safety, health and environment indicators, and describes the work of the federations in running their own programmes.

This year we describe just a few examples from the many ways that member companies are implementing Responsible Care in their everyday activities. These are presented throughout the report.

I hope you find this report interesting and informative.

José Maria Bach

CHAIRMAN, CEFIC RESPONSIBLE CARE

On behalf of all his friends and colleagues throughout the industry, we would like to thank Dr Jim Whiston who formally retired as Cefic Chairman, Responsible Care, after a decade in November 2002. In addition, he also chaired the International Council of Chemical Associations Responsible Care Leadership Group from 1995 to 1997.

The European Programme

Highlights of the joint work of Cefic and the national federations

OPEN DOORS

In May 2002, Cefic launched a Pan European Open Door Programme to encourage national associations and their member companies to invite members of the public to visit their manufacturing sites to learn more about the work, products and the value that the chemical industry brings to virtually every aspect of modern-day living. By the end of 2002, over 590 companies had opened their doors to an estimated one third of a million members of the public. The Pan European event continues during 2003 to enable more countries to take part in the initiative.

SUBMISSION TO THE JOHANNESBURG SUMMIT

Responsible Care formed a major part of the overall submission of the chemical industry to the WSSD in August 2002, demonstrating how it has made significant progress in helping achieve environmental improvement over the ten years following the first historic UN Conference on Environment and Development in Rio in 1992. Responsible Care experts in Europe played a key role in generating the information for a major sectoral report on the chemical industry for UNEP and in a summary document entitled "On the Road to Sustainability". These reports can be found on the UNEP and Cefic web sites respectively.

SPREADING RESPONSIBLE CARE TO A WIDER EUROPE

ChemFed, part of the EU PHARE programme for applying countries, can look back on some key achievements during 2002 including the launch of Responsible Care in Estonia, Latvia, Lithuania and Bulgaria thanks to the efforts of EU and CEEC experts.

- Bulgaria: Launched June 2002. Representatives from Cefic, the French federation UIC, and the Bulgarian authorities took part in the event where 12 companies representing around 20% of the country's chemicals output signed the commitment to Responsible Care.
- Latvia: Launched September 2002. The Latvian minister of environment and regional development, together with other representatives of the authorities and Cefic, participated in the event. Four companies representing over 50% of chemicals distribution signed up to Responsible Care.
- Estonia: Launched December 2002. The event included representatives from the Estonian authorities. The national federation signed an agreement with the Ministry of Environment on implementing the programme, and seven companies representing 19% of the chemical output in Estonia signed the Responsible Care commitment.
- Lithuania: Launched November 2002. Four major chemical companies are developing programmes for launch and implementation during 2003.

Training and raising awareness of Responsible Care at both federation and company level continued last year, with the focus on the new countries launching the initiative. These four federations translated the Cefic Guidebook on Responsible Care into local languages, and have made good progress with laying a firm foundation for the initiative at both federation and company level.

Training for specialists from Responsible Care companies in Bulgaria and Latvia was organised, and groups were hosted by the chemical federations in France and Finland. Practical advice on implementation at the company level was demonstrated by Aventis Vitry in France and by Kemira, Tikkurila and Akzo Nobel Inks in Finland.

In the Czech Republic, Hungary, Poland, Slovakia and Slovenia the federations concentrated on further developing Responsible Care activities. Expert EU support was tailored to the specific needs of the federations.

Members of the Project Responsible Care Task Force and experts from the German and French chemical industry federations provided individual consultations, access to information resources of Cefic and EU federations, and technical information materials.

PRODUCT STEWARDSHIP

At the end of 2002, an important guidance document on Product Stewardship was produced jointly between Cefic and the European Chemical Distributors Association (FECC).

The document is intended to be used when commercial agreements between chemical suppliers and distributors are being drawn up and gives valuable information and advice on a range of considerations including requirements on handling, storage and transport, product and packaging disposal, packaging, classification and labelling, etc.

This is one way industry is taking Responsible Care a step further, beyond the factory gate and helping to spread it along the supply chain.

By the end of 2002, over 590 companies had opened their doors to an estimated one third of a million members of the public.

ANNUAL EUROPEAN CONFERENCE

The annual European Responsible Care conference was held jointly with the FECC in Barcelona in November, which focused on getting the message of Responsible Care across to our key stakeholders. The conference was well attended by over 180 delegates including participants from the applying countries who are setting up and implementing Responsible Care programmes as they join an enlarging European Union. Key outcomes included:

- Enhance best practice experience sharing – especially in the areas of product stewardship, and safety and security
- Develop effective means to increase involvement of SMEs in Responsible Care – the business value must be communicated
- Seek closer links with NGOs, and focus on how to communicate the benefits of chemicals to all.

INCREASING TRANSPARENCY WITH KEY STAKEHOLDERS

Cefic, the European Chemical Employers Group (ECEG) and the European Mine, Chemical and Energy Workers' Federation, (EMCEF), started work at the end of the year to establish a memorandum of understanding on Responsible Care. The agreement was reached in March 2003. The move establishes a framework for the employees' organisation to contribute to the future development of Responsible Care in Europe and to discuss aspects of the initiative such as reviewing improvements in the safety, health and environmental (SH&E) performance of the chemical industry, looking at means of assisting the social partners in the EU Candidate Countries, and discussing education and training needs of employees covering SH&E and Responsible Care.

REVITALISING RESPONSIBLE CARE IN EUROPE

At the end of the year, an in-depth review of Responsible Care was started to establish a stronger and re-vitalised initiative that:

- Continues to improve performance
- Brings added business value
- Revives membership
- Allows closer alignment between countries and regions
- Provides a stronger reputation foundation

The outcome of this review will be discussed in more detail in next year's report.

PUTTING RESPONSIBLE CARE INTO PRACTICE

For the first time, the 2002 edition of the annual Cefic Responsible Care report contains examples of activities to illustrate how the initiative is being put into practice at the company level.

These company examples are based on a feature appearing in the Responsible Care supplement published by European Chemical News magazine, 14-20 April 2003 issue. For further information, www.europeanchemicalnews.com

CWS Lackfabrik

CWS Lackfabrik won the Stiftung Arbeit und Umwelt, a trade union award launched in 1993 to recognise environmental excellence, in 2000. The award was given in recognition of CWS's implementation of Responsible Care principles into the daily activities of the company's workforce.

CWS, which employs 250 people at sites in Germany and the US, produces a range of polymers, binders and powder coatings. The company has been involved in Responsible Care since its launch by German chemicals association Verband der Chemischen Industrie (VCI) in 1993. Responsible Care was seen as offering an opportunity to integrate sustainability features into new management systems for quality, environment and worker safety. Company management worked closely with the company's works council, and held staff 'information hours' to get ideas and improve internal communications, which resulted in a high degree of awareness and acceptance of Responsible Care among the company's employees.

Since then, the company has achieved EMAS certification, and had its integrated management system validated to EMAS II and certified to ISO 14001 and 9001:2000.

Implementation of the integrated management system for quality, environmental protection, product stewardship, employee health and safety, process safety, distribution safety and communications has resulted in a host of benefits. Since 1994, emissions of volatile organic compounds (VOC) have been reduced by over 60%, dust output has fallen by nearly 70%, and worker accidents are down by 50%. Since 1999, carbon dioxide emissions have been reduced by about 10% or 300 tonne/year.

The company's customers and the authorities are also impressed with the results of signing up to Responsible Care, says CWS. The company notes that effective internal and external communication about the benefits achieved under the programme is key to success.

www.cws.de



Review of Performance

1996-2001

The safety, health and environmental performance of the European chemical industry is measured and assessed each year against a range of 15 indicators that assist the national federations and companies to share best practice and to benchmark against other countries and companies.

The data in this report are provided by each federation which collects the information from their member companies. The coverage ranges from 86-100% of their memberships. In 2001, the number of employees in companies which provided data for safety at the workplace indicators was 1,129,000 compared to an estimated industry total of 1,917,000. More than half (58%) of the employees work in companies that are committed to Responsible Care.

SAFETY

The European chemical industry maintains its endeavours to provide employees with a safe place of work.

Fatalities

We are very sorry to report that in 2001, 30 employees lost their lives at work. This includes eleven who died in the explosion in Toulouse, France, where nine contract workers and nine members of the public also died. Every fatality is one too many and safety in the workplace continues to be of paramount importance to the industry.

	1996	1997	1998	1999	2000	2001
Europe fatalities	39	37	46	13	26	30

Injuries at Work

The lost time injury rate (LTIR) is stable at about 10 accidents per million hours worked which is better than most other industry sectors. We know that further improvements can be made as the LTIRs of the best performing member companies are well below the chemical industry average.

OCCUPATIONAL HEALTH

The good health of employees is very important to the chemical industry.

In 2000, we introduced an Occupational Illness Frequency Rate (OIFR) indicator as a measure of performance. Although data has been collected for 2 years, differences in legislation, culture and occupational health practices between countries makes it difficult to report OIFR on a truly comparable basis. Cefic will continue to develop the indicator for reporting in future years (page 32).

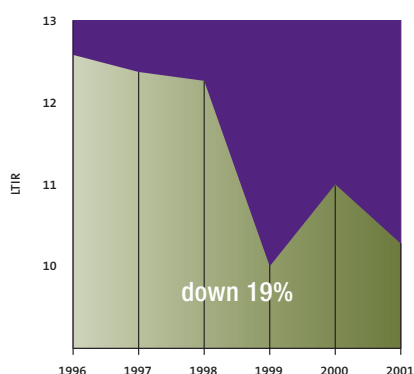
ENVIRONMENT

Emissions to the environment continue to fall. To make the assessments we use 'matched samples' calculating the indices (base 100 in 1996) on the absolute emissions of those countries which were able to report on all 6 years (1996-2001).

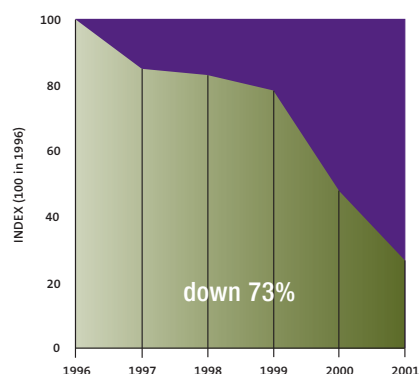
Emissions to Water

- The measurement of phosphorous compounds, nitrogen compounds and chemical oxygen demand (COD) to water have all shown year-on-year improvement since these indicators were introduced in 1996. Emissions of phosphorous compounds are down 75%; emissions of nitrogen compounds are down 32%; and COD is down 24%.
- Emissions of heavy metals are down 27% since 1996. Heavy metals measured are mercury, arsenic, cadmium, lead, chromium, copper, nickel and zinc.

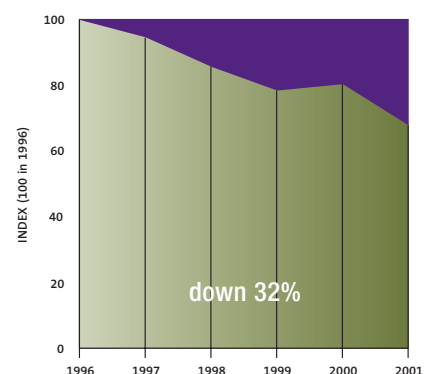
LOST TIME INJURY FREQUENCY RATE



PHOSPHOROUS EMISSIONS TO WATER



NITROGEN EMISSIONS TO WATER



For country data see pages 28-32

Emissions to Air

- Emissions of sulphur dioxide (SO₂) and nitrogen oxides (NO_x) in 2001 remained unchanged from year 2000 although there have been overall reductions of 44% and 25% respectively since 1996.
- Emissions of volatile organic compounds (VOC) show a year-on-year reduction, which are now 40% down since 1996.

Wastes disposed to land

Reporting on hazardous and non-hazardous wastes to land was only introduced last year. There is still insufficient data from which to make any firm conclusion (see page 31 for data collected to date).

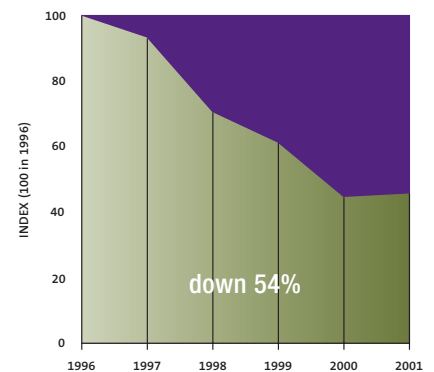
DISTRIBUTION INCIDENTS

The number of distribution incidents involving chemicals on the railways and the roads per million tonnes of product transported was slightly higher in 2001 over the previous two years. However the incident ratio in 2001 is still 25% lower than it was in 1996.

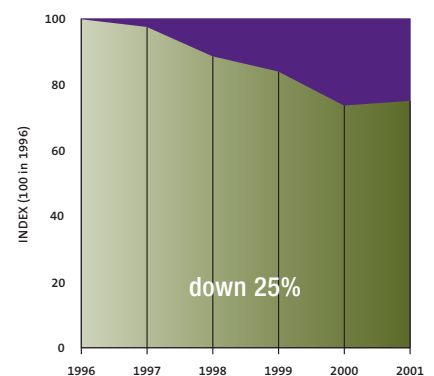
CARBON DIOXIDE (CO₂) EMISSIONS, PRODUCTION, FUEL AND ENERGY

Latest data covers year 2000. They show that fuel and power consumption continues to increase much less than production underlining the European chemical industry's strenuous efforts to improve its energy efficiency. As a consequence of this strong improvement in energy efficiency, CO₂ emissions per unit of production improves steadily.

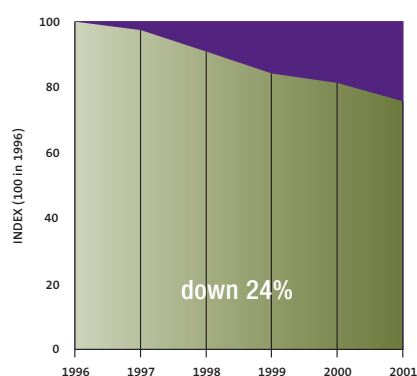
SO₂ EMISSIONS TO AIR



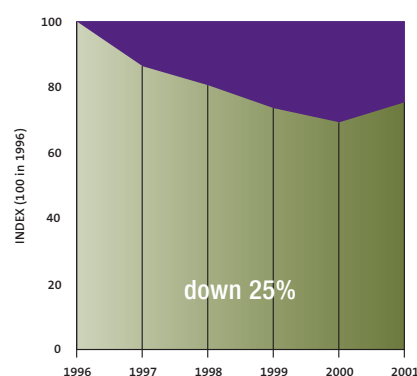
NO_x EMISSIONS TO AIR



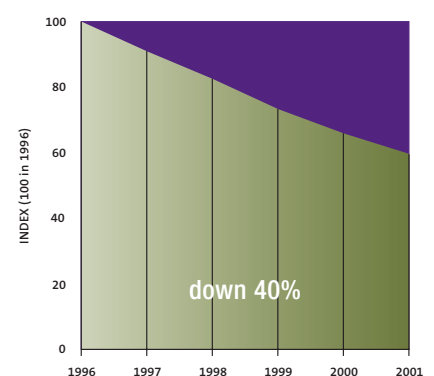
CHEMICAL OXYGEN DEMAND (COD)



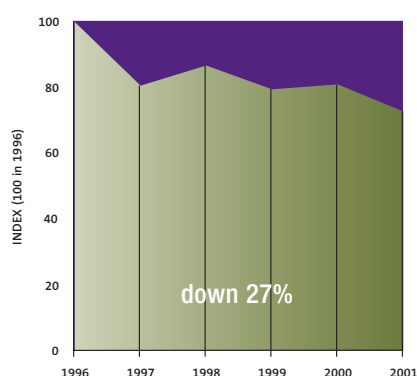
DISTRIBUTION INCIDENTS



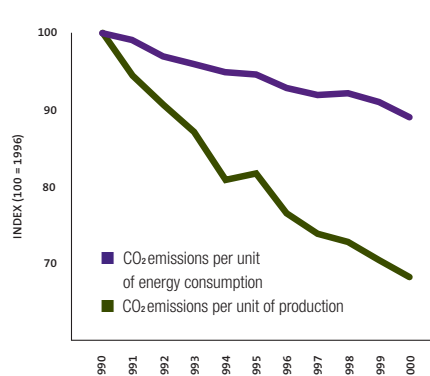
VOC EMISSIONS TO AIR



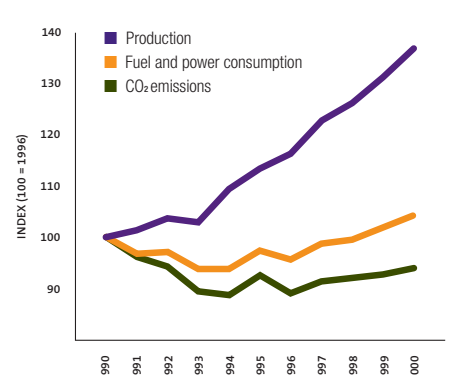
HEAVY METAL EMISSIONS TO WATER



SPECIFIC CO₂ EMISSIONS



FUEL AND ENERGY



National Responsible Care activities

AUSTRIA

FACHVERBAND DER CHEMISCHEN INDUSTRIE
ÖSTERREICHS - FCIO

www.fcio.at

Adopted Responsible Care in 1992

PROGRAMME DESCRIPTION:

Codes, guidance notes or checklists for implementation

- Community Awareness and Emergency Response
- Pollution prevention
- Process safety
- Distribution
- Employee health & safety.

Indicators of performance

Responsible Care companies are requested to report annually to meet the Cefic reporting requirements.

Communication with interested parties

A brochure gives an overview of the international Responsible Care programme and Austrian implementation and activities.

Mutual assistance forums

FCIO's Committee for Health, Safety and Environment Responsible Care meets regularly. These meetings serve as a forum for information exchange and experience sharing. FCIO has organised seminars and experience exchange forums concerning the harmonisation of EU-legislation (VOC, EPER, Seveso II). Guidelines for safety data sheets (SDS) have been updated and a number of SDS seminars organised.

Process to encourage full participation of association members

Responsible Care is not a condition of membership. Peer pressure and communication of the benefits of Responsible Care are the main means of encouraging companies to commit to the initiative.

Implementation assurance

Third party verification of Responsible Care has been in place since 1992, requiring little adaptation to meet ICCA criteria. By end 2002, 34 companies (8% of total number) had Responsible Care certification according to the Austrian third party auditing process. These 34 companies account for more than 50% of the turnover of the Austrian chemical industry. FCIO collects company data using a revised Responsible Care questionnaire, and has developed a new questionnaire for plastics converters.

Additional features

- Local name: Verantwortliches Handeln hat Zukunft.
- Emergency distribution response scheme:- TUIS. to use as part of verification process, last revised in July 1998.
- System exists for jointly examining Responsible Care and the European Union's EMAS.

BELGIUM

FEDERATION OF THE CHEMICAL INDUSTRIES OF BELGIUM – FEDICHEM

www.fedichem.be

Adopted Responsible Care in 1991

Highlights:

The 2002 Open Door event was widely publicised and very successful: 45 companies, 11 high schools and universities took part, attracting around 70,000 visitors. A survey showed that 95% of visitors had a better understanding of chemistry and chemical products after the visit, and 72% believed the industry is a strong performer in the field of health, safety and environmental protection. More than 90% of visitors said they would return on the next open day.

PROGRAMME DESCRIPTION:

Codes, guidance notes or checklists for implementation

Complete list in 1996 publication 'Responsible Care, a commitment of the Chemical Industry'. Self-assessment and Implementation Guide, reviewed in 1999. Comprehensive Responsible Care Reference Document completed by Walloon section of Fedichem. Product stewardship brochure issued in 2000 and Implementation Guide in 2001 incorporating self-assessment. Work on three other modules, indicators of performance, risk-analysis and supplier:customer relationship, is ongoing.

Indicators of performance

- Emissions to air and water
- Waste production
- Lost time accidents
- Water and energy use
- Environmental investments, running costs and taxes.

Communication with interested parties

A fifth survey of Responsible Care was carried out covering 327 production sites, and the results will be widely distributed to stakeholders. Several member companies have local Community Advisory Panels.

Mutual assistance forums

Responsible Care managers of the major companies work together in several local Responsible Care groups. They meet on a regular basis, share experiences, and are particularly beneficial for smaller companies belonging to the groups. The 'Implementation and self-assessment guide', provided by Fedichem, facilitates implementation. Individual assistance is given on request, quite often with regard to communication with neighbours and stakeholders. Work on Product Stewardship was intense in 2002. Workshops and seminars offered practical information on PS implementation to member companies, and Fedichem published three brochures: "Guidelines for the implementation of Product Stewardship", "Product Stewardship in practice"

(covering the relation between producer and customer, elementary risk-analysis, and performance indicators), and "PS and the implementation of the new Directives on dangerous substances and preparations". A new list of FAQs will be put on Fedichem's extranet.

Process to encourage full participation of association members

Responsible Care is a condition of membership. All Fedichem members (approx. 750) are signed up to the initiative.

Implementation assurance

This is carried out through self-assessment. Significant changes in performance data from member companies are discussed on an individual basis. SMEs are visited on a regular basis, and Responsible Care is always a theme during these visits. The self-assessment and Implementation guide 'Responsible Care, a commitment of the Chemical Industry', reviewed in 1999, will also be put on the extranet.

Additional features

- Local name: Verantwoord en Zorgvuldig/ Gestion Responsable.
- Belintra, part of Cefic's ICE programme on prevention of transport incidents, involves 62 Belgian companies. The Belgian Government showcased Belintra at the World Summit on Sustainable Development as a Type II-Partnership.

CZECH REPUBLIC

SVAZ CHEMICKÉHO PRUMYSLU ČESKÉ REPUBLIKY - SCHP CR

www.schp.cz

Adopted Responsible Care in 1994

Highlights

Balakom, AS, an SME member company, was one of four companies recognised at the 2002 Solvent Stewardship Awards, presented by the European Solvents Industry Group (ESIG) at the joint Cefic/ FECC Responsible Care Conference in Barcelona. Disastrous flooding in August 2002 in the Czech Republic had a severe impact on the chemical industry and trade in general. Three major accidents forced companies, together with their association, to analyse the findings and assess ways in which they could improve emergency response and management.

PROGRAMME DESCRIPTION:

Codes, guidance notes or checklists for implementation

- Proactivity*
- Health and safety
- Integrated pollution prevention and control
- Reduction of past and existing environmental damage
- Emergency preparedness
- Environmental management
- Environmental education and training
- Information openness.

Rohm and Haas

As part of Rohm and Haas' commitment to Responsible Care and product stewardship, with a focus on Green Chemistry and Sustainable Development, the company's Electronic Materials business, Shipley, has in the UK looked at the increasing volume of end-of-life electronics that are being consigned to landfill.

It is estimated that 50,000 tonne/year of end-of-life electronic scrap is produced in the UK. The limited availability of landfill, combined with the fact that only 15% of printed circuit boards (PCBs) are being recycled, has led to greater emphasis on more sustainable approaches.

The study found there is a lack of infrastructure and established methodologies to handle the recycling of PCBs and their components in the UK. As yet, there is no single solution that is capable of handling all types of PCB scrap, but the technology is being developed and solutions do exist.

The European Union's Waste from Electrical and Electronic Equipment (WEEE) directive, which comes into effect in 2006, will require an increase in the recovery and recycling of materials found in scrap electronics. Currently, the only board waste recycled has an inherent value due to its precious metal content. There is a clear opportunity to establish and implement a PCB-recycling capability in the UK before the WEEE directive comes into force.

Rohm and Haas says collaboration is key to moving forward with sustainability. In 2002 the company conducted a joint life cycle assessment on acrylic water-based and solvent-based road-marking paint with Prosign, and ADEME (Agence de l'Environnement et Maitrise de l'Energie).'

The study showed that 17,000 tonne/year of VOC release could be saved if all western Europe used water-based, instead of solvent-based, road-marking paints. This would result in almost 60 000 tonne/year less of CO₂ being released into the atmosphere.

www.rohmmaas.com



Robinson Brothers

As part of an overall business strategy of continuous improvement and in support of its ISO 14001 and Responsible Care goals, UK speciality chemicals manufacturer, Robinson Brothers has been revisiting the products that it has made for some years to see if a fresh approach can improve process economics. The company has found that improvements are possible, sometimes dramatically so, and that these gains translate into a more sustainable business.

The mechanism the company uses to scrutinise all of its products, both old and new, is called Process Improvement Groups (PIGs). These are multifunctional, self-starting (and ending), self-motivating teams involving operators, engineers, chemists, HSE, production management, quality assessment/quality control, research and development, information technology, and purchasing – depending on individual products and problems.

“Over the last few years the PIGs have learnt to question the status quo and exert their power to initiate and manage projects to improve quality, output, efficiency, operability, environmental impact, and safety/ health,” says Brian Murphy, Robinson Brothers’ managing director. “They have been successful with existing chemicals and for the introduction of new products and processes. They have also helped to change the company culture.”

A recent example was with a chemical intermediate that Robinson has made for over 20 years, which is used in both early stage pharmaceutical and agricultural chemical synthesis.

Last year its PIG subjected the product to intense scrutiny. “Over a period of some months we successfully and radically altered both the process and the chemistry. No significant new capital investment was involved in the change, although equipment modification and reconfiguration was required,” says Murphy.

“We were able to reduce the overall time for completing the reaction sequence from 84 hours to around 50. At the same time we increased the yield, expressed as the percentage of the main starting material in the final product, from 84% to 89%. The process changes allowed us to recycle around 50% of the effluent increasing yield and reducing environmental impact. The final aqueous waste from this process is still treated and discharged to sewer but in lower volumes and, because of its lower organic content, external treatment costs are lower,” says Murphy.

“We calculate that our energy savings per kilogram produced are over 35% due to this improved process and we have reduced both production cost and environmental burden as well. In the competitive markets we face these days we are resigned to the fact that these cost savings will, at best, be shared with our customers. At worst they will simply absorb the savings, and more. The environmental benefits at least will still remain!”

www.robinsbrothers.ltd.uk



** Since 1994 the Proactivity code has helped define proactive behaviour of member companies' management and their employees, both on and off site, in areas such as cooperation and dealing with external stakeholders, HSE and reputation issues. The Responsible Care programme has been used in Ministry of Environment documentation and in public reports as the model of voluntary activity that is helping the Czech chemical industry to achieve its transformation towards sustainable development.*

Indicators of performance

- Emissions to air
- Emissions to water
- Waste generation
- Energy consumption
- Accidents at work
- Distribution incidents

According to the revised SCHP CR IoP Guide (updated in May 2002) most member companies, including traders and distributors, refer to: emissions to air and water, wastes, energy consumption, workplace safety including occupational illnesses, transport accidents, and voluntary activities (EMAS, ISO 14001, ISO 9001, ICE, Safe Enterprise etc.).

Communication with interested parties

Member companies receive Responsible Care reports every two months. The internet is the association's main communication vehicle with the public on Responsible Care. Most member companies publish their own newsletter and also carry HSE data on the internet. Most member companies also have regular communication with local authorities, carry out school visits, and organise open door events.

Mutual assistance forums

Training workshops on safe logistics, environmental legislation and safety at work were organised in cooperation with national authorities and the Chemical Labour Union using the outcomes of Cefic's ChemFed Project.

Process to encourage full participation of association members

Responsible Care is not a condition of SCHP membership. Product stewardship practices have been highlighted by the association as the priority issue for companies implementing Responsible Care, which has resulted in increased participation from trade and distribution companies.

Implementation assurance

According to the revised Responsible Care Implementation and Assessment Guide, companies must carry out an annual self-assessment of Responsible Care. The results must be submitted to employees for comment, published on the company's internet pages or at the official local authority public announcement desk. The original self-assessment including the comments of all stakeholders are then reviewed by independent committee, which recommends the Board to either approve or veto the

Responsible Care helps the industry to engage and work with stakeholders at local, national and international levels.

results, and to officially award successful companies with the title “Responsible Care bearer”.

Additional features

- Local name: Odpovedn podnikni v chemii.
- SCHP CR initiated voluntary and regulatory activities defined by the Ministry of the Interior aimed at improving security at high risk facilities.
- SCHP CR offered voluntary agreements to the Prevention and Emergency Department of the Ministry of Transport and to representatives of most industrialised regions, aimed at achieving closer cooperation with the authorities on good logistics practices, and highlighting best available techniques by member companies.
- Agreement covering Transport Information Accident Response System (TRINS) with Ministry of the Interior.

DENMARK

FORENINGEN AF DANSKE KEMISKE INDUSTRIER - FDKI

Adopted Responsible Care in 1995

PROGRAMME DESCRIPTION:

Codes, guidance notes or checklists for implementation

- Environmental management/reporting
- Emergency Response
- Occupational environment management.

Indicators of performance

IoPs in line with Cefic HSE Reporting Guidelines

Communication with interested parties

No formal structure

Mutual assistance forums

No formal structure

Process to encourage full participation of association members

Responsible Care is not a condition of membership. FDKI relies on peer pressure to encourage other companies to participate in Responsible Care. 72% of the membership has signed up to Responsible Care.

Implementation assurance

No formal system

Additional features

- Partnership programme for Traders & Distributors Association.
- Emergency Response system in place since 1994.

FINLAND

KEMIANTEOLLISUUS RY – KT RY

www.chemind.fi

Adopted Responsible Care in 1992

Highlights:

2002 marked a decade of Responsible Care in Finland. A joint safety project named Safety 24h with the Chemical Workers' Union was organised. More than 40 company projects were carried out, including topics ranging from behavioural safety to contractor safety. Co-operation with trade unions was excellent.

PROGRAMME DESCRIPTION:

Codes, guidance notes or checklists for implementation

- Process safety
- Safety in transportation
- Product Stewardship
- Waste management
- Environmental performance.

Responsible Care (Vastuu Huomisesta) encompasses a set of Guiding Principles and Guidance Notes. While the Guiding Principles and the Guidance Notes are the cornerstones of the programme, there are also several checklists, memoranda, etc. to help companies with implementation. A Guide for Small and Medium-sized Enterprises, including five checklists referring to the Guidance Notes, is available, as well as a Guide for Plastics Converters.

Indicators of performance

- Discharges to water
- Releases to air
- Waste management
- Process safety
- Transportation safety
- Product stewardship
- SH&E training
- SH&E spending
- Energy and water consumption
- Management systems
- Communication.

45 IoPs in total. Annual Responsible Care IoP report published in Finnish and English; both collection and reporting of data is mainly on the website which gives detailed results of national performance. The report is well-established with stakeholders and publicised by means of local and national press conferences. Over the past 9 years, between 97% and 100% of companies have participated in performance data collection.

Communication with interested parties

See Highlights. Other activities include: annual Open Door week. Yearly presentation on Responsible Care to Chemical Congress. Advertising campaigns. Nearly half participating companies have some form of community advisory panel.

Responsible Care is an effective self-help network. Companies and federations share best practices for mutual benefit.

Mutual assistance forums

The Chemical Industry federation's role in implementing Responsible Care is to serve as a co-ordination unit. The practical implementation of the environmental, health and safety programmes is up to the individual companies. Companies participating in the programme commit themselves, in writing, to follow the Guiding Principles and the Guidance Notes, to co-operate with other participating companies, and to be open in their relations with public at large. The national federation arranges seminars and special one-day meetings for the committed companies. Responsible Care was communicated by selected success stories from member companies. Annual Progress Report, federation's stand at National Chemistry Fair, as well as some separate publications all featured these stories.

Process to encourage full participation of association members

Responsible Care is not a condition of membership. By March 2003 a total of 116 companies had committed themselves to Responsible Care. These companies represent 65% of the total employees in the chemical industry, and over 80% of production volume. 20% are companies with over 250 employees and around 33% are companies with fewer than 50 employees. Members are encouraged to commit to Responsible Care through regular information, peer pressure and dialogue between CEOs and senior executives.

Implementation assurance

Self-evaluation checklists have been in use since 1992, and companies are increasingly interested in self-assessment. An indication of the seriousness of this commitment is the provision of information for the national reporting. A verification tool for committed companies has been developed.

Additional features

- Local name: Vastuu Huomisesta.
- Partnership agreement between KT ry and Association of Finnish Technical Traders Chemical Division.
- SH&E voluntary agreements: energy efficiency and conservation.
- Emergency distribution response system.

FRANCE

UNION DES INDUSTRIES CHIMIQUES - UIC

www.uic.fr

Adopted Responsible Care in 1990

Highlights:

Under the "Discover Chemistry in Europe" initiative, UIC organised Open Doors events – including exhibitions, conferences, etc – in October 2002, involving some 250 sites and more than 100,000 visitors. These events helped enhance the chemical industry's reputation with the public.

PROGRAMME DESCRIPTION:

Codes, guidance notes or checklists for implementation

Over 50 technical and guidance documents have been published by UIC for its members; these documents cover all aspects of SH&E and Responsible Care.

Indicators of performance

- Occupational safety
- Air emissions
- Water emissions
- Waste generation
- Energy consumption
- Environmental investments.

For the fourth consecutive year, UIC carried out a survey of HSE performance indicators at about 1,200 member sites. The number of sites responding to the survey is on the increase, and even includes UIC members not yet officially Responsible Care signatories. The main results are publicly available in French and English.

Communication with interested parties

An agreement on safety was signed on July 4, 2002 between UIC, the associated federations and four Trade Unions, complementing the May 20, 1992 agreement on the improvement of health and safety at work. It will help to further strengthen in-company incident prevention and safety. Other activities include development of communication both inside industry and with external stakeholders.

Mutual assistance forums

Promotion of Product Stewardship through business and distribution is an ongoing activity. The SMEs Awareness programme managed by the local UIC associations with the help of UIC and the support of experts is ongoing; since 1999, more than 110 SMEs have taken advantage of this programme.

Process to encourage full participation of association members

Responsible Care is not a condition of UIC membership but companies representing half of member sites and over 90% of French chemical industry turnover have signed up to the initiative. UIC continues to work on getting industry-wide support for Responsible Care, focusing in particular on SMEs. "Engagement de Progrès" has been signed by member companies, which together represent one half of member sites and over 90% of the French chemical industry turnover.

Implementation assurance

UIC has decided to conduct a self-assessment survey every three years using a questionnaire based on the Cefic guide for federations. The main objectives are for members to determine the strengths and weaknesses of their involvement in the programme and for UIC to identify the gaps and develop appropriate tools.

The year 2000 results analysis helped define 2002 UIC objectives. The survey is to be launched for the second time in 2004.

Additional features

- Local name: Engagement de Progrès.
- Emergency distribution response scheme under the European ICE programme.

GERMANY

VERBAND DER CHEMISCHEN INDUSTRIE - VCI

www.vci.de

Adopted Responsible Care in 1991

Highlights:

In 2002, VCI focused its Responsible Care activities on the World Summit on Sustainable Development. For instance, VCI's Responsible Care Report 2002 Focal Topic deals with "Sustainable Development and Responsible Care, Ten years after Rio: Our contribution to the challenges of Agenda 21". VCI also published "Learning Sustainability", a brochure summarising the discursive project "Key Steps for a Sustainable Germany". Altogether 240 experts representing over 130 organisations from most parts of society participated in the project that focused on discussion and understanding. Both documents were exhibited at the German Industries booth at WSSD's Ubuntu Village.

PROGRAMME DESCRIPTION:

Codes, guidance notes or checklists for implementation

- Product Stewardship
- Process safety
- Employee health and safety
- Environmental protection
- Distribution safety
- Communication.

Indicators of performance

Climate Protection, Environmental Protection (emissions into air and water, use of resources, costs of environmental protection, environmental management systems), Product Stewardship, Occupational Health and Safety, Process Safety, Distribution Safety, Reference Data and Economic Indicators.

Communication with interested parties

As part of Germany's Year of Chemistry in 2003, around 200 member companies are expected to participate in the Open Doors event on 20 September. Since 1990, there have been around 1.6 million visitors to chemical companies' Open Door events. Employees and their representatives are actively involved in Responsible Care activities. Responsible Care is a focal subject of information events for works councils; these events are jointly organised by VCI, BAVC (the German federation of chemical employers' associations) and IG BCE (the mining, chemical and

Dow Corning

At the end of 2002, and a year ahead of schedule, Dow Corning completed an undertaking given to the American Chemistry Council (ACC) in 1999 to have Responsible Care 'practice in place'.

With more than 40 manufacturing and customer service centers around the world, Dow Corning had set itself a challenging task, particularly in some countries where Responsible Care is not very well known.

The company adopted a management system approach for every code of Responsible Care, in line with a business process philosophy being implemented in other areas including finance, customer ordering and human resources. This included setting up teams of code stewards globally, whose role was to set the standards expected, coach sites on how to implement the codes, and support the audit process.

The company reworked the codes into a management system framework, tailored to recognise the different nature of operations at manufacturing sites versus sales offices. The company also trained sites on how to use the system, conducted audits, reviewed progress, and established self-assessment tools to enable sites to monitor their own progress.

The strategy has meant that managers at all locations clearly understand the company's expectations and have a mechanism that allows them to check progress and continuously improve. Dow Corning's global chief product steward and risk manager Keith Huckle says the approach has also had several business benefits, especially through the product stewardship and distribution elements, which have improved customer partnerships and loyalty. "Our commercial staff that deal with customers offer a broader range of services and can get closer to the customer," he says. "As a result, we have been able to develop sustained partnerships."

More broadly, Huckle says the company's knowledge and expertise in this area also supports a business strategy of offering more options and choices for customers. Dow Corning announced earlier this year it was making its environment, health, and safety (EH&S) and analytical testing services available to companies, regardless of whether they buy Dow Corning products. These services include toxicology, environmental, and chemistry testing and consulting; chemical and product inventory registration assistance; product compliance reviews; material safety data sheet development; and support implementing EH&S software into SAP's enterprise resource planning systems. "The efforts we have put into Responsible Care and environment, health and safety are now providing a springboard for future business development," says Huckle.

Looking to the future, Dow Corning is developing long-range HSE targets and a sustainability strategy, which will be founded on the philosophy of Responsible Care.

www.dowcorning.com



BASF Group

The 'Competence Center Responsible Care' established by BASF in 2001 is responsible for ensuring continuous improvement throughout the company's environment, safety and health performance. The competence center sets goals, oversees implementation and monitors the meeting of targets. In the past BASF has been successful in reducing its emissions into air and water. For the future the company will continue to improve its environmental performance.

The long-term global goals in the areas of environmental protection, occupational safety, distribution safety and product safety have been published in the BASF report "Environment, Health, Safety 2002". Results against the goals will be reported on a regular basis.

Regular site audits carried out on behalf of the Board of Executive Directors are key to successfully measuring BASF's success in implementing its Responsible Care standards in demonstrating improvement, and identifying where there is room for further improvement.

These audits are performed by an international team of experts supported by the regional organization in the fields of environment, safety and health. The structure of BASF's audit system has been adapted to address the codes of Responsible Care, so results show even more clearly how a site performs with regard to environmental protection, product stewardship, occupational safety and occupational health, process safety and emergency response, distribution safety, and dialogue.

In the 2002 reporting period, 138 environment and safety audits were conducted at 74 sites throughout the BASF Group, while occupational health and health protection audits were carried out at 44 sites.

www.basf.com

energy industrial union). Based on the 'Responsible Care social partnership agreement' VCI, BAVC and IG BCE formed a joint committee to facilitate exchange on the implementation of Responsible Care, experience gathered in this field and the further strategic development of the initiative. With support from the Chemical Industry's Employers' Liability Insurance Association (BG Chemie) the social partners VCI, BAVC and IG BCE are working on a further Responsible Care training series.

Mutual assistance forums

Special help is directed at SMEs, which make up the majority of VCI members. Continued support has been provided for EU candidate countries with their Responsible Care programmes.

Process to encourage full participation of association members

Responsible Care is a condition of VCI membership. Nearly 99% of the German chemical industry belongs to VCI.

Implementation assurance

VCI reviews compliance with Responsible Care requirements in its annual questionnaire survey that serves as a basis for the Responsible Care Report. In 2000/2001, for the first time, VCI mailed a questionnaire on Responsible Care Self Assessment. Returns provide a representative picture (126 companies with a total of 216,887 employees), and shows there is a great need to catch up where communication and product stewardship are concerned in Germany. This will have to be addressed in the next round of Responsible Care self-assessment that also has to take into account the outcome of Cefic's Responsible Care Review 2003.

Additional features

- Local name: Verantwortliches Handeln.
- Partnership agreement with chemical distributors association, VCH.
- National Emergency Response scheme, TUIS.
- SH&E voluntary agreements: some 30 agreements are in existence in Germany.
- The German Chemical Trade Union (IG BCE), the VCI and German federation of Chemical Employers Association (BAVC) work closely on Responsible Care under an agreement signed end 1999.

GREECE

HELLENIC ASSOCIATION OF CHEMICAL INDUSTRIES – HACI

www.haci.gr

Adopted Responsible Care in 1995

PROGRAMME DESCRIPTION

Codes, guidance notes or checklists for implementation

- Public awareness and Emergency Response
- Waste Management
- Storage and distribution of chemicals



Through Responsible Care, the chemical industry commits to continuous improvement in all aspects of health, safety and environmental performance, and to open communication with stakeholders.

- Process safety
- Safety hygiene
- Pollution control.

Indicators of performance

- Emissions to air and water
- Occupational health and safety (9 IoPs in total)
IoPs published since 2000, including 12 quantitative indicators: Energy & Water Use, CO₂ Emissions to Air & Water, COD, VOCs, Emissions of Sulfur & Nitrogen Oxides, Aquatic Release of Phosphorous & Nitrogen Compounds, Non-hazardous Waste for Disposal, Number of Fatalities, Occupational Health & Safety.

Communication with interested parties

Annual Responsible Care IoPs report in Greek & English, key figures also on web site.

Mutual assistance forums

Conferences and meetings involving the competent National Authorities

Process to encourage full participation of association members

Responsible Care is not a condition of membership. 60% of member companies have adopted the full programme.

Implementation assurance

No system in place.

Additional features

- National emergency response scheme covering transportation of dangerous materials is under development in cooperation with the Emergency Fire Services.

- Transportation
- Distribution
- Hazardous waste.

Checklists have also been published for the following

- environmental protection
- safety
- occupational health
- energy consumption
- communication

Indicators of performance

- Air emissions
- Water emissions
- Waste generation
- Energy use
- Environmental investment
- Lost time accidents.

Communication with interested parties

See highlights. Many member companies hold Open Days and publish HS&E reports. MAVESZ organises an annual Responsible Care workshop, and works with the authorities on legislative issues.

Mutual assistance forums

Meeting programmes for senior executives and Responsible Care coordinators. Companies working in small groups.

Process to encourage full participation of association members

Responsible Care is not a condition of membership but over 90% of members have signed up. Committed companies represent 75-80% of turnover of the Hungarian chemical sector. Encouragement comes mainly from peer pressure and promoting the benefits of Responsible Care.

Implementation assurance

See highlights. Responsible Care commitments related to the management of the environment have been verified through ISO 14001 certification at the majority of Hungarian companies signed up to Responsible Care. Companies must complete a comprehensive questionnaire on HS&E performance every 2-3 years.

Additional features

- Local name: Felelcs Gondoskodás.
- National emergency response scheme VERIK under which experts cooperate on minimising consequences/prevention of incidents during transportation of dangerous materials.

HUNGARY

MAGYAR VEGYIPARI SZÖVETSÉG – MAVESZ

www.havesz.hu

Adopted Responsible Care in 1992

Highlights:

After a decade of Responsible Care, Mavesz is implementing a number of changes to renew the initiative. It will issue a new guide, and enhance other forms of communication for both member companies and the public including additional information on the web site, newsletters, presentations, workshops, etc. Mavesz also plans to implement a new version of the self-assessment checklist, and to develop means for implementation at all member companies wherever possible.

PROGRAMME DESCRIPTION

Codes, guidance notes or checklists for implementation

- Community Awareness and Emergency Response.
- Research and development
- Manufacturing

IRELAND

THE IRISH PHARMACEUTICAL & CHEMICAL MANUFACTURERS FEDERATION – IPCMF

www.ipcmf.ie (under construction)

Adopted Responsible Care in 1992

The recognition given to the chemical sector's contribution to sustainable development at last year's World Summit in Johannesburg is due in no small part to Responsible Care.

Highlights:

In 2002 IPCMF undertook a major review of Responsible Care. A Responsible Care gap analysis was carried out in February, and key items for action identified. Following this, a detailed work programme was put in place with an annual management plan delivered. A Responsible Care newsletter was forwarded to all contacts and in October of 2002 our first annual Responsible Care performance report was published. IPCMF is now working for a management programme for 2003 with far greater buy-in from companies and a recognition of the importance of Responsible Care for the ongoing sustainability of the industry in Ireland.

PROGRAMME DESCRIPTION

Codes, guidance notes or checklists for implementation

- Environmental management
- Process safety
- Distribution

Further codes are being reviewed and will be developed.

Indicators of performance

All companies are required to report accident, occupational illness and environmental performance data. This data is used to benchmark performance against industry and European standards. Data collected over the previous years is being assessed to demonstrate performance in health, safety and environmental management.

Communication with interested parties

It is federation policy to collaborate with public and regulatory agencies on environmental issues. This exercise is seen as being vital for ensuring long-term confidence in the industry and its commitment to Responsible Care. The EPA has indicated that the performance of the pharmaceutical industry in Ireland is good overall, with high levels of compliance with license requirements.

Mutual assistance forums

Steering group meets regularly to define Responsible Care work programme. Responsible Care coordinators working group meets twice a year to review implementation issues and identify actions. Four local mutual assistance cells operate in areas with a large concentration of chemical facilities.

Process to encourage full participation of association members

Commitment to Responsible Care is a condition of IPCMF membership. The membership represents over 80% of Irish chemical production.

Implementation assurance

No formal verification system is in place; all companies committed to Responsible Care have mandatory reporting requirements under existing environment and health and safety legislation. Under the EPA's Integrated Pollution and Control legislation, companies must put in place and operate an environmental management system and outline a programme for continuous improvement. The EPA

audits environmental performance on an annual basis. This is a publicly acceptable mechanism for external verification. However, it is IPCMF's intention to carry out independent audits against the Guiding Principles of Responsible Care.

Additional features

- Partnership agreement signed in 1997 with the Irish Chemicals Marketers Association to implement Responsible Care.

ISRAEL

MANUFACTURERS' ASSOCIATION OF ISRAEL / CHEMICAL, PHARMACEUTICAL & ENVIRONMENTAL SOCIETY – MAI

www.cpc.org.il/RC

Adopted Responsible Care in 2001

Highlights:

Progress has been made in setting up the first community advisory panel in the Ramat-Hovav Industrial Area, a major location for the chemical industry, including participation of a 'Green' NGO. MAI's first major Responsible Care event was held in early 2003, with the participation of Israeli Chemical Industry CEOs and major figures in the Ministry of Environment, during which Responsible Care members received their Membership Certificates.

PROGRAMME DESCRIPTION:

Codes, guidance notes or checklists for implementation

Three Codes are in place:

- Pollution Prevention
- Employees Health & Safety
- Process Safety

Work is underway on the Community Awareness and Emergency Response Code. By end 2003, MAI plans to have all 6 in place, including Product Stewardship and Distribution.

Indicators of performance

No formal structure.

Communication with interested parties

See Highlights. MAI's Chemical, Pharmaceutical & Environmental Society participates in all SHE governmental legislation procedures through public committees. The society operates all MAI Environmental Committees for other industry sectors and is responsible for coordination of joint teams from industry and the authorities seeking solutions to ecological problems. The society operates six educational centres for children. It plans to publish its first Responsible Care report in 2003.

Mutual assistance forums

No formal structure.

Process to encourage full participation of association members

Responsible Care is not an obligation of membership but all

major company CEOs are on board. Efforts in 2002 were focused on getting more member companies signed up. By April 2003, 20 companies had committed to Responsible Care including major local firms.

Implementation assurance

No formal system.

Additional features

- A voluntary agreement between the Ministry of the Environment and the Manufacturers Association covers air pollution reduction. Most member companies have signed the covenant, and committed to emission standards and reduction targets.
- The society is responsible for operation of the Israeli Cleaner Production Centre

ITALY

FEDERAZIONE ITALIANA DELL'INDUSTRIA CHIMICA - FEDERCHIMICA

www.federchimica.it

Adopted Responsible Care in 1992

Highlights:

A co-operation agreement was signed between Federchimica and "Stazione Sperimentale Combustibili" (Scientific Research Institute for experimental studies on fuels and their thermal properties). Outcome of the agreement is guidance on dust explosivity, published June 2002, and a certificated testing "kit" for process and product safety, which Responsible Care companies get at a special price.

PROGRAMME DESCRIPTION:

Codes, guidance notes or checklists for implementation

- Community Awareness / Emergency Response
- Employee Health and Safety at Work
- Process Safety
- Protection of the Environment / Waste reduction
- Safe Warehousing and Distribution

Federchimica publishes an extensive range of guidance, questionnaires, etc covering the codes.

Indicators of performance

The Responsible Care Report is based on Cefic's 1998 HSE Guidelines. Federchimica Annual Responsible Care Report, published since 1996, contains quantitative IoPs on:

- Health and Safety of Employees and Contractors
- Water Emissions
- Air Emissions
- Energy Consumption
- Waste Management
- Water Management
- Distribution Safety
- Product Stewardship

ExxonMobil Chemical

At ExxonMobil, no aspect of work receives greater attention than safety, says the company. ExxonMobil has a simple, straightforward global goal: 'Nobody Gets Hurt'.

"We want a work environment in which nobody gets hurt. Through daily attention to safety in all we do, from management to the shop floor, the improvements of the past ten years lead us to visualise an accident-free environment and that's what we are striving to achieve," says Peter Peschak, president ExxonMobil Chemical Europe.

The company's annual Awards for Excellence in Responsible Care recognises exceptional achievements by ExxonMobil Chemical employees across Europe. The programme demonstrates the company's dedication to Responsible Care principles, and to accomplishing them through its employees.

Each year prizewinners are selected from amongst a broad number of entries received across Europe. In 2002, a project management team based at Fawley and Fife in the UK received an award for extending best practice in safety management to a diverse contractor workforce. The team standardised safety programmes on all project work, which included: peer-on-peer safety audits for contractor technicians; human factor-based safety excellence initiatives, including job-start safety talks and personal safety plans; wider use of near-miss reporting; upgraded weekly reviews of HSE performance with contractors.

Since starting the programme, contractors at the Fawley and Fife plants have only had three recordable injuries over a 30-month period.

Another example of an award-winning safety initiative comes from a team of operators at the company's polypropylene specialties plant in France. The team was recognised for its implementation of a safer way to clean raw material hoppers. Between each production batch, the raw material hoppers that feed the mixing screw must be cleaned. This used to be done by a technician climbing onto the pipes above the mixing screw to extract surplus material with a vacuum cleaner. The vacuumed material had to be disposed of as waste. The team developed an automated solution eliminating this job entirely and enabled them to reclaim the material that previously was sent to waste.

www.exxonmobil.com



Avecia Biocides

Understandably, Product Stewardship is an important element of the Responsible Care programme at Avecia Biocides' Protection & Hygiene Business; its products are inherently hazardous to human health and the environment, and need to be managed with care along its various product supply chains that include many industries and final end-uses.

In recent years, this business has devoted additional resources to the fast-growing market for hygiene products. Here, the requirement for strong product stewardship is especially critical, given the potentially increased exposure of consumers to a broader range of products containing antimicrobial chemicals (e.g. antibacterial wet-wipes, clothing, hygienic plastics). By design, the Protection & Hygiene business put in place new product stewardship resources, including designated managers and specialists, to support its commercial objectives, and is now reaping the benefits of that commitment to product stewardship. Key commercial stakeholders, including highly influential retailers, are keen to derive the learnings from detailed human health and environment product risk assessments, which specifically cover hygiene applications. Rightly, these stakeholders are unwilling to deal with suppliers who are unable to provide this type of support.

While many companies still struggle with the question of how to identify business value from Responsible Care/ product stewardship, Avecia Protection & Hygiene has already – and successfully – placed its product stewardship activities at the heart of its business strategy, which is where it properly belongs.

www.avecia.org

- Implementation of ISO 14001 certification and EMAS registration
 - Environmental Investment and Cost
- And qualitative Indicators on:
- Process Safety
 - Product Stewardship

Communication with interested parties

The 8th Responsible Care Report was published in September and discussed with journalists and external stakeholders. Open Doors in 2001/02 had a low profile due to security reasons, but signs are encouraging for 2002/03: about 60 sites have organised Open Doors days.

Mutual assistance forums

A Responsible Care Conference was organised in December 2002 where many Responsible Care Coordinators explained their progress in SH&E management and exchanged experience. Other events were organised to share views and exchange experiences on specific matters such as Energy, Kyoto Protocol, IPPC Directive. Federchimica took part in seminars in Eastern Europe candidate countries under the Phare Project.

Process to encourage full participation of association members

Responsible Care is not a condition of membership. More than 160 companies are committed to Responsible Care representing about 45% of national chemical industry turnover (including pharmaceutical sector). At the end of 2001 a "1+1 Project" was launched in order to increase the number of companies committed to Responsible Care, whereby every Responsible Care company should bring at least one other company into the programme. Special assistance on Responsible Care was offered to SMEs (e.g. presentation to staff by the association, and site audits for SH&E management system).

Implementation assurance

The self-assessment survey is planned for spring 2003.

Additional features

- Responsible Care Local name: L'impegno dell'Industria Chimica per l'ambiente, la sicurezza, la salute.
- Responsible Care Partnership Agreement in place with AssICC, the Italian Chemical Distributors Association.
- SH&E voluntary agreements under discussion with Ministry of Environment to reach Kyoto objective and improve recognition of Responsible Care.
- The Transport Emergency Service has been strengthened by the participation of Trenitalia, the national railway company

THE NETHERLANDS

VERENIGING VAN DE NEDERLANDSE CHEMISCHE INDUSTRIE - VNCI

www.vnci.nl

Adopted Responsible Care in 1990



Highlights:

Launch of a new handbook for developing a company communication plan. This was perceived by member companies as very functional, practical and helpful. To sustain the launch, several workshops were organised to share experiences in developing company communication plans. To fulfil the potential need for such a handbook in other European countries, it was translated into English and distributed at the Cefic Responsible Care conference in autumn 2002. More stringent conditions have been set for Responsible Care participation: member companies should supply data to VNCI covering LTR, fatalities (including contractors); reductions achieved regarding the emission of 37 substances to air and 35 substances to water; and transportation accidents. They are also required to carry out periodical Responsible Care self assessment, and to develop a communications plan and send a copy to the federation for advice/approval.

PROGRAMME DESCRIPTION:**Codes, guidance notes or checklists for implementation**

- Product Stewardship
- Self-assessment questionnaire
- SQAS (distribution)
- Safety Checklist Contractors
- Communications plan for companies.

Indicators of performance

See highlights. Annual Responsible Care report documents a comprehensive range of IoPs. VNCI is also evaluating safety and energy consumption.

Communication with interested parties

See highlights. In addition, Responsible Care Committee includes ex-government ministers, politicians, environmentalists, journalists, CEOs and scientific research institute. Many companies have set up local Community Advisory Panels. Annual Responsible Care Progress Report. Open Day (every two years since 1978).

Mutual assistance forums

VNCI sponsors Responsible Care seminars and conferences for members. Based on self-assessment results, workshops held during 2001 focused on product stewardship and communication.

Process to encourage full participation of association members

Responsible Care commitment is not a condition of membership. The number of Responsible Care participants in 2002 was 132, which represents more than 90% of Dutch chemical production. Responsible Care Award in 2002 was presented to Ciba Specialty Chemicals Maastricht for its project "How to prevent further water pollution by the elimination of nitrates".

Implementation assurance

Around 90% of companies participated in 2002 Responsible Care self-assessment, and submitted a copy to the VNCI. Based on the outcome of these assessments workshops will be held during 2003.

The main issues are Product Stewardship and Communication. In 2000 a start was made with organising Responsible Care peer reviews. Evaluation of the experience derived from these reviews showed it was a great help to identify new areas for improvement. Third party verification of Responsible Care is still postponed to the near future.

Additional features

- The VNCI guidance document regarding the environmental burden impact of emissions was translated into English in 2001 as a result of increasing demand from members with international activities. This Environmental Performance Indicator method for the chemical industry can be downloaded from the VNCI web site. The environmental equivalents were developed and accepted by all parties involved: the Ministry of Environmental Affairs, the University of Leiden and CE Delft.
- Currently there is one formal Responsible Care partnership with The Dutch Chemical Trade Association which began implementation in 1997. The Dutch Association of Paints and Varnishes (VVFV) is an associated member of the VNCI, but does not participate in the formal Responsible Care programme. The VVVG developed its Coating Care System with many similarities to the VNCI Responsible Care programme, which is now being implemented.
- Voluntary Agreements with Government on: improving energy efficiency; implementing environmental measures for companies to achieve goals with the help of VNCI guidance; achieving targets for prevention/reduction of packaging materials with the help of VNCI guidance.

NORWAY**FEDERATION OF NORWEGIAN PROCESS INDUSTRIES - PIL**

www.pil.no

Adopted Responsible Care in 1993**PROGRAMME DESCRIPTION****Codes, guidance notes or checklists for implementation**

- Pollution prevention
- Process safety
- Employee health and safety
- 'How to be a Responsible Care company'
- Various 'Green papers'

Indicators of performance

- Total recordable injury rate
- Lost time injury rate
- Lost workdays due to injuries
- Fatal accident rate
- Near misses rate
- Fires, explosions & other major material damage
- Sick leave/duration
- Work related illnesses

Responsible Care encourages companies and associations to inform their publics about what they make and do.

- Energy consumption
- Waste production
- Water consumption
- Emissions (various).

Communication with interested parties

Publication of a comprehensive annual report, The Environment and Society. Individual companies sponsor open days, meetings with local communities and publish annual environmental reports. Some sites have joint projects with the local community.

Mutual assistance forums

PIL committees and advisory boards meet regularly and provide opportunities for companies to share best practices and Responsible Care implementation information. A programme of workshops and seminars covers a range of topics. Association web site provides SH&E performance data for all member companies.

Process to encourage full participation of association members

Responsible Care is not a condition of membership, and peer pressure is the primary means of encouraging companies to participate in Responsible Care. Around 215 companies, representing about 55% of the total number of chemical industry employees within PIL, have signed the guiding principles.

Implementation assurance

Implementation assurance is based on the following:

- Return of statistical information on extensive list of HS&E-parameters.
- Publication of an annual HS&E annual report, distributed to the local community.
- Annual report to the federation on site and company-specific contact information and bi-annual self-assessment questionnaire rating degree of Responsible Care implementation.
- Participation in experience-sharing events arranged for the sector.
- Active use of the Responsible Care logo within ICCA guidelines. Companies failing to fulfil the first 3 bullet-points will lose their right to refer to themselves as Responsible Care sites if, after having been warned for 2 consecutive years, the federation sees no significant change.

The new basic principles from 1999 state that sites shall have a documented SH&E management system and encourages EMAS and ISO 14000-series. As these systems cover all aspects of the site, a site's Responsible Care commitment is inspected as part of the audit.

Additional features

- The local name MIA was changed to Responsible Care in 1999
- PIL membership is broader than most chemical associations and includes laundry and cleaning, and waste recycling sectors among others.
- Partnership programme: the Norwegian Chemical Suppliers Association.
- SH&E voluntary agreements with government cover waste reduction (packaging sector), reduction in greenhouse gas emissions (aluminum), SO₂, reduction in sick leave (all sectors).

POLAND

POLSKA IZBA PRZEMYSŁU CHEMICZNEGO, ZWIĄZEK PRACODAWCÓW - PIPC-ZP

www.rc.com.pl

Adopted Responsible Care in 1992

Highlights:

Responsible Care featured high on the agenda at the key event of 2002 – the 5th International Conference “Chemical Industry for Environmental Improvement”, which brought together industry, local authorities, government, and also representatives of universities, technical academies and local communities.

PROGRAMME DESCRIPTION:

Codes, guidance notes or checklists for implementation

- Employee health and process safety
- Distribution safety
- Product Stewardship
- Harmonisation of national environmental law with EU directives.

Indicators of performance

- Environmental impact and charges (e.g. emissions, waste to landfill, water consumption)
- Environmental penalties
- Emissions (various)
- Waste generation
- Administration's environmental use consents
- Emergency response plan
- Risk analyses/ Safety reports
- Accident indicators.

Communication with interested parties

Company links with local communities continue to improve. Most PCCI members participate in environmental and process safety events. Most companies committed to Responsible Care have held an open day – 9 companies participated in 2002 – and publish SH&E newsletters for their local community. Many companies now publish annual environment reports. The association holds regular seminars and workshops related to Responsible Care. Articles on Responsible Care appear in the national press.

Mutual assistance forums

The Responsible Care Chapter is headed up by a member of the board of PCCI, and includes some company CEOs and representatives from the Ministries of Economy and Environment. It controls the Responsible Care secretariat and has a wide range of responsibilities including creation of a forum for sharing ideas and information exchange. There is a full programme of meetings and training courses. The secretariat has developed an information-exchange facility for companies on its Responsible Care web site, and has issued a range of publications to support and encourage members, including a regular newsletter called “OiT-ek”.

Process to encourage full participation of association members

Responsible Care is not an obligation of PCCI membership but around 40% of companies have signed up, including nine new members during 2002. 23 companies participate in Responsible Care including two distribution firms. Two new companies signed up in 2001. PCCI visits non-signatories to encourage participation. High performers are mentioned in PCCI's annual report, and information prepared for various media and government ministries.

Implementation assurance

There is a formal verification procedure in Poland, based on a self-assessment questionnaire completed by the company and involving a comprehensive set of questions built around the Responsible Care fundamental features and Guiding Principles. A preliminary audit establishes whether a company meets the formal requirements of Responsible Care and can use the name and the logo, while a certified audit enables the Responsible Care Chapter to award a company with the Responsible Care Certificate.

Additional features

- Local name: Odpowiedzialnosc i Troska.

PORTUGAL

ASSOCIAÇÃO PORTUGUESA DAS EMPRESAS QUÍMICAS - APEQ

www.apequimica.pt

Adopted Responsible Care in 1993

PROGRAMME DESCRIPTION:

Codes, guidance notes or checklists for implementation

- Pollution prevention
- Community Awareness and Emergency Response
- Distribution
- Product Stewardship
- Process safety
- Employee health and safety
- Communication.
- Checklist introduced in 1997.

Indicators of performance

45 IoPs in place covering accident frequency, severity rate, accident incidence rate, costs related to safety and environment, noise levels and cost related to health, emissions to air and water, waste recycling, hazardous and non-hazardous wastes for disposal, water and energy consumption.

Communication with interested parties

Meetings to communicate Responsible Care to local authorities, institutions and schools have been organised and the first community panel, PACOPAR, has been set up with a four-year action programme.

Mutual assistance forums

On site Responsible Care coordinators meetings to promote

Millennium Chemicals

Millennium Chemicals is one of four companies participating in a Community Liaison Panel, established in January 2001 in Stallingborough, UK, to help develop a clear understanding of the issues involved in the co-existence between the chemical industry and the local community, and to work together on initiatives for mutual benefit. The panel includes community representatives, an independent facilitator and, from industry, BOC, Cray Valley Polymers, Millennium and Synthomer.

Through the panel, emergency advice information has been published and distributed. Although UK legislation implementing the Seveso II Directive requires such information to be given to only one household in the area, the panel decided to go further and give information to the broader community, including the local school.

The school visit was led by Neil Finley, safety health and environment manager at Millennium Chemicals, on behalf of the panel, and Paul Gilbert, a Millennium employee, member of the Parish Council and vice chairman of the school governing body. A short video was presented and a brief discussion with the pupils was held around the key message of 'Go In, Stay In, Tune In'. Pupils were invited to enter a colouring competition on that theme.

Finley returned to the school to award prizes to the pupils. He commented: "The children gave me their full attention during the initial visit and were absolutely clear about the different steps to take in a fire or chemical incident. I was very impressed by their maturity and their grasp of the key messages."

www.millenniumchem.com



Hydro Polymers

PVC has been under intense and hostile attack for a number of years, primarily because of its association with chlorine chemistry. It has been argued by some that the plastic is inherently unsustainable, although much of this argument has been emotionally driven rather than based upon scientific scrutiny. PVC is durable in use and difficult to break down. This persistence has made it a target for some campaigners, yet this could arguably be one of its greatest strengths from a sustainability perspective, says Hydro Polymers.

The company is currently incorporating sustainability into its business activities through a systems-based framework process known as The Natural Step (TNS). The Natural Step (TNS) organisation was established in Sweden in the late 1980s as a means for tackling the difficulties facing society. Karl-Henrik Robért, a leading Swedish cancer expert, in co-operation with physicist Dr John Holmberg, and a network of other scientists from many disciplines elaborated the principles. The TNS framework is a robust and science-based set of tools that define sustainability in workable terms and helps organisations engage with the practicalities of sustainable development.

TNS is now an international charity based in nine countries including: Sweden, UK, USA, Canada, Australia, New Zealand, South Africa, Japan and Israel. TNS has worked with a wide range of major companies to help them address their sustainability challenges. However, working with Hydro Polymers was the first time the TNS process had been used in depth to evaluate a single material from a sustainability perspective.

The TNS process for Hydro Polymers began in 2001 with workshops in the UK, Norway and Sweden. A key development in the process was the publication of a report by TNS scientists entitled PVC: An Evaluation using The Natural Step Framework which identified five challenges as key criteria to achieve full sustainability in PVC. These challenges have now been integrated into the Hydro Polymers strategic development plan.

Challenge No 5 requires Hydro Polymers to commit to raising awareness about sustainable development across the industry, and the inclusion of all participants in the achievement. This challenge is of fundamental importance in supporting the other challenges.

The European Council of Vinyl Manufacturers' (ECVM) Vinyl 2010 process is the beginning of such a strategy, uniting the European PVC Industry from raw materials suppliers to end customers. However, this does not prevent pioneers from within the industry innovating their own novel solutions to existing challenges ahead of the game.

www.hydropolymers.com



experience sharing. Regular Responsible Care / HS&E seminars and workshops covering pollution prevention, performance indicators and emissions monitoring. News and information published in bimonthly publication. APEQ has published a comprehensive Responsible Care manual.

Process to encourage full participation of association members

Responsible Care is not an obligation of APEQ membership. 29 major companies are signed up, representing about 80% of the total sales volume of the chemical industry. APEQ's goal is to involve all its members in Responsible Care and a partnership agreement with the national distribution associations is due for signing.

Implementation assurance

Most APEQ Responsible Care signatories are international companies participating in external environmental audit schemes involving verification of management systems.

Additional features

- Local name: Actuação Responsável.
- Voluntary agreement between APEQ, associated companies and the Ministries of Environment and Economy (Industry) is ongoing; industry is ensuring its advocacy on regulations and public policy issues is consistent with Responsible Care.
- An integrated local Emergency Response system has been set up since 2000.

SLOVAK REPUBLIC

ZVÄZ CHEMICKÉHO A FARMACEUTICKÉHO PRIEMYSLU - ZCHF

www.rcsk.sk

Adopted Responsible Care in 1995

PROGRAMME DESCRIPTION:

Codes, guidance notes or checklists for implementation

- Health and safety in the workplace
- Protection of the environment
- Emergency preparedness
- Communication
- Environmental education
- Product Stewardship

Indicators of performance

- Air emissions
- Discharges to water
- Waste management
- Safety and occupational health
- Energy consumption
- Water consumption
- Environmental protection spending.

Responsible Care enables the industry to demonstrate how it has improved over the years and to develop policies for further improvement

Communication with interested parties

The association continues to work closely with government authorities.

Mutual assistance forums

The ZCHFP Responsible Care working group provides assistance to members undergoing implementation. Seminars on various topics have been successful and will be continued.

Process to encourage full participation of association members

27 companies, representing over 90% of total turnover, are actively implementing Responsible Care.

Implementation assurance

Some 40% of companies committed to the Responsible Care have gained ISO 14001 certification, undertaken by an independent internationally recognised organisation.

Additional features

- Local name: Zodpovedná starostlivosť.
- ZCHFP and the Ministry of Interior have signed an agreement under the Cefic emergency response programme ICE.

SPAIN

FEDERACIÓN EMPRESARIAL DE LA INDUSTRIA QUÍMICA ESPAÑOLA - FEIQUE

www.feique.org

Adopted Responsible Care in 1993

Highlights:

At the beginning of 2002 the Chemical Sector Observatory was constituted and formed by the two main Trade Unions in Spain and FEIQUE. Its objective is to deal with subjects not strictly labour related, including Responsible Care, health, safety, environment, and research matters. As a result of dialogue within this group, an Agreement on Responsible Care has been signed that will include reviewing information on member companies' implementation including performance results; experience exchange on Responsible Care developments in Spain and other countries; development of ideas for new performance indicators; training and participation of employees and their representatives in member companies on Responsible Care performance; and development of a proposal to enhance communication with society.

Meetings with the Spanish Association of Insurance Companies (UNESPA) were held to show this sector the importance and real value of the Responsible Care programme to the chemical industry. The aim was to obtain a commitment from insurance companies to take into account Responsible Care when quoting on insurance policies, to give added value to companies that implement the initiative.

PROGRAMME DESCRIPTION:

Codes, guidance notes or checklists for implementation

- Health and safety protection
- Environment protection
- Process safety
- Transport and distribution
- Product Stewardship
- Communication, including Emergency Response.

Indicators of performance

- Safety (8 loPs)
- Environment (14)
- Energy (4)
- Communication (2)
- Product Transportation (2)

Feique has continued with its benchmarking initiative for safety loPs, including contractor LTIR for 2001; 80% of companies responded. The same approach is being considered for other indicators such as energy efficiency and COD. Since late 2002 the Performance Group has been working on new Indicators and the improvement of existing ones in order to make them available for the 2003 questionnaire (data from 2002). Some are related to Process Safety, Product Stewardship and Communication. CEOs of Responsible Care companies committed on targets for 5 key indicators to be fulfilled in 2005. These were published in the Responsible Care Report 2001 (issued 2002). This report also shows the comparison of the real figures of these 5 key indicators for 2001 and their targets for this year, which were set in 1998.

Communication with interested parties

Individual member companies have sponsored open days. Feique publishes a Responsible Care report, and about 40% of Responsible Care members publish environmental reports. Annual Spanish Science Education Award. In 2001, Feique and the Ministry of Science and Technology produced a 25-minute film, Chemistry and Us, focusing on the importance of chemicals in improving quality of life, and industry's HSE commitment through Responsible Care. The film was delivered to 8,000 schools and colleges throughout Spain and broadcast on TV. In 2000, Feique and 30 chemical companies in co-operation with the Museum of Science and Technology of Catalonia, sponsored a travelling exhibition on chemistry which will be shown in major Spanish cities until 2005.

Mutual assistance forums

Contacts and information sharing continues with Iberoamerican federations. An updated inventory of Responsible Care documents in Spanish and Portuguese has been issued. Two successful Product Stewardship seminars and regular meetings for Feique Responsible Care steering committee and coordinators. Workshops to improve knowledge of the initiative and exchange experiences for coordinators, technical staff, human resources and communications staff.

The public's focus on products is reflected in our continuing efforts to extend Responsible Care through the supply chain.

Process to encourage full participation of association members

Commitment to Responsible Care is not a condition of membership, but 90% of FEIQUÉ's direct members companies have signed the Guiding Principles.

Implementation assurance

All companies have been visited by internal Feique auditors during the last three years to verify Responsible Care. In the future, Feique auditors will undertake verifications of new signatories and poor performers. In 2001 an internal verification programme was established for the six codes of practice requiring self-assessment reports on each code to be sent to Feique every two years. A questionnaire requiring self-assessment on the Responsible Care guiding principles was sent to CEOs to check their level of support for the initiative. Based on responses, a report is sent to the co-ordinators and CEOs identifying opportunities for improvement and listing recommendations for each company.

Additional features

- Local name: Compromiso de Progreso.
- Voluntary agreement on chlorinated solvents seeks to improve management of these products through collaboration between product manufacturers, distributors and final consumers.

SWEDEN

PLAST- & KEMIFÖRETAGEN (THE SWEDISH PLASTICS & CHEMICALS FEDERATION)

www.plastkemiforetagen.se

Adopted Responsible Care in 1991

Highlights:

In a move to improve the quality of Safety Data Sheets, the federation developed a comprehensive guideline for preparing SDS during 2001/02. This was combined with a number of seminars. The guideline – The art of making Safety Data Sheets – is intended for those who produce or supply chemicals to users. An additional guideline – The art of reading SDS – is aimed at those who buy and use chemicals, and is intended to help them assess the quality of the SDS they receive, as well as how to use the information provided most effectively. Both guidelines are available, free, from the web site. So far close to 10 000 copies have been printed from the site.

PROGRAMME DESCRIPTION:

Codes, guidance notes or checklists for implementation

- Extensive set of Guidance manuals and checklists.

Indicators of performance

- Training and Work Environment (6 IoPs)
- Air Emissions (4)
- Water Discharges (5)
- Waste (4)
- Energy Consumption (3)

- Water Consumption (2)
- Product Stewardship (3)
- Environmental Management Systems
- Environmental Reports
- Emergency Response Commitment.

The association has been collecting IoPs since 1995, and has published them annually since 1996. Increasing numbers of individual companies publish their own reports with indicators for use with interested parties, authorities and other stakeholders.

Communication with interested parties

The association publishes an annual Responsible Care report and has an intensive dialogue with government and the authorities. It maintains extensive contacts with schools and teachers. At local level companies have a number of activities to encourage communication with stakeholders.

Mutual assistance forums

Regional networks allow for regular exchange of information. Much effort has focused on Product Stewardship – see highlights.

Process to encourage full participation of association members

Responsible Care is not a condition of membership, but the majority of member companies have signed up, representing more than 95% of total turnover and number of employees. Most member companies are SMEs.

Implementation assurance

Companies complete self-assessments of implementation of Responsible Care.

Additional features

- Local name: Ansvar & Omsorg.
- Emergency distribution response scheme - ERC (Emergency Response Centre).
- Formerly Kemikontoret, the federation recently merged with its counterpart in the plastics sector to form the The Swedish Plastics & Chemicals federation.

SWITZERLAND

SCHWEIZERISCHE GESELLSCHAFT FÜR CHEMISCHE INDUSTRIE
SOCIÉTÉ SUISSE DES INDUSTRIES CHIMIQUES
SOCIETÀ SVIZZERA DELLE INDUSTRIE CHIMICHE SGCI/SSIC

www.sgci.ch

Adopted Responsible Care in 1992

Highlights:

Since Safety and Health at the workplace are important elements of Responsible Care, the first meeting to discuss activities in connection with Responsible Care was held with Swiss Union representatives in December 2002.

PROGRAMME DESCRIPTION:**Codes, guidance notes or checklists for implementation**

Directions for self-assessment - 32 steps for the implementation of Responsible Care

Indicators of performance

Key figures on safety, health and environmental protection.

Communication with interested parties

The association continues to work and communicate closely with government authorities. A joint declaration containing measures to reduce risk of transportation by rail of dangerous goods was signed between the Swiss Federal Department for the Environment, Transport, Energy and Communications (UVEK), the Swiss Railways (SBB) and the chemical industry.

Mutual assistance forums

The association sponsors Responsible Care workshops for its members.

Process to encourage full participation of association members

All new members of the association are required to commit to the initiative. In 2002, SGCI/SSIC set out to motivate members which had not yet signed the commitment to Responsible Care, resulting in 7 new signatories. 90% of members representing 95% of sales have signed up to the SGCI/SSIC Responsible Care principles and programme. There are a total of 200 member companies of which approximately 120 are chemicals and pharmaceuticals trading companies.

Implementation assurance

Member companies use the "Directions for self-assessment" developed by the association. These Directions cover all Responsible Care topics like Community Awareness/Emergency Response, Environmental Protection, Health and Safety at Work, Process Safety, Transport and Distribution, and Product Stewardship. In 2003 there will be a new round of self-assessments by the members.

Additional features

- Local name (3 national languages): Fortschritt mit Verantwortung / Le progrès avec notre responsabilité / Il progresso sì, ma con responsabilità.
- Most related associations (e.g. traders, manufacturers and distributors of pharmaceuticals, crop protection, flavours and fragrances) are already part of SSIC.
- Emergency distribution response scheme: participating companies are listed in an annex to fire brigades' emergency orders.

Thomas Swan

Thomas Swan & Co, a small privately owned company manufacturing a wide range of performance and speciality chemicals, has worked its way up the certification ladder from ISO 9001 through ISO14001, EMAS and OHSAS18001. The next logical step, according to Dai Hayward, director and general manager, was to be certified to Responsible Care. "With all this certification in place and compliance with the law, why bother with this step?" asks Hayward. "The simple answer lies in our reputation and licence to operate."

In 1979 about 50% of the UK population had a favourable impression of the chemical industry. In 1985 this figure had dropped to 30%, and in the most recent survey the figure further reduced to 25%. "This means that there are a lot of people out there who do not trust the industry," says Hayward.

"We are a small company situated close to housing and schools. People need to trust us and we need that trust to retain our licence to operate. This need goes beyond the local community. Our customers and other stakeholders including banks, insurance companies and regulatory agencies increasingly look for reassurance of that robust framework by which we operate."

He adds: "It is our opinion that anything that can contribute to improving trust, credibility and image – based on a credible performance record – within the community and beyond has got to be worthwhile. Sound management systems go a long way towards gaining trust. After all, we all use them to help in the day-to-day management of our businesses. But people want the hard evidence that we are doing what we said we would do. They want to see continuous improvement and they want it validated by someone else.

"We cannot certify ourselves – history tells us that credibility is not enhanced by internal policing. It is not sufficient just to implement a Responsible Care Management System; it has to be maintained and has to deliver. Initial certification followed by regular surveillance by a third party can only help to keep our eyes on the ball and maintain the commitment," says Hayward. This has paid off for Thomas Swan. "Following an incident in 1979, we were not trusted by our community," says Hayward. Today, after a series of independent surveys, the degree of trust by the local community stands at 72%.

www.thomas-swan.co.uk



Henkel

Henkel's director corporate sustainability management Michael Bahn, says the only sensible and effective way of implementing sustainable development is systematically. "Henkel uses integrated management systems based on globally uniform sustainability standards," he says. Regular internal audits check on implementation of the group-wide standards – in 2002, 43 sites were audited.

Henkel companies also have their management systems externally certified. At the end of 2002, 72 production sites had been certified to the international ISO 14001 environmental management standard.

Bahn says: "We consider it especially important to maintain a dialogue with all stakeholder groups." Key to this effort is the company's sustainability channel on the Internet, where it publishes environmental data on emissions, wastes, wastewater and resource consumption, as well as reports on occupational accidents and incidents, transport accidents, and ongoing improvement measures.

Henkel says its employee Code of Conduct is of vital importance, as the general public is showing a growing interest in how international enterprises do businesses. The conduct of each individual Henkel employee reflects on the reputation of the company as a whole, says Goetz Gageik, director human resources. The objective for 2003 is to anchor the Code of Conduct even more firmly in Henkel's corporate culture by including it in the employment contracts for all managerial staff, for instance, and by ensuring 100% distribution among all employees, especially those of newly acquired companies.

The Code was introduced in 2000, and defines clear corporate rules of conduct for day-to-day dealings with customers, employees, shareholders, competitors, the communities Henkel operates in, and society in general. The aspects covered range from meeting customer needs to developing employees, as well as mutual respect, personal integrity, and open communication.

www.sd.henkel.com



TURKEY

TÜRKİYE KİMYA SANAYİCİLERİ DERNEĞİ - TKSD

www.tksd.org.tr

Adopted Responsible Care in 1993

PROGRAMME DESCRIPTION:

Codes, guidance notes or checklists for implementation

- Community Awareness and Emergency Response
- Pollution Prevention
- Process safety
- Distribution
- Employee health and safety
- Product Stewardship.

Indicators of performance

Application of IoPs began in 1998, and members are requested to report annually. IoPs revised in 2000 to enlarge the scope of monitoring and evaluating activities.

Communication with interested parties

TKSD staff attend many national technical symposia and make presentations on Responsible Care. TKSD continues its active participation in the Istanbul Chamber of Industry's Environmental Affairs Commission, the Ministry of Environment's regulatory review committee and local government regulatory committees, and publicises the principles of Responsible Care to emphasise the commitment of the chemical industry to environmental protection efforts. Seminars are held at different universities. A Responsible Care course is run by Istanbul Technical University. In addition to the lecturers from TKSD, member companies present case studies and offer site visits for students.

Mutual assistance forums

TKSD continued a programme of meetings and workshops. Seminars held regularly at plant level for members.

Process to encourage full participation of association members

Responsible Care is mandatory for all new members since 1994. By end 2001, 60 companies had signed up. Members represent about 60% of Turkish chemical industry by turnover and 20% by employees. The Responsible Care Award Scheme was revised to cover two different categories: Programme Fulfilment and Specific Action.

Implementation assurance

Annual facility visits are carried out by the TKSD technical staff to evaluate Responsible Care performance. A Code of Management Practices checklist is completed by the company and reviewed with a company representative and TKSD staff. Facility units are visited and graded, and recommendations made in an audit report.

Additional features

- Local name: Üçlü Sorumluluk.

Responsible Care promotes co-operation with governments and organisations in the development and implementation of effective regulations and standards

UNITED KINGDOM

CHEMICAL INDUSTRIES ASSOCIATION - CIA

www.cia.org.uk

Adopted Responsible Care in 1989

Highlights:

2002 saw the development of forward looking collective Responsible Care performance goals for 2010 (base year 2000) through consultation with external stakeholders. The initial HSE goals and targets were launched in January 2003 with goals on environmental burden and products later in the year. By mid 2004 it is hoped to have published a complete set of sustainable goals and targets.

PROGRAMME DESCRIPTION:

Codes, guidance notes or checklists for implementation

Development of Responsible Care Management System which is outlined in a Guidance document that is presently completing its 4th review, based on the Guiding Principles which were revised in 1999. Guidance incorporates all aspects of Responsible Care as well as reference to HSE International and European standards, UK regulation, industry codes of practice and examples on how to improve Responsible Care performance. Separate documents developed and published as appropriate to the needs of the industry. 2002 saw specific training and guidance for the sales force in product stewardship

Indicators of performance

- Safety
- Occupational health
- Environment
- Distribution
- Energy consumption
- Communication
- Management systems
- Product Stewardship.

IOPs published annually since 1990 principally on safety, occupational health, environmental emissions, distribution, communication, and management systems. Collection of further indicators to meet CEFIC requirements has been undertaken. Energy consumption now comes under the UK Climate Change chemical sector national agreement, which is overseen by a separate section of the CIA, CIABATA.

Communication with interested parties

Reputation workshops run in 2002 to improve quantity and quality of communication with key stakeholders. Around 42% of member companies' manufacturing sites have links with the local community through liaison panels and complaint procedures have been formalised at around 96% of sites. In addition to the association's Indicators of Performance Report, most members' manufacturing sites produce their own performance reports.

CIA makes use of opinion formers groups for the presentation of performance indicator data and other HSE data. Some sites have local Community Liaison panels, and contact with schools is widespread throughout the membership. An active 'Speak Out and Listen' programme is run by trained volunteers from the member companies.

Mutual assistance forums

A network of 22 Responsible Care regional "cells" provide a means of exchanging implementation experiences and best practices. A special web site for the cells piloted in 2001 is now being reviewed and enhanced: it aims to provide information and support to implementation. Responsible Care Leadership Groups have been established. National seminars and workshops on Responsible Care, Product Stewardship and HS&E issues are held regularly. Best practice guidance documents, plus task forces and committees in operation.

Process to encourage full participation of association members

Responsible Care is an obligation of CIA membership. CIA members represent 70% of total UK chemical sales. All 170 members have signed the Guiding Principles, which were reissued in 1999. This represents nearly all the major UK chemical manufacturing sites but only around 40% of employees in the entire sector. Self-assessment by members is also mandatory. National seminar, IOPs and initiatives such as cells create opportunities for promotion and sharing of good practice. Annual Responsible Care Award, presently in its 8th year, is given to the site that has shown the best implementation practises of all facets of Responsible Care in the preceding year.

Implementation assurance

Self-assessment to the CIA's Responsible Care Management System was 100% completed by member companies by the end of the first quarter 2001. The names of the 232 sites that had returned their completed assessments to the CIA were posted on the CIA's public web sites. This implementation assurance will continue on a regular three-year cycle and is mandatory for all member companies. Following the launch of a voluntary third party certification process for Responsible Care Management Systems (RCMS) in 2000, five certificates have now been awarded. The Association has been building the business case for certification. Auditors from five certification bodies have now been CIA-qualified to conduct audits – the process for controlling the quality and scope of the process.

Additional features

- Partnership Programme with British Chemical Distributors and Traders Association. Partnership agreement with British Lubricants federation. Liaison with the British Coatings federation, which has developed its own Coatings Care programme.
- Emergency distribution response system – CHEMSAFE. Participation mandatory at level 1, ie provision of 24-hour telephone information.

Responsible Care Performance Data

Responsible Care is a commitment by the chemical industry to continuously improve its SH&E performance and to report on the progress made.

The data generated, although not perfect, is reported annually in the spirit of Responsible Care. The reporting also enables our federations and companies to share best practice and hence improve performance. We continue to improve the reporting process in various ways.

Extending the scope of the survey

This is the sixth successive year of reporting and each year we add more indicators. Associations tend to report only the data from their member companies that are actively participating in the national Responsible Care programme. The survey shows that there is an overall reduction in the number of employees while at the same time there is improved performance. This is because Responsible Care companies usually have better SH&E performance. Countries showing an increase in the number of employees is a result of an increase in the number of companies participating in Responsible Care.

Distribution incidents

The guidance required to report on distribution incidents covers 18 parameters. As last year, the total tonnage of chemicals distributed by rail and road and the total number of incidents were used to calculate the resulting incident frequency. We also asked the federations to report on sea, inland waterways and pipeline tonnage. This additional data is available from Cefic and will be posted on the internet (www.cefic.org).

Heavy metals

For heavy metals we only mention the tonnage emitted (without conversion to copper equivalent). Emissions for individual metals can also be found on the Cefic web site (www.cefic.org).

Availability of data

Gathering and checking data is a complex and time consuming process. For new parameters, the information is not fully comprehensive. No benchmarking can be performed between countries because of size and process differences between each country's industry. Cefic reserves the right to adjust these figures retrospectively as more data become available.

Reporting scope

Country	Number of employees in survey						In industry	%
	1996	1997	1998	1999	2000	2001	2001	
Austria	-	12924	12964	12927	13629	11537	42385	27.2
Belgium	-	-	84764	86890	89619	90021	118400	76.0
Czech Republic	96000	94779	93361	35200	26593	28124	90802	31.0
Denmark	17703	18712	19564	13421	7057	-	51400	-
Finland	19300	20700	21900	22800	24900	24200	39000	62.0
France	280000	280000	113000	113500	115500	114300	240000	47.6
Germany	400500	389664	401098	402827	391277	415996	467029	89.1
Greece	-	-	-	-	2073	2000	-	-
Hungary	83100	84000	81800	83200	36700	34255	79004	43.4
Ireland	9000	9000	11000	8370	8954	9581	24000	40.0
Italy	69700	69150	68850	64334	63105	61711	187000	33.0
The Netherlands	39656	36899	38000	32965	75050	75050	79000	95.0
Norway	6656	7182	7366	6720	10348	-	-	-
Poland	39825	37706	33886	29139	25441	26323	153800	17.1
Portugal	4836	4731	4659	4442	4561	4561	23000	19.8
Slovak Republic	38711	38764	35066	28845	25745	24329	36973	65.8
Spain	26700	28100	26491	27992	28192	29392	137000	21.4
Sweden	40000	40000	40000	43500	34000	32000	43500	73.6
Switzerland	46700	46000	45000	43800	44000	44000	65000	67.7
Turkey	5100	12545	12181	11137	13200	13900	45000	25.0
United Kingdom	118000	111280	103807	97071	95444	87906	235000	37.4
Europe	134187	1342136	1254757	1169080	1135388	1129186	1917293	58.8

Specific comments can be found in the countries report section.

Distribution incidents

Country	Total tonnage transported by rail and road (kilotonnes)						Total number of incidents (rail and road)						Number of incidents per 1 million tonnes transported						
	1996	1997	1998	1999	2000	2001	1996	1997	1998	1999	2000	2001	1996	1997	1998	1999	2000	2001	
Austria	-	-	3600	3082	3282	4020	-	-	8	17	20	29	-	-	2.22	5.52	6.09	7.21	
Belgium	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Czech Republic	-	-	-	1215	885	3984	-	-	-	2	1	9	-	-	-	1.65	1.13	2.26	
Denmark	762	682	666	707	699	-	0	0	0	0	0	-	0	0	0	0	0	-	
Finland	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
France	-	-	34000	39700	33100	35800	-	-	26	35	23	15	-	-	0.76	0.88	0.69	0.42	
Germany	47942	60444	65286	60397	64313	69886	71	71	55	45	51	49	1.48	1.17	0.84	0.75	0.79	0.70	
Greece	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Hungary	-	-	-	-	27312	20702	-	-	-	-	112	109	-	-	-	-	4.10	5.27	
Ireland	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Italy	-	9540	13630	13050	13390	14271	-	20	29	17	25	32	-	2.10	2.13	1.30	1.87	2.29	
The Netherlands	-	-	-	-	10378	5983	-	-	-	-	43	39	-	-	-	-	4.14	6.62	
Norway	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Poland	-	-	-	-	-	4810	-	-	-	-	-	-	-	-	-	-	-	-	
Portugal	1779	1855	2263	2349	2440	2260	2	1	4	6	7	8	1.12	.54	1.77	2.55	2.87	3.54	
Slovak Republic	-	-	-	-	-	-	-	-	-	-	-	16	-	-	-	-	-	-	
Spain	9237	10785	9424	15873	14899	15467	24	28	21	29	15	33	1.79	1.87	1.50	1.83	1.01	2.13	
Sweden	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Switzerland	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Turkey	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
United Kingdom	27210	24182	23041	26074	25261	23102	17	11	26	17	20	15	0.62	0.45	1.13	0.65	0.79	0.65	
Europe	Matched sample on those countries which reported 6 years in a row (shaded highlight); index 100 in 1996.																		
Totals	91103	102157	105252	105440	107612	111415	114	111	106	97	293	334							
Incident ratio													1.25	1.09	1.01	0.92	0.86	0.44	
Index													100.0	86.8	80.5	73.5	69.1	75.3	

Safety at the workplace indicators

Country	Fatalities						Lost Time Injury Rate 1					
	1996	1997	1998	1999	2000	2001	1996	1997	1998	1999	2000	2001
Austria	-	0	0	0	0	0	-	14.7	16.1	13.4	13.2	8.1
Belgium	0	1	1	0	0	1	22.6	23.8	21.9	21.3	21.4	20.1
Czech Republic	9	3	9	0	2	4	17.2	16.0	16.2	9.3	7.4	8.9
Denmark	0	0	0	0	1	-	10.5	8.9	9.2	12.6	11.9	-
Finland	0	0	1	2	3	0	19.7	16.5	16.9	16.9	15.5	13.6
France	9	7	2	0	2	11	12.3	12.1	8.4	8.4	8.2	10.2
Germany	8	6	14	3	5	6	13.8	13.3	13.4	8.7	12.0	12.0
Greece	-	-	-	0	-	-	-	-	-	8.5	-	-
Hungary	2	3	5	0	3	0	8.2	6.7	7.5	7.4	11.6	10.9
Ireland	0	0	0	0	0	0	9.7	13.0	12.6	11.1	10.5	8.9
Italy	2	3	1	2	2	4	12.8	16.1	15.0	14.4	14.0	14.0
The Netherlands	1	3	1	0	3	0	3.0	2.9	3.3	2.1	2.6	2.8
Norway	1	0	0	1	0	-	9.7	9.9	11.1	7.9	7.2	-
Poland	3	5	5	1	0	0	7.8	7.3	6.6	4.3	7.31	7.11
Portugal	0	0	0	0	0	0	13.7	13.3	16.4	14.3	14.2	13.9
Slovak Republic	1	3	2	0	1	2	6.3	6.4	6.8	2.5	6.6	4.9
Spain	3	1	1	2	3	0	17.0	14.6	14.3	13.3	11.2	10.0
Sweden	0	1	0	0	0	0	4.6	4.2	4.4	4.4	4.3	4.5
Switzerland	0	0	1	0	0	1	11.4	11.2	11.1	11.1	10.8	11.0
Turkey	0	0	0	0	0	0	4.6	13.7	33.0	33.0	40.0	42.0
United Kingdom	0	1	3	2	1	1	12.0	11.3	10.7	10.8	6.4	6.4
Europe	39	37	46	13	26	30	12.6	12.4	12.3	10.0	11.0	10.3

Specific comments can be found in the countries report section.

1 Lost Time Injury Rate: number of accidents with one day or more out of work per 1 million worked hours.

Emissions to water

Country	Phosphorous compounds (tonnes)						Nitrogen compounds (tonnes)						Chemical Oxygen Demand (COD, tonnes of O ₂)					
	1996	1997	1998	1999	2000	2001	1996	1997	1998	1999	2000	2001	1996	1997	1998	1999	2000	2001
Austria	-	-	97	93	106	27	-	-	2809	2341	1916	1355	-	-	6493	6143	6647	4986
Belgium	1212	1204	1206	1173	898	620	3872	3746	3575	3443	3005	2504	36464	34371	33219	30627	26059	22091
Czech Republic	230	219	212	155	200	125	5500	5084	4487	2770	3914	3894	17700	15500	13000	11900	12711	14061
Denmark ¹	51	54	62	47	46	46	663	785	781	685	637	637	5764	5394	5619	4469	3493	3493
Finland	36	31	28	32	37	38	521	579	666	647	853	751	6100	7260	8420	8670	9730	8370
France	-	-	1800	1500	1800	1400	-	-	17000	13500	17000	14500	-	-	64000	53500	66000	63700
Germany	393	339	310	305	353	348	12684	11784	11189	10031	10107	9000	49748	51770	48167	46117	46202	41300
Greece	-	-	-	3	3	1	-	-	-	-	10	6	-	-	-	-	614	356
Hungary	-	-	-	-	123	285	1210	1360	850	350	415	492	5482	5884	6570	5210	2561	2790
Ireland	-	-	-	88	52	33	-	-	-	94	106	66	-	-	-	5677	2359	2311
Italy	196	215	204	213	103	135	2360	2630	2540	2050	2073	2110	28100	30600	28300	26062	25817	23206
The Netherlands	2980	3083	3189	2976	1370	167	2635	2800	2219	2253	1921	1886	10	10	12	9	8	6
Norway ¹	1294	101	90	78	72	72	1026	1061	1770	1589	1654	1654	14540	13013	14879	14539	12979	12979
Poland	97	129	127	63	51	40	5693	4363	3114	2612	3388	2214	12824	9878	9288	6547	7365	8230
Portugal	4	5	3	4	9	8	1418	1383	1094	1146	1093	1270	3921	3296	2590	3834	2807	2306
Slovak Republic	-	74	60	35	21	22	-	590	600	1217	719	391	11609	10882	10187	9087	8707	7492
Spain	582	614	449	496	200	259	2967	2518	2447	3976	3508	3348	23090	21047	15519	14582	15401	15168
Sweden	40	50	35	40	31	24	960	1000	730	935	690	600	10050	10730	9430	9540	9190	8760
Switzerland	-	40	39	40	36	40	-	1200	1150	1130	1090	1050	6400	6000	5900	5600	5700	6000
Turkey	-	-	81	50	60	55	-	-	234	191	220	225	-	-	24217	28828	27900	28450
United Kingdom	-	-	-	1888	1873	1839	-	-	-	7935	12056	11643	-	-	-	133980	123592	108796
Europe	Matched sample on those countries which reported 6 years in a row (shaded highlight); index 100 in 1996.																	
Matched total	7115	6045	5915	5582	3371	1883	41443	38979	335462	32487	33258	28145	231801	225635	211099	196793	1188729	176252
Index	100.0	85.0	83.1	78.5	47.4	26.5	100.0	94.1	85.6	78.4	80.2	67.9	100	97.3	91.1	84.9	81.4	76.0

¹ Data for 2001 has not yet been reported. Year 2000 data repeated.

Heavy metals emissions to water

Country	Heavy metals to water (tonnes)					
	1996	1997	1998	1999	2000	2001
Austria	-	-	11	11	14	12
Belgium	100	99	90	80	49	47
Czech Republic	-	-	-	19	-	228
Denmark	-	-	-	-	-	-
Finland	-	-	19.4	24.2	26	19
France	-	-	207	177	195	195
Germany	203.6	203.6	195.5	187.4	178.4	161.9
Greece	-	-	-	-	0.0	0.0
Hungary	-	-	8.6	6.4	3.9	4.1
Ireland	-	-	-	-	-	-
Italy	63.0	24.0	27.0	24.6	20.5	25.4
The Netherlands	45.5	27.4	45.6	37.6	35.6	30.3
Norway ¹	11.8	9.4	9.7	8.0	31.1	31.1
Poland	-	-	-	-	-	19.3
Portugal	6.8	3.5	2.6	4.5	8.5	3.5
Slovak Republic	-	-	-	1.5	2.4	1.9
Spain	21.7	15.0	25.3	19.6	10.2	3.7
Sweden	-	-	-	37.2	43.7	43.9
Switzerland	10.0	9.0	10.0	10.0	9.5	9
Turkey	-	-	28.0	13.0	25.0	30.0
United Kingdom	-	-	-	107.4	140.1	101.4
Europe	Matched sample on those countries which reported 6 years in a row (shaded highlight); index 100 in 1996.					
Matched total	352.4	282.9	305.7	281.7	284.3	255.9
Index	100.0	80.3	86.8	79.9	80.7	72.6

Emissions are mostly Zinc.

¹ Data for 2001 has not yet been reported. Year 2000 data repeated.

Emissions to air

Country	SO ₂ (tonnes)						NO _x (tonnes)						Volatile Organic Compounds (tonnes)					
	1996	1997	1998	1999	2000	2001	1996	1997	1998	1999	2000	2001	1996	1997	1998	1999	2000	2001
Austria	-	500	607	525	451	459	-	1947	2039	2004	1956	1746	-	-	1881	1822	951	787
Belgium	14058	15060	14268	12190	11244	12565	18911	19951	17289	17453	15809	16345	24970	24070	22084	17557	16806	17145
Czech Republic	70800	63000	30000	20500	18197	18874	19300	16000	15000	12100	11091	10587	4100	3800	3300	1750	1553	1270
Denmark ¹	1318	1260	978	1086	942	942	1074	1231	1044	1033	945	945	1066	1051	1076	944	830	830
Finland	17100	17400	17700	17000	14200	14500	9000	9300	8800	8090	7280	7400	11900	11000	11500	11100	11800	11400
France	-	-	78000	78000	67000	61000	-	-	35000	36000	35000	34000	-	-	57000	55000	55000	55600
Germany	39052	27249	24976	21724	18414	177000	37435	39638	36631	32185	30609	30200	19079	19579	15052	14124	13280	12700
Greece	-	-	-	718	720	682	-	-	-	170	170	165	-	-	-	-	-	153
Hungary	3421	3850	4739	2631	2575	3516	2539	2620	2810	2666	2657	3113	3507	2910	2609	2008	1872	5023
Ireland	-	-	-	140	153	152	-	-	-	14251	17870	20693	-	-	-	835	410	318
Italy	93300	93600	53500	43443	16295	12281	22300	21100	18500	18116	11031	9517	9600	8300	7900	6985	5721	4846
The Netherlands	11058	9136	7789	6728	4917	4440	25974	23512	21971	20690	19547	16766	14285	18500	14847	16101	11644	5387
Norway ¹	3663	2913	2817	2813	804	804	2171	2422	2811	3138	2959	2959	3722	3636	3397	2830	449	449
Poland	75379	67972	57028	53906	38877	44696	29939	25788	22697	21021	17800	25430	-	-	-	-	-	881
Portugal	11367	12156	10480	8538	7470	7936	3165	3081	3107	3033	3033	2418	2396	2064	1513	1418	1312	1041
Slovak Republic	38646	36688	34182	31985	22721	23290	9769	9009	8354	7448	6240	5411	13679	13400	12475	11736	10499	9645
Spain	22544	25297	22380	23230	19716	19564	15804	20307	17972	20922	16933	18078	12887	13376	15881	15400	15970	15572
Sweden	11850	11950	11860	7340	7330	6890	9310	7550	6790	5850	6240	6200	11020	11170	11670	12920	15850	14020
Switzerland	780	740	730	700	690	650	1170	1100	1100	1050	980	1000	2050	2000	2000	1800	1700	1700
Turkey	-	-	49454	47395	49600	50200	-	-	4279	4647	4760	4900	-	-	449	207	320	300
United Kingdom	-	-	20299	36222	26633	17668	-	-	12681	32088	22777	22992	104457	82834	71789	58092	48500	41600
Europe	Matched sample on those countries which reported 6 years in a row (shaded highlight); index 100 in 1996.																	
Matched total	414336	388817	293427	253814	184392	188648	207861	202609	184876	174794	152971	156369	238718	217690	197093	174765	157786	142628
Index	100.0	93.8	70.8	61.3	44.5	45.5	100.0	97.5	88.9	84.1	73.6	75.2	100.0	91.2	82.6	73.2	66.1	59.7

¹ Data for 2001 has not yet been reported. Year 2000 data repeated.

Hazardous and non-hazardous wastes to land

Country	Hazardous wastes (tonnes)						Non-hazardous wastes (tonnes)					
	1996	1997	1998	1999	2000	2001	1996	1997	1998	1999	2000	2001
Austria	-	-	31002	26730	20768	18279	-	-	20601	18862	16647	11160
Belgium	-	-	-	-	79908	113655	-	-	-	-	856088	772003
Czech Republic	-	-	-	109187	100724	123908	-	-	-	921386	738517	702510
Denmark	40719	45959	38740	53617	49310	-	201686	201686	204616	215076	174459	-
Finland	114000	86000	88000	137000	123000	111000	362000	362000	280000	291000	483000	529000
France	-	-	1093000	1136000	1122000	1223000	-	-	-	-	-	-
Germany	-	-	-	-	886585	987023	-	-	-	-	1425154	1201020
Greece	-	-	-	-	-	-	-	-	-	-	-	22214
Hungary	-	-	-	705757	804290	743622	-	-	-	75690	5438	-
Ireland	-	-	-	92050	107901	118224	-	-	-	271049	276690	228538
Italy	-	433600	465700	433306	444327	390183	-	323200	390800	439211	547786	420188
The Netherlands	-	-	-	-	17	10	-	-	-	-	51	37
Norway	-	-	-	-	-	-	-	-	-	-	-	-
Poland	-	-	-	188089	174064	163511	-	-	-	569680	635657	2055713
Portugal	13311	10239	10910	13011	13280	10731	323200	8765	13038	17791	13565	6050
Slovak Republic	-	-	-	-	-	67591	-	-	-	-	-	41427
Spain	-	-	-	-	159385	203069	-	-	-	-	250892	233389
Sweden	-	-	-	73600	83500	109900	-	-	-	240000	338000	233000
Switzerland	-	-	-	-	155000	160000	-	-	-	-	82000	80000
Turkey	-	-	36000	4341	7310	6800	-	-	17527	33822	25200	27500
United Kingdom	-	-	-	808000	707000	718000	-	-	-	1169000	1440000	1187000
Europe	No matched sample because of lack of important data for earlier years.											

Energy consumption and CO₂ emissions

Index (1990=100)	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
Production (volume)	100.0	101.3	103.8	102.8	109.5	113.0	116.1	122.7	126.1	131.3	136.8
Fuel and power consumption	100.0	96.7	96.8	93.4	93.4	97.2	95.6	98.8	99.5	101.5	104.1
CO ₂ emissions	100.0	96.0	94.2	89.7	89.0	92.2	89.2	91.1	91.9	92.4	93.1
CO ₂ emissions per unit of energy consumption	100.0	99.2	97.3	96.0	95.3	94.9	93.3	92.2	92.4	91.0	89.9
CO ₂ emissions per unit of production	100.0	94.7	90.7	87.3	81.3	81.6	76.8	74.3	72.8	70.3	68.4

The Fuel and energy graph on page 6/7 represents the evolution over the years of the European Chemical industry production index (in volume, base 100 in 1990) and the corresponding indexes of fuel and power consumption and CO₂ emissions.

The Specific CO₂ emissions graph on page 6/7 represents the evolution over the years of CO₂ emissions per unit of energy consumption and per unit of production.

Occupational Illness Frequency Rate (OIFR) ¹

Differences in legislation, culture and occupational health practices in different countries make it difficult to report OIFR on a truly comparable basis. It is therefore not meaningful to make direct comparisons of the data from one country with those from another. Results for 2000 and 2001 from countries providing information clearly illustrate this. Divergences and reporting gaps have been larger than expected. As a result, Cefic will attempt to improve the reporting on this parameter. It is not uncommon to have data fluctuation during early reporting years which, in this case may not be due to actual developments in occupational health.

	1999	2000	2001
Austria		0.1	0.05
Czech Republic		0.16	0.22
Germany	1.0	0.24	0.83
Italy	0.02	0.03	0.05
Poland		0.12	0.09
Spain		0.32	0.34
Sweden		3.6	3.7
Switzerland		1.22	1.14
United Kingdom	2.3	2.2	1.87

¹ The occupational illness frequency rate is expressed as the added number of all occupational illnesses per year per million working hours in the employee population of the chemical industry.

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Glossary of abbreviations

CEEC	Candidate Eastern European Countries
CEO	Chief Executive Officer
COD	Chemical Oxygen Demand
EMAS	European Council of Chemical Associations
EPA	Environmental Protection Agency
EU	European Union
FECC	European Chemical Distributors Association
ICCA	International Council of Chemical Associations
IoP	Indicator of Performance
ISO	International Organisation for Standardisation
SH&E	Safety, Health and Environment
SME	Small and Medium size Enterprise
WSSD	World Summit on Sustainable Development
UN	United Nations (Organisation)
UNEP	United Nations Environment Programme





Responsible Care



the European Chemical Industry Council, is the Brussels-based organisation representing national chemical federations and chemical companies of Europe.

Cefic represents, directly or indirectly, over 30,000 large, medium and small chemical companies in Europe, which employ about 2 million people and account for more than 30% of world chemical production.

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