

On the Road to Sustainability

A contribution from the Global Chemical Industry to
the World Summit on Sustainable Development, August 2002



Safety



Innovation



Environment



Capacity building



Globalisation

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The ICCA Chemical Sector Report to UNEP

This brochure is a summary of the ICCA Chemical Sector Report to UNEP which was published in May 2002.

The Chemical Sector Report gives a forthright account of industry's progress against sustainability goals since the Rio UN Conference of 1992, sets future targets, and highlights the challenges that lie ahead.

It can be accessed on the ICCA website at www.icca-chem.org, or you can obtain copies from the ICCA secretariat at:
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Introduction

'On the Road to Sustainability' shows how the global chemical industry is working towards becoming more sustainable. We provide details of initiatives that demonstrate how the chemical industry, represented by the International Council of Chemical Associations (ICCA), has responded and contributed to the sustainable development challenge of Agenda 21, adopted at the historic UN Conference on Environment and Development in Rio de Janeiro, Brazil in 1992.

Sustainable development is commonly defined as development that meets the needs of the present generation without compromising the ability of future generations to meet their own needs. Sustainable development will only become a reality if its three elements - economic, environmental and social - can be reconciled with and fully integrated into our daily business.

The chemical sector has been at the forefront of voluntary industry efforts to improve health, safety and the environment through its unique Responsible Care initiative. Sustainable development is, of course, much broader in its approach, but we believe we have laid a solid platform for progress towards becoming a sustainable sector and in continuing to reduce our environmental 'footprint' on the planet.

Details of other industry efforts are also outlined in this publication. We highlight new issues being addressed by industry, and point up those areas where we are looking for support, partnerships and cooperation with others - vital in enabling us to achieve our goals. The chemical industry's increasing openness and transparent reporting, and progress through dialogue with stakeholders has enabled us to uncover many of the issues that the public believes are our responsibility. Some of these are being addressed; others - as you will read - still have to be tackled.

Industry's Approach To Sustainable Development

Chemical Safety

We recognise we have a responsibility for our products along the supply chain and throughout their entire product life cycle and we are stepping up efforts to put this concept into practice.

The chemical industry is a key industry - its products and services are instrumental in meeting the needs of mankind and are all around us in our everyday lives - from food and clothing, housing and communications, to transport and leisure activities. The chemical sector is a huge industry operating in nearly every country in the world, employing over 10 million people, and generating global annual production worth over US\$1.7 trillion.

There are four topics that the ICCA believe constitutes the chemical sector's prime contribution towards sustainable development.

They are:

- Chemical safety
- Innovation
- Capacity building (which means improving knowledge about chemicals through training, education and communication)
- Globalisation

We aspire to a common global approach but also one that provides the flexibility needed to meet specific regional or national needs. This chapter outlines our approach to sustainable development; many of the initiatives mentioned are covered more fully in the following chapters.

Chemical Safety

Even chemicals that have dangerous characteristics can bring real benefits to society as long as they are handled or used properly. To help allay public concern about some of its manufacturing operations and products,

the industry applies the process called risk assessment to help ensure the safe management of chemicals and protect human health and the environment.

One of the main ways the chemical industry approaches sustainable development is through its global voluntary initiative known as Responsible Care, which focuses on performance, communication and accountability. Responsible Care commits companies and national associations to work together to continuously improve the health, safety and environmental performance of their products and processes, and to contribute to the sustainable development of local communities and of society as a whole. The initiative, explained later in more detail, is managed by the ICCA at global level.

We recognise we have a responsibility for our products along the supply chain and throughout their entire product life cycle and we are stepping up efforts to put this concept into practice.

We believe the international assessment of chemical risks should be expanded and accelerated through a series of measures including enhanced co-operation between governments and regional and international organisations. To this end, we work closely

The safe use of chemicals is an absolute priority for the industry.

with key stakeholders through events such as the Intergovernmental Forum on Chemical Safety (IFCS) and initiatives like the Inter-Organisation Programme on the Sound Management of Chemicals (IOMC), and the Rotterdam Convention on the Trade in Hazardous Chemicals also known as "PIC Convention".



Our industry is also investing heavily in global initiatives that directly address the issue of chemical safety, namely the High Production Volume (HPV) programme and the Long-range Research Initiative (LRI).

We strongly support stakeholder efforts to ensure that governments have the information necessary to provide for protection of health and the environment against risks associated with chemicals. Much information is already developed and provided by industry, through mechanisms such as chemical Safety Data Sheets (so-called MSDS or SDS), and labelling of products.

We also back programmes to harmonise the classification and hazard communication of chemical substances, and support the adoption and implementation of the Globally Harmonised System for the Classification and Labelling of Chemicals (GHS) within an agreed timeframe.

And we support the introduction of Pollutant Release and Transfer Register (PRTR) programmes, which provide information on releases of substances to the environment.

In the context of risk assessment of chemicals, we back the proper application of the Precautionary Principle as embodied in Principle 15 of the Rio Declaration. It provides for cost-effective measures to prevent health and environmental degradation, where the weight of plausible scientific evidence establishes that serious or irreversible damage to health or the environment is likely to be caused by the activity or chemical in question.

We are fully behind the World Health Organisation (WHO) initiative on good

practice in health, environment and safety management. Industry's Responsible Care initiative works with health, safety and environment (HSE) management systems and we believe that occupational health matters should be managed as an integral part of each company's safety, health, environment and quality (SHEQ) management system.

Innovation

It is renowned for making new products to meet customer needs and adopting more resource efficient manufacturing processes that have reduced environmental impact.

Innovation is the lifeblood of the chemical industry.

Although there are many examples of replacing old products with new ones that bring enhanced health, safety, or environmental improvements, we realise there is still enormous scope for further progress over full product life cycles.

Maximising innovation requires resources that can only be financed from profitable earnings. Wealth creation and profits are fundamental to sustainable development - they sustain economies and contribute, via re-investment and research and development (R&D), to new technologies and environmental improvements.

Innovation at all levels and in all fields of activity is the most effective instrument for ensuring that the economic and environmental goals, as well as those of society, are being advanced. The chemical industry's contribution, and its challenge, is to continue to maximise innovation.

Many companies apply the eco-efficiency approach to sustainable production developed by the World Business Council for Sustainable Development. This reduces the amount of material and energy used to produce goods and services; reduces the amount of toxic material allowed to enter the environment; enhances material recyclability; maximises sustainable use of renewable resources; extends product durability; and increases the benefit derived from goods and services within a given timeframe.

Eco-efficiency has already begun to be adopted through the chemical sector as a decision-making tool and its influence is growing, but there is much to do and we need to improve our ability to share the techniques that work with our peers.

Some leading companies are beginning to sell chemical services rather than just kilograms of chemicals. Solvents for dry cleaning businesses are now collected, purified and reused. Another example is in the coatings and catalysts sectors, which are adopting similar programmes with their customers. This service approach provides greater scope for efficiency and sustainable development, and is another area where we can help by spreading best practice.

Capacity building

The chemical industry's Responsible Care initiative has proved an important tool to

promote and spread health, safety and environmental standards worldwide. Most multinational chemical companies have signed up to Responsible Care and, in doing so, have taken their established policies, standards and practices into the developing parts of the world where they operate, working closely with local companies to assist them in improving their standards and performance.

Joint ventures with local companies in developing countries also speed the transfer of technology and health, safety and environmental standards.

Responsible Care addresses a key factor in the improvement of environmental and safety performance.

The codes of practice of Responsible Care call for effective management systems - plan-do-check-act "loops" - to ensure continuous improvement and to prevent slippage in performance. Such management skills are an important "export" of Responsible Care.

Product stewardship is probably the most important tool we have at our disposal to extend the reach of ICCA's messages and practices to other sectors, and to all stakeholders. At the same time, we need to consolidate practices within our own membership, and are urging manufacturing companies to ensure product stewardship is fully integrated into their management systems.

One of industry's important capacity building initiatives involves ICCA member associations together with several leading

A major aim is to develop Responsible Care throughout the supply chain by establishing partnerships in product stewardship at national, regional and global level.



international chemical firms who have provided both manpower and financial resources to maintain the UNEP Action Programme for Emergencies at the Local Level (APELL).

In addition, the global chemical industry is promoting and supporting capacity building activities in developing countries and those with economies in transition. The European Chemical Industry Council (Cefic), for example, is working with the authorities and industry in a number of countries including Poland, Slovakia, and Romania, seeking membership to the European Union. Actions include the formation of national chemical safety training programmes; development of chemical safety information and instruction tools; expert networking on safety; product stewardship programmes in collaboration with national chemical federations and public authorities; and spreading management capabilities and effective management systems.

Globalisation

As many formerly underdeveloped parts of the world choose to follow the route of the more prosperous and demand their share of the world's resources, we need to do our part to ensure that efficient technologies are transferred to them, together with high environmental, health and safety standards.

Global chemical companies have an important role to play in such transfers and in improving education and training.

It is predicted that world chemicals output will increase by 63% in real terms between 1996 and 2010. Globalisation of the industry will also continue, with production in non-OECD countries steadily growing. Although globalisation has the potential to benefit everyone in the world, developing countries do not yet see many of its benefits - an issue that we think can be most effectively addressed through partnerships. For example, we believe that

We also believe that education is one of the essential components of a strategy to combat poverty and lift the living standards of a society.

for developing countries to have better access to global markets, official development aid needs to be harnessed with the institutional structures and assistance from international chemical businesses to enable

the industry to fulfill its responsibilities.

Today, increasing numbers of chemical companies are demonstrating that belief through social programmes to improve and support education in both developed and developing nations.

Trade liberalisation can support sustainable development when countries develop sound environmental policies that are properly integrated with trade and investment policies, a concept promoted by the World Trade Organisation (WTO). The private sector also has a role - and indeed a responsibility - to see that trade liberalisation and environmental protection go hand-in-hand.

Routes to Sustainability

Responsible Care - industry's ethic

The chemical industry's voluntary initiative Responsible Care was first conceived in Canada in 1985 to address public concerns about the manufacture, distribution and use of chemicals. With continuous improvement at its heart, Responsible Care has already shown itself to be an effective driver for industry at all levels. And as a flexible, evolving initiative it enables industry to respond proactively to emerging issues.

The industry associations are responsible for the detailed implementation of the initiative in their countries. Individual countries' Responsible Care programmes are at different stages of development and have different emphasis but are monitored and helped by the ICCA through its Responsible Care Leadership Group (RCLG), which assists in the cross-fertilisation of ideas and best practice.

Responsible Care incorporates eight fundamental features including a formal commitment on behalf of each company to a set of Guiding Principles signed by the Chief Executive Officer. Commitment to Responsible Care involves progressive development of indicators against which improvements in performance can be measured, an ongoing process of communication with internal and external stakeholders, and mutual assistance and sharing of best practices at association and company level.

At the heart of Responsible Care are Codes of Management Practices or Guidance notes to assist companies

with implementation which deal with the following areas:

- Community awareness and emergency response /communication;
- Pollution prevention;
- Process safety;
- Distribution;
- Employee health and safety;
- Product stewardship.

Responsible Care, however, is much more than simply a checklist of activities - it is an 'ethic' for chemical businesses that fundamentally changes the way we think and act. Companies adopting Responsible Care are encouraged to reach out to the community and, instead of downplaying concerns, are expected to seek out and address them.

ICCA's future plans involve spreading the implementation of Responsible Care as broadly as possible within the chemical and allied industries, and up and down the supply chain. We will also continue to encourage its extension to partners in related industries who are encouraged to tailor the initiative to fit their own organisations.

We have prioritised the introduction of Responsible Care to new countries with significant chemicals production including China, Russia, Saudi Arabia and Venezuela. In the case of China, the Association of International Chemical Manufacturers in Hong Kong has already forged important links and carried out joint activities with industry and the authorities on Responsible Care.

There is a need to develop an improved implementation assurance process for Responsible Care.

Responsible Care is currently implemented in 46 countries where more than 85% of the world's chemicals, by volume, are manufactured.



Global Responsible Care

As at mid-2002, the national chemical federations of the following countries are signed up to Responsible Care:

Argentina, Australia, Austria, Belgium, Brazil, Canada, Chile, Colombia, Czech Republic, Denmark, Ecuador, Finland, France, Germany, Greece, Hong Kong SAR, Hungary, India, Indonesia, Ireland, Israel, Italy, Japan, Malaysia, Mexico, Morocco, Netherlands, New Zealand, Norway, Peru, Philippines, Poland, Portugal, Singapore, Slovak Republic, South Africa, South Korea, Spain, Sweden, Switzerland, Taiwan - China, Thailand, Turkey, United Kingdom, United States, Uruguay.

However, there are still different national views of what kind of process should be recommended as the best model for international use. A number of stakeholders have advised that to be credible, Responsible Care needs a solid verification methodology involving third parties. ICCA is studying the options available and the international requirements for the implementation of a model for external Responsible Care verification, to be adapted and used by its member associations.

Each national association signed up to Responsible Care is required to make an annual progress report on implementation of the initiative. Worldwide, 28 countries have published the required codes or guidelines for implementation of Responsible Care, with 29 countries reporting a range of performance indicators such as emissions, incidents and injuries; 20 of these are making the indicators public and discussing them with interested parties.

Protecting Human health and the Environment

Increasing public concern about the health and safety of chemical products has galvanised the industry into providing more health and environment information related to the substances that it makes. Work is well underway on two major ICCA initiatives: the High Production Volume (HPV) programme to generate complete safety data files on 1,000 high production volume substances by the end of 2004;

and the Long-range Research Initiative (LRI) that funds research designed to find out about the effects of chemicals on human health and on the environment.

- **HPV Chemicals:** The chemical industry recognises the need for a sufficient knowledge base to assess the health, safety and environmental effects of chemicals and to assist users and governments to manage the risks they may pose.

Supplementary to the various national and regional governmental existing chemical programmes, the ICCA via member associations and their companies launched the High Production Volume (HPV) Chemicals programme in 1998. The aim of this programme is to complete

Screening Information Data Sets (SIDS) and internationally agreed initial hazard assessments (SIAR) for 1,000 HPV Chemicals by the end of 2004. The programme, organised in partnership between the chemical industry

and governments, is mainly based on the efforts of company consortia of the three regions - Europe (Cefic), Japan (JCIA), and the US (ACC). It contributes to the OECD Existing Chemicals Programme and the Agenda 21, Chapter 19 Programme Area A, 'Expanding and Accelerating International Assessments of Chemical Risks.'

In addition, the ICCA initiative will provide a valuable contribution to the IFCS Priority for Actions Beyond 2000 and the Bahia Declaration. It will generate a knowledge base on 1,000 chemicals representing

We are committed to building up awareness of Responsible Care, not only with our public but also with our own employees.

Drinking water initiative

A key player in water treatment, the global chlorine industry is committed to working with concerned stakeholders, and to following a sustainable development model.

more than 90% of the entire production volume of chemicals globally. The data and initial hazard assessment information can be used by producers, users and government for continuous improvement in the safe use of chemicals, particularly in developing countries.

- **The Long-range Research Initiative (LRI)** is a global, generic, research programme aimed at improving risk assessment methodology and filling gaps in the understanding of how chemicals may harm human health and the environment. The first public announcement on the LRI was made in 1999, at the Third WHO Ministerial Conference on Environment and Health. It is being carried out in collaboration with academia and government, funded jointly by Cefic, ACC and JCIA with a budget of \$25 million a year, for at least five years. The broad areas being covered include endocrine disruption, exposure assessment, risk assessment methodologies, respiratory and immunotoxicity and chemical carcinogenicity.

The LRI aims to achieve the following:

- Provide scientific facts relevant to issues of public concern;
- Offer new insights into managing risks and reducing uncertainties;
- Present government with information as a foundation for laws and regulations;
- Enable industry to respond more quickly and effectively to emerging concerns;
- Ensure the views of the chemical industry are substantiated by high quality science;
- Underpin the development of safe and sustainable products;

- Support more research than could be achieved by individual companies;
- Demonstrate a clear and continued commitment to the industry's Responsible Care initiative.

Results of the research will be published in peer-reviewed journals and communicated widely via workshops, open literature and the Internet.

Other initiatives:

- **Water:** To provide clean drinking water to some of the 1.5 billion people who need it most, chlorinated water supplies are often shipped all over the globe. Chlorine plays a key role in controlling pathogens such as typhoid, cholera and diarrhoea. Globally, up to 2 million children die each year of diarrhoea caused by waterborne microbes, according to WHO statistics. Before chlorine's widespread use in US water systems, for example, 25,000 deaths a year were caused by typhoid fever in the early 1900s. Today, 98% percent of US public water supplies that are disinfected are treated with chlorine or chlorine-based compounds and less than 20 typhoid deaths have been recorded in the US since 1990. The chemical industry has made significant contributions to the strategy outlined in Agenda 21 to protect the quality and supply of freshwater resources through the development of lower cost but adequate services that can be installed and maintained at community level. A key player in water treatment, the global chlorine industry is committed to working with concerned stakeholders, and to following a sustainable development model.



- Energy efficiency and global climate change:** In Japan, 293 companies belonging to the Japan Chemical Industries Association (JCIA) voluntarily reduced their average unit consumption of energy by 7% in 2000 compared with the 1990 level. JCIA's goal now is to achieve a further 3% reduction by 2010. In Europe, carbon dioxide emissions per unit of production have fallen by 30% in the period 1985-1998, and Cefic has committed to reduce specific energy consumption by 30% by 2010 in its Voluntary Energy Efficiency Programme (VEEP). In the USA, American Chemistry Council (ACC) members achieved an average annual improvement in energy efficiency of 2.4% from 1992 to 1998, for a total improvement of 13.5%.
- Ozone layer:** As part of its effort to protect the stratospheric ozone layer the chemical industry has replaced ozone depleting chemicals chloro-fluorocarbons (CFC)s with the less harmful hydro-chlorofluorocarbons (HCFC)s and hydro-fluorocarbons (HFC)s. HCFCs and HFCs are being used at only the rate of 20-25% of the prior CFC consumption thanks to emissions reductions and enhanced recycling systems.
- Classification and Labelling:** The ICCA supports adoption and implementation of the Globally Harmonised System (GHS) for the Classification and Labelling of Chemicals within an agreed timeframe.

New Zealand is the first country to begin implementation, and their experience in developing classification criteria, plus producing key codes of practice to explain the regulatory requirements and controls, will be available to assist others.

Action in Capacity Building

Manufacturers and distributors of chemical products worldwide need to ensure that whenever and wherever their materials are handled, they are handled by properly trained and well-organised people. Best available technologies and practices

designed to protect human life and the environment must be encouraged by national legislation.

Key actions include the provision of sufficient safety information about the chemicals, such as through chemical safety data sheets, to all users and handlers in a transparent way.

- UNEP's Programme on Awareness and Preparedness for Emergencies at Local Level, APELL, has been designed to provide information on chemicals to prevent accidents and, where they do occur, to improve worldwide emergency response capabilities. The chemical industry provides training and

expertise plus direct financial support for APELL from the ICCA, the US American Chemistry Council, Cefic, the Canadian Chemical Producers' Association and the Japan Chemical Association; and from large international corporations including Dow Chemical, Shell, Nalco, OxyChem, DuPont and Rhodia.

Supply chains issues

Moves to introduce Responsible Care into the activities of suppliers and customers, and their customers, now need to be sustained.

- The plant science industry's federation CropLife International runs various stewardship programmes. Lessons learnt from CropLife's Safe Use Initiative (SUI), launched in 1991, and which now reaches over 80 countries in Africa, Asia and Latin America, show that capacity building in developing countries should be targeted at community level - from farmers and their families, to agricultural workers, dealers and distributors, trainers of trainers, teachers, agricultural researchers and children.

CropLife International member and associated member companies have also contributed to the disposal of over 3,000 tonnes of obsolete pesticides in over ten countries, including 800 tonnes classified as Persistent Organic Pollutants (POPs). (CropLife International members no longer produce POPs. The stocks referred to are government owned and were inappropriately procured through central purchasing mechanisms.)

Other CropLife International stewardship programs, such as empty crop protection products container management, also illustrate the importance of, and the industry's commitment to, promoting environmentally responsible product management.

- In December 2000, the EU Commission and Cefic launched a 2-year twinning programme to strengthen the capability of chemical industry federations in the candidate countries of Central and Eastern Europe. The programme aims to ensure these federations are well organised to effectively support and

represent the interests of their associate companies and helping prepare them for enlargement of the European Union.

Supply Chain issues

Improving the management of chemical products down the supply chain means sharing the considerable challenges involved with other key organizations. This is a long and difficult journey, but we have made a start. Greatest progress has been made in the manufacture of products.

- In the last few years the ICCA has agreed Responsible Care Partnership arrangements with a major international organization, the International Council of Chemical Trade Associations (ICCTA). We are also discussing the possibility of working more closely with the International Paint and Printing Ink Council (IPPIC) and issuing a joint statement recognising the importance of the safe manufacture, distribution, disposal, handling and use of paints and coatings.
- In the early 1990s, chemical companies recognised the need to take a fresh look at the safety, quality and environmental aspects related to the provision of logistic services. Within the framework of Responsible Care, initiatives were started through Cefic, which have since evolved into a number of Safety and Quality Assessment Systems (SQAS), each related to a particular transport mode or logistic operation. SQAS, being upgraded in 2001/2, enables chemical companies to have the quality and safety management



systems of their logistic service providers assessed in a uniform manner, thereby avoiding multiple assessments by individual chemical companies. The SQAS schemes are also spreading outside Europe, to South Africa, Brazil, the US and countries in Asia Pacific.

- National and regional associations are also exploring agreements, several with their counterparts in the distribution sector, which have adopted

their own version of Responsible Care known as Responsible Distribution. And in the UK, for example, the Chemical Industries Association has signed an important agreement on product stewardship with the British Chemical Distribution and Trade Association.

Reporting Progress

Cefic is using 16 indicators to demonstrate the performance of European chemical manufacturers. Key performance improvements in the period 1996-2000 in Europe include a 21% fall in lost time injuries of industry workers, a 58% cut in emissions of phosphorous, a 25% cut in emissions of nitrogen, a 43% cut in the discharge of heavy metals to water, a 56% cut in emissions of sulphur dioxide, and a 33% cut in emissions of volatile organic compounds to air.

Since 1988, member companies in the USA have reduced releases of toxic chemicals to the air, land and water by 58%, despite a corresponding 18% increase in chemical production. In Canada, the industry reported a 60% reduction in emissions of chemicals to air between 1992 and 1999, and forecasts a further 14% cut by 2003. Canadian chemical industry employee injuries were reduced by 33% and transport incidents per 100,000 shipments reduced by almost 50% over the same period. In Japan, the Japan Chemical Industry Association (JCIA) reduced chemical emissions of chemicals to air from 1995-1999 by 52.1%. In Mexico, the Lost Time Injuries Frequency Rate was reduced by 44% in the period 1996-2000. During the period from 1997 to 2000, the Water Consumption Rate decreased 10%. Australia's Plastics and Chemical Industries Association (PACIA) recorded a 60% reduction in employee lost time injuries from 1990 to 1999.

Importantly, a large number of national associations have made public the data collected among their member companies, generating reports of good quality, available in printed form or directly accessible on their web sites. This fact alone has become an important push towards the achievement of better HSE performance in the chemical industry, as part of its commitment to Responsible Care.

Industry in Action

Industry's efforts

A recently completed joint venture between Bayer and Dow to produce chrome salts from South African chrome ore, rather than exporting the ore, is an example of the industry's commitment to ensuring the local population benefits from productive use of natural resources.

This chapter offers a few examples from the growing number of chemical companies and associations working towards sustainability.

Industry's efforts in South Africa

Economic empowerment of the previously disadvantaged sectors of South African society remains one of the greatest challenges facing the country since democratisation. The chemical industry is playing its part in seeking out opportunities for meaningful partnerships with potential entrepreneurs through ventures like Chemcity, recently established by leading chemical manufacturer Sasol. Chemcity aims to help young entrepreneurs and their companies get a foothold in the chemical industry by providing raw materials and environmental services in an integrated way, allowing the fledgling company to focus on the business of making chemicals.

Lack of access to safe drinking water is one of the most pressing needs for about 10 million of South Africa's population. In recognition of the need to extend basic services to all citizens of South Africa, the chemical industry is supporting rural water supply schemes that are local to some of its operations. In addition chemical companies producing water treatment chemicals support civil society initiatives to improve awareness of the importance of water conservation.

Successful hazard communication is particularly challenging in countries with a relatively low literacy rate and where traditional hand signals may be confused with some of the hazard signs. Chemical companies in South Africa recently participated in pilot testing of a new global hazard communication system in order to identify the ease with which employees recognised the hazard illustrated by a specific pictogram.

Liberalised trade and investment means cleaner environments

In 1991 Procter & Gamble purchased Rakona State Enterprise in the Czech Republic, a producer of detergents and liquid cleaners. Since then it has invested \$85 million to update the facility focusing on health, safety and environmental upgrades. Today, the facility meets all worldwide Procter & Gamble standards in these areas. State of the art management and production systems supported by computer-based information

technologies have resulted in a world class and world competitive plant producing not only for the Czech Republic and Slovakia but also for 14 other countries in the region.

Olin Corporation's investment of \$1.1 million in a joint wastewater treatment system for two plants it operates on Venezuela's Lake Maracaibo made it the first in the region to achieve world-class effluent standards. The project is cited as a model for restoration of the lake's environment. Olin has shared its knowledge with the World Bank's

One of the mechanisms used to prevent occupational illness and injury is the use of hazard communication.



International Finance Corporation to help develop the first manufacturing process safety and environmental control criteria for World Bank funded industrial plants in developing countries.

Applying worldwide standards under Responsible Care

DuPont applies its “zero emissions” goal to its worldwide operations because it makes sense environmentally and because the company believes it will be rewarded by customers in domestic and export markets for achieving maximum levels of environmental efficiency.

Eastman Kodak's largest manufacturing facility in Mexico is a model of freer trade and environmental responsibility working hand-in-hand. Approximately 85% of production from the Guadalajara plant, including optical disks and printed circuit boards, is exported to markets throughout the world. Installation of a state-of-the-art water treatment plant and recycling system has cut discharges to the municipal drainage system to zero, the first Kodak plant in the world to achieve this feat. Kodak has made objective international performance standards an integral part of the production process in Mexico.

Construction safety programmes implemented by Eastman Chemical together with its prime contractor, Foster-Wheeler Eastern, helped it complete construction of its Kuantan plant in Malaysia without a lost workday injury. Eastman has presented health, safety and environment seminars in Singapore to distributors of its products from 12 countries in the region. The company is also a key sponsor of the Malaysian

Nature Society of Pahang nature camp, which helps educate children on the importance of protecting and preserving the environment.

Care for their communities

The Chlorine Chemistry Council (CCC) of the USA works with the American Red Cross in The Water Relief Network to provide chlorine-based materials to communities that have been devastated by disasters. Hurricane Luis ravaged Puerto Rico in 1995. When the storm lifted, untreated, unsafe water flowed through the island's pipelines, posing a serious threat to human survivors. Within 48 hours, US chlorine manufacturers delivered needed supplies of chemicals to treat the contaminated water, ensuring its safety and purity. Working through CCC's Water Relief Network, members of the chlorine industry provided generators and plastic sheeting to assist with ongoing relief efforts in hurricane-torn Haiti in 1996.

In June 30, 2000, Dow officially delivered to the City Hall of Guarujá the Municipal Day Nursery “Grace Anna Dow”. The new day nursery has capacity to shelter almost 80 children benefiting 60 families. Located in land donated for the City Hall, the construction has an area of 280m². The installations include two nurseries, two activity rooms, a shed for recreation, a baby's bathroom, an infirmary, storeroom, and cooking, laundry and administrative facilities.

Canadian firm Nexen is committed to providing local nationals with increasing roles in the running of its production, operation and administrative facilities in Masila, Yemen.

SUSTECH programme

The SUSTECH programme was created by a core-group of Cefic member companies in 1994 in response to the expressions of public concern about the sustainability of the industry's products and processes. It aims to promote collaborative technological R&D between companies in Europe's process industries and universities and research institutes. It is led by the chemical industry and focuses on the synergy to be gained particularly from collaboration across industrial sectors and with academic researchers.

Since 1993, they have offered an extensive training program that provides English teaching, training and hands-on experience to national applicants. As a result, from 1993-1999, the number of Yemenis employed in their operations has increased by an average of 9% annually, and in 1999 they represented approximately 64% of the Masila operation's total workforce of 670.

Employees of Norsk Hydro along with trade unions, the environmental organisation Bellona and the Norwegian church built a waterworks in Mensura, Eritrea. Employees donated 2,000 hours of pay to the project. The waterworks provides safe water to the 4,000 inhabitants of Mensura's two villages and a refugee camp built with aid from the Norwegian church. The project started as a wish to help people in rural Eritrea, and to demonstrate how polyvinyl products can be useful to society by improving living conditions. About 5,000 metres of polyvinyl pipes supply pure water to various water posts in the villages. The local school and hospital have received their own water supply.

Formosa Plastics Group of Taiwan-China has founded several non-profit organisations to help improve quality of life in its local community, for example, Chang Gung Memorial Hospital. It also built four branches throughout the island. At present, Chang Gung treats 25,000 outpatients daily and has 6,500 beds available for in-patients. It is considered one of the largest and best-equipped general hospitals in Asia.

To eliminate a serious shortage of nurses, Formosa also founded the Chang Gung Institute of Nursing. And in 1987, it established Chang Gung Medical College, now known as Chang Gung

University. Presently, the university has schools in medicine, engineering, and management with a total of fifteen departments and nine graduate study programs.

Improvements through innovation

With the increased use of modern coating systems, for example water-based paints, the coating industry has greatly reduced one environmental concern: solvent emissions. Coating materials containing newly developed BASF crosslinkers can be collected by ultrafiltration and reused, benefiting the environment. The fact that the process is also commercially justifiable and makes paint recycling profitable is shown by the eco-efficiency analysis, which, in addition to the ecological benefits, also assesses the economic benefits of the alternatives.

A new partnership of two major US companies from different sectors, Dow in chemicals and Cargill in foodstuffs - Cargill Dow Polymers - is learning to make plastics from corn and sugar beets. Using these renewable carbohydrate sources, will help reduce the use of fossil fuel, lower emissions of carbon dioxide, and contribute to a reduction in solid waste as the target plastic is biodegradable.

HERA will provide a common risk assessment framework for the household cleaning products industry, and show that this process will deliver evaluated safety information on the ingredients used in these products in a speedy, effective and transparent way.



The HERA Project - Human and Environmental Risk Assessment - is a joint voluntary initiative between the European detergents industry and its suppliers, represented by Cefic.

This process is intended to support a risk-based approach in the European Union, and may serve as a pilot for the application of the same process in other sectors and/or geographical areas. Data will be published via the internet.

Procter & Gamble has launched a new product system for developing countries. It makes water germ-free, leaving it clear

and safe to drink. Chlorine, which many people in developing countries use to disinfect their drinking water, is the first vital step. The new two-step process deals with the common problem of turbidity prior to chlorination. Trials in Guatemalan villages are ongoing. Access to safe drinking water worldwide could prevent hundreds of millions of cases of diarrhoea and more than a million childhood deaths a year.

Biodiversity: technology transfer

Development of Vitamin A-enhanced rice varieties ("Golden Rice"): AstraZeneca, the maker of Golden Rice, has approached more than 80 developing nations across Asia, Africa and Latin America about donating Golden Rice seeds. A joint project with Zeneca Ag Products, Monsanto, and Greenovation earlier this year offered intellectual property, regulatory, advisory and research expertise to help make Golden Rice available to developing countries.

Development and Transfer of Virus-Resistant Sweet Potatoes: This collaborative project partnered the Monsanto Company with the Kenya Agricultural Research Institute to develop improved varieties of sweet potato resistant to virus infections. This effort includes building regulatory capacity, conducting field trials, and improving distribution. As a result, the Kenyan variety of sweet potato was recently approved by the Kenya Biosafety Committee for import.

Shell is committed to work with others to maintain eco-systems as well as respect the basic concept of protected areas through its biodiversity standard. They have set up an early warning system to inform and consult with key stakeholders whenever they intend to work in sensitive environments and have committed to assessing potential impacts on biodiversity prior to all new activities or significant changes to existing ones, and developing conservation plans where appropriate. Shell has made a \$2.8m grant to the Smithsonian Institution to establish biodiversity baselines, assess the impact of Shell operations upon the surrounding biodiversity, and build local capacity to help countries meet their obligations under the Convention on Biological Diversity (CBD). Shell is also playing an integral part in the Energy and Biodiversity Initiative (EBI) bringing together 5 energy companies and 5 conservation organisations to share experiences and use their collective influence to recommend best practice guidelines for integrating biodiversity conservation into oil and gas development. Finally, Shell is in the process of developing a strategic partnership with the World Conservation Union (IUCN)



and has begun this process by bringing a secondment from IUCN into Shell for two years to work exclusively on biodiversity.

Engaging stakeholders

The Canadian National Advisory Panel of public interest representatives brings together 16 individuals from across Canada who have demonstrated leadership and interest in issues related to the chemical industry. The panel has provided ongoing advice to the chemical industry on the development and implementation of Responsible Care. It has also played a key role in sensitising the CCPA and its members to public concerns relating to the production and

use of chemicals in our society, and in promoting frank and open dialogue between industry and the public. Panel members are involved in environmental, health and safety issues. They reflect expertise in ecological science, environmental economics, risk assessment, epidemiology, human health and safety, labour issues, transportation issues, engineering, agriculture and the retailing of chemical products. The panel's strength lies in the diversity of perspectives its members bring to the table, and their contacts with other involved citizens at the national, regional and local levels. Several other countries signed up to Responsible Care also benefit from the input of national advisory panels, and others are in the process of setting up similar schemes.

Future Challenges and Goals

ICCA's goals

- Extend geographic reach of Responsible Care to all countries that manufacture chemicals
- Support Responsible Care partnership agreements along the supply chain
- Re-examine stakeholder request to set up global database for chemical MSDS
- Improve knowledge needed to produce new and better MSDS; improve their use and understanding
- Develop and recommend methods and indicators to compile worldwide chemical industry performance reports
- Improve safety information on products through the GHS structure and Responsible Care
- Stimulate and support education and training of people involved with chemical safety
- Continue to support UNEP's APELL programme
- Enhance internal and external communication; maximize stakeholder dialogue
- Develop strategies to continuously stimulate exchange of best practices among members and implementation of national programmes aimed at building local technology R&D capacity

This chapter sets out some key challenges and goals for the ICCA that will enable us to help chemical companies worldwide achieve sustainability.

ICCA Vision

ICCA adopted a new vision for the future at its October 2001 meeting, that the industry wants "To be widely valued and supported for its economic, social and environmental contribution to society". This vision represents the industry's commitment to fulfill its environmental, health and safety responsibilities, increase its contributions to sustainable development, and to be seen as a positive force within society.

Extend Product Stewardship up and down the supply chain

ICCA is prepared to make the extension of product stewardship to the entire supply chain a priority of our Responsible Care Leadership Group, which monitors the various national and regional activities and coordinates the initiative at international level.

Chemicals management initiatives

The ICCA, member federations and companies have been actively involved in negotiations for an International Convention on Persistent Organic Pollutants (POPs), the Stockholm Convention, to control or eliminate products which present unacceptable environmental and health risks.

As part of our general chemicals management policy, we also support the phasing out of uses of chemicals if unacceptable and unmanageable risks are identified.

We are in the early stages of developing and implementing a new initiative aiming to ensure the safe use of chemicals. In pursuing this chemicals management initiative, the chemical industry will provide a "knowledge base" of hazard, use, exposure information, and risk characterisation on chemicals in commerce, and make public an appropriate summary of that information. Companies would screen information against agreed criteria for setting priorities, and then conduct additional activities, including further testing based on a tiered use and exposure driven approach. The initiative will be implemented at regional/national level, and further elaboration of its

implementation is under development.

In response to stakeholder requests to extend the ICCA HPV Chemicals programme in order to improve monitoring, and to take further actions, we have stimulated non-OECD member associations to invite national chemical

producers to participate in the international consortia already set up or about to be created.

Developing Responsible Care

The ICCA, using the experience of its Responsible Care Leadership Group,

We encourage our members to adopt the measures in the Stockholm Convention and other internationally recognised treaties.

ICCA's challenges

- Recruitment of small to medium size chemical companies in both the developed and developing world continues to be slow. Further work is needed to understand the key barriers in countries and ensure that support is given to help them in implementing Responsible Care.
- Moving Responsible Care through the supply chain is still problematic. Greatest progress has been in the manufacturing of products. The effort to introduce the Responsible Care ethic into suppliers and customers, and their customers, now needs to be sustained.
- Although some global reporting of performance results has started, agreement on a full range of health, safety and environmental indicators for worldwide use has not yet been reached.
- The ICCA has been slow to recognise the need for and implement effective partnerships with critics.
- Zimbabwe, which adopted Responsible Care some years ago, has withdrawn from membership of the Responsible Care Leadership Group. This resignation has been accepted with regret, but Zimbabwe will be able to return to the RCLG in the future, provided it meets current Responsible Care requirements.

continuously performs its own critical analysis on its members' Responsible Care programmes.

We plan to advance Responsible Care practices and principles throughout the global chemical industry, while maintaining the integrity and credibility of the initiative. The Council has finalized a Responsible Care Global Statement (below) that encapsulates the philosophy of a strategic stewardship - along the lines of the principles of sustainable development - that all ICCA members will abide by. This universal ethic takes into account the different views and positions of all ICCA members and will be a major step towards the consolidation of Responsible Care at global level. The implementation of this proposal is being considered during 2002.

We are also set on improving the quality of Responsible Care initiatives. In future, a federation's implementation record will be critically evaluated against an agreed timetable, and national programmes not meeting these milestones will be reviewed. Assistance through ICCA's mentoring process for developing countries will probably have to be stepped up to achieve these goals. ICCA also intends to measure the global industry's HSE performance improvement through internationally comparable performance indicators. As well as improving its quality, we plan to extend the geographical boundaries of Responsible Care. Russia, China, Saudi Arabia, Venezuela and the emerging European economies that have so far not adopted Responsible Care, have been identified as the key targets to extend our global coverage. The interest expressed in Responsible Care in these countries is mixed.

There is still much to be done to get the Responsible Care message across to both internal and external stakeholders. The ICCA is therefore committed to more assiduously promoting branding of our HSE programmes as Responsible Care and to demonstrate the relationships between Responsible Care and other related initiatives. Another area for action is in our dialogue with targeted stakeholders which needs to be improved and in some cases established.

Today the discussion on how to proceed is still ongoing. Possible options include, for example, the expansion of Responsible Care to cover all aspects of sustainable development or a new programme in addition to Responsible Care.

Social issues

There is no question that the social dimension of sustainable development must be given increasing attention by industry stakeholders. The social component of sustainable development must be treated at national level before the ICCA takes a position on how to respond to the demands at international level. Many companies in the chemical industry are responding to the complex challenges of integrating the social dimension in the context of sustainable development by adopting a triple-bottom-line approach to define business success. At this moment, however, there is no consensus of what constitutes the scope of corporate social responsibility. As a result, local, national and, in rare cases, regional approaches seem to be more appropriate, and have been chosen by the ICCA as the best way forward for the moment. A process of "testing the field", by national chemical associations/ federations, proactively or in response to societal



demands is currently underway. Overall, the challenge will be to establish systems of governance for sustainable development that integrate environmental, economic and social dimensions.

Enhancing capacity building

Capacity building is one of the key challenges ahead, which the ICCA can achieve through best practice sharing and the coordination of member companies' efforts.

A key ICCA goal is to increase capacity building efforts, in part through strengthening co-operation with governments, stakeholders and other industries.

- In line with one of the priorities of the ICCA Responsible Care Leadership Group to extend partnership agreements to as many Responsible Care countries as possible, the RCLG has developed ICCA Guidelines for Responsible Care Partnerships.
- The next decade will reinforce existing pressure to increasingly train and educate people whose daily activities or work exposes them to chemicals, or makes them responsible for policy issues. Special attention should be paid to preparing training for government officials and users of chemicals in less developed countries, in particular those in Africa, where local chemical production is usually non-existent and, as a consequence, less information is available. ICCA plans to stimulate companies and associations to develop or support the development of training courses, seminars and materials in this area and share best practice.

- The ICCA is committed to raise or distribute funds and or human resources needed to carry out capacity building projects and plans to develop strategies for the identification of resources needed at the international, regional, national and local levels. Responsible Care, APELL and other voluntary initiatives will be used by the chemical industry in its capacity building projects. A challenge will be to reach countries where the industry has not adopted Responsible Care or has not implemented APELL anywhere within its borders.
- Global corporations should apply harmonised standards that guarantee the same level of performance for all their facilities around the world and use local partners to develop national technological solutions whenever needed. ICCA plans to develop strategies to continuously stimulate the exchange of best practices among its members and the implementation of national programmes aimed at building local technology R&D capacity.

ICEM

In late 1999 following an ILO tripartite meeting on Voluntary initiatives in the chemical industries, ICCA and the International Federation of Chemical, Energy, Mine and General Workers' Unions (ICEM) opened discussions aimed at reaching a global agreement on Responsible Care.

Although the talks failed, organizations are taking up discussions with organised labour at national and regional level. Some national associations have already established agreements.

Developing countries

Close attention is being paid to the implications and responsibilities that operating in developing countries impose on the chemical industry, especially in a globally competitive environment. The most visible can be summarised as follows:

- When considering new projects or expansions on existing production sites, companies will invest on the basis that the project considered will be set up according to health, safety and environmental standards at least equivalent to the investor country.
- Chemical companies committing to Responsible Care ensure that their facilities meet, and often exceed, local standards, resulting in the transfer of environmentally sound technologies and environmentally beneficial goods and services in developing countries.
- Not all national chemical companies or national chemical industry associations are members of ICCA and therefore remain outside the Responsible Care initiative. ICCA needs to reach out to these companies and countries in the future, if it wants to guarantee health and safety throughout the industry, and maintain overall credibility.

In November 1999 the German chemical association, VCI concluded a "Social Partnership Agreement on Responsible Care" with the IG BCE (German Trade Union of the Mining, Chemical and Energy Industries) and the BAVC (Association of German Chemical Industry Employers).

This agreement lays down that workers and their representatives should be involved in Responsible Care activities and be given regular status reports on its implementation.

It was also agreed that employees should be given more intensive training in all fields of Responsible Care.

Reporting

The communication of performance improvement to customers, suppliers, local communities, regulators, employees, shareholders, financial analysts and the general public is a fundamental requirement.

To monitor, benchmark and communicate the achievements of the chemical industry at local, national, regional and global level, the chemical industry needs a comprehensive assessment of its performance, based upon common definitions. Agreement on a core set of quantitative indicators of performance is a means of achieving this objective. A common set of global Responsible Care performance indicators have been adopted. However, due to large differences in legislation, culture and occupational health practices, data collection is not yet complete.

Stakeholder involvement

Our industry increasingly recognizes that fears, doubts and criticisms about its operations and its products have to be taken seriously. If we truly want to build up trust and meet with acceptance we must be prepared to talk more openly about remaining and inevitable dangers and be prepared to accept the need for an increase in the participation of our stakeholders.

Stakeholders can help the chemical industry by looking at things from a different perspective and with a different background and different expertise. Mutual respect and consensus-driven communication processes have to be the basis for common definitions of problems and approaches to solutions.

Specific goals are to enhance internal and external communication and to ensure that expectations are met or exceeded by maximising stakeholder dialogue.

ICCA is also considering the development and establishment of a continuing process of stakeholder involvement as a follow-up to the stakeholder consultation facilitated by UNEP for the preparation of the

Chemical Sector Report to UNEP for the World Summit on Sustainable Development. We are ready to explore options to increase stakeholder involvement beyond existing dialogue, and are looking at concrete partnerships with different stakeholders.

Openness and transparency are vital for the chemical industry.



Responsible Care is the voluntary initiative of the global chemical industry in which companies, through their national associations, commit to work together to:

- continuously improve their company's and the chemical industry's performance in protecting people and the environment throughout the life cycle of their products and processes;
- contribute to the sustainable development of local communities and of society as a whole;
- inform their publics of the risks and benefits of what they make and do, and about their performance, achievements and challenges;
- dialogue and work with their stakeholders at the local, national and international level to understand and address their concerns and aspirations;
- cooperate with governments and organizations at all levels in the development and implementation of effective regulations and standards, and to meet or exceed those requirements;
- extend Responsible Care to all those who manage chemicals.

Glossary of Key Terms

ACC	American Chemistry Council
Cefic	European Chemical Industry Council
CAER	Community Awareness & Emergency Response
HPV	High Production Volume chemicals
ICCA	International Council of Chemical Associations
ICEM	International Federation of Chemical, Engineering, Mine & General Workers' Unions
JCIA	Japan Chemical Industry Association
LRI	Long-range Research Initiative
MSDS	Material Safety Data Sheets
UNEP	United Nations Environment Programme



The International Council of Chemical Associations

The International Council of Chemical Associations (ICCA) was established in 1989 and provides a forum for regular meetings of officers and executives from member associations to drive collective improvements and to discuss policy issues of international interest to the chemical industry. The purpose of the ICCA is to exchange views among members, to co-ordinate actions by council members, and to present an international chemical industry view to organisations.

ICCA Membership includes the national chemical associations of the following countries: Argentina, Australia, Brazil, Canada, Chile, Japan, Mexico, New Zealand, South Africa, the US, Uruguay and in Europe, Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Netherlands, Norway, Poland, Portugal, Slovak Republic, Slovenia, Spain, Sweden, Switzerland, Turkey, and the United Kingdom.

For further information visit the ICCA website at www.icca-chem.org

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