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Industry as a partner for sustainable development

Chemicals

International Council of Chemical Associations (ICCA)



Developed through a multi-stakeholder process
facilitated by:



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Industry as a partner for sustainable development

Chemicals

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Disclaimer

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Foreword

Foreword – from the ICCA Board Chairman

Established in 1989, the International Council of Chemical Associations⁽¹⁾ (ICCA) today represents 85% of chemical production worldwide. As ICCA President, I am pleased to introduce this report⁽²⁾ to UNEP which summarises the progress the chemical industry has made since the groundbreaking United Nations (UN) Rio Conference of 1992, and the problems still to be solved in the years to come.

Many chemical companies have worked with the International Chamber of Commerce (ICC) and participated in that 1992 meeting, later joining together with others to form the World Business Council for Sustainable Development (WBCSD) to continue to develop and implement the aims and decisions from the Conference. We have supported the work of the UN Environment Programme (UNEP) and worked with others in the Intergovernmental Forum on Chemical Safety (IFCS), and it is in this spirit of co-operation that we offer this contribution to the 2002 World Summit.

The chemical sector is an agent of change for many of the issues facing mankind. There are many challenges ahead. We offer our record of achievements and progress as evidence of our positive commitment to meet the challenges of sustainable development. The products and services we supply, the innovations we pioneer, and the wealth we generate, will be instrumental in meeting society's future needs, but only if we are able to encompass all three dimensions of sustainable development together:

We are committed through our Responsible Care programme in 46 countries to driving continuous improvement in all areas of safety, health and environmental protection, both of our processes and products, as well as increased involvement with local communities. This has given the industry we represent a global ethic, a common language, a mutual assistance network and encouragement processes with which to spread best practices around the world.

Through greater openness and transparent reporting, and subsequent dialogue with stakeholders, we have uncovered many of the issues that the public believes are our responsibility. Some of these are being addressed. Others, as you will read, have still to be tackled. We recognise that many of these issues are beyond the reach and control of a single sector. Nevertheless, we are more than willing to play our part working together with other members of society, and particularly governments.

Our industry was established initially in the developed world, but it now encompasses developing nations and economies in transition, and our members in these regions work closely with their local companies to aim for high standards, especially in safety, health and environmental aspects, in everything that we do.

We are open to a continuing dialogue with stakeholders and look forward to the discussions that we hope this report will stimulate.

Jean-Pierre Tiroufflet,
ICCA President

(1) ICCA provides a forum for regular meetings of officers and executives from the member associations to drive collective improvements and to discuss policy issues of international interest to the chemical industry. In addition, ICCA may make policy statements or develop programmes where consensus is reached among the constituent member associations. The purpose of ICCA was to exchange views among members, to coordinate actions by constituent members, and to present an international chemical industry view to organisations.

(2) To ensure that ICCA produced a comprehensive report giving due weight to 'General Sustainable Development' issues in action and projects, ICCA formed an international task force with members representing over global coverage and coordinated by representatives of CIEL, the International Council of Chemical Manufacturers and the World Business Council for Sustainable Development (WBCSD). The task force produced the document and suggested changes have been incorporated in the final report.

Part I: Overview of the report

The chemical industry supports the goal of sustainable development and has a vital role to play in attaining that goal. The challenges of sustainable development are truly global in nature, and this report summarises the global response of the chemical industry. This ICCA report to UNEP sets out to:

- describe how the chemical industry, represented by the ICCA, has responded and contributed to the sustainable development challenge of Agenda 21;
- explain and emphasise the new issues which the industry is currently addressing;
- highlight those areas where the chemical industry is looking for support and partnerships with others.

The different social, economic and environmental conditions in countries or regions where the industry operates, are reflected in the different stages of industry initiatives in different regions around the world. We aspire to a common global approach, but we have not devised a one-size-fits-all programme which tackles all the complex issues. The approach provides the necessary flexibility to be adopted to meet specific regional needs.

Our contributions to the three dimensions of sustainable development are presented in this report against the relevant chapters of sections I and II of Agenda 21, where many examples of the influence of the chemical sector in both the developing and the developed countries have been provided.

There are four topics which the chemical industry believes constitute the chemical sector's prime contribution towards sustainable development. They are globalisation, safety, capacity building and innovation.

Globalisation

- The chemical sector operates in nearly every country in the world, employing over ten million people. It is also growing at a rate equal to or greater than the gross domestic product (GDP) in many of those countries. ICCA represents the majority of this sector and has been representing the industry at a global level since it was established in 1989. Since then, ICCA has moved from a mere forum for discussion and information-sharing, to one which sets common objectives, policies and advocacy for the whole industry.
- ICCA also has been working in co-operation with governments as well as with United Nations (UN) organisations to work towards sound chemical management and trade policies. Interactions and collaboration with the United Nations Environment Programme (UNEP), the World Business Council for Sustainable Development (WBCSD), the International Chamber of Commerce (ICC), the Intergovernmental Forum on Chemical Safety (IFCS) and other sector and international organisations have played an important role in the achievements made.
- It is crucial to preserve the balance between the environmental, economic and social pillars of sustainable development. Liberalised trade and investment can be key contributors when countries develop sound environmental policies that are properly integrated with trade and investment policies. Also the uneven spread of the benefits of globalisation has to be addressed.
- ICCA believes that a new round of negotiations in the World Trade Organisation (WTO) should contribute to the goal of further growth and sustainable development to the benefit of all WTO members. The negotiating agenda must also reflect the legitimate interests of the

developing countries. Improved market access for, and technical assistance to, developing countries are important elements and should be included in the discussions.

- ICCA has taken a leadership position in encouraging harmonisation of best practices throughout the chemical industry.
- Responsible Care is the platform through which ICCA encourages the world's chemical manufacturers to embrace the environmental principles of sustainable development. While the industry has made significant strides, there is still a long way to go. Responsible Care calls for continuous improvement, and as such the industry continues to work on product and process improvements in order to provide innovative solutions to rapidly evolving issues and demands from clients and, ultimately, from society as a whole.

Safety – Process, products, people

- The chemical industry has tackled many of the issues raised at Rio in 1992 through Responsible Care – the industry's global commitment to continuously improve safety, health and environmental performance.
- Membership of Responsible Care has grown from 13 countries in 1992 to 46 today from all continents. A major challenge will be to bring them all to equivalent levels of safety, health and environmental performance. Another major challenge is to encourage those few countries not yet embracing Responsible Care to join the others who have.
- This common approach under the leadership of ICCA has led to significant improvement in performance around the world and also to a better and constructive dialogue with stakeholders at international as well as national level. Reporting on global performance has begun for the sector on safety, and will be extended to cover emissions, health and products.

- The chemical industry has had many achievements under Agenda 21. Of particular note has been the contribution to achieving the goals of Chapter 19 that deals with the 'Environmentally sound management of chemicals'.
- Further efforts in each of its six programme areas will continue to be supported.
- Increasing public concern about the health and safety of chemical products has energised the industry to provide more information about the substances that it makes. Work is well underway in two major ICCA initiatives. The High Production Volume (HPV) programme will generate complete safety data packages on 1,000 HPV substances by the end of 2004 and the Long-Range Research Initiative (LRI), another global chemical industry effort, is funding research to understand more about the effects of chemicals on human health and on the environment.
- To consolidate the existing efforts and to bring forward new possibilities ICCA is currently developing a global strategy on chemicals management.

Capacity building

- There is no doubt that the dissemination of information and knowledge about chemicals and their safe use plays a vital role if sustainable uses of industrialised products are envisioned. This dissemination, together with the means to make the best use of such information and knowledge, has become known as 'capacity building'. ICCA believes that capacity building on chemical safety is a key aspect of industry's role in promoting the sound management of chemicals.
- Safe manufacturing, distribution and use of chemicals across the world is essential. It is therefore vital that chemical companies everywhere adopt high environmental and safety standards, and spread the latest knowledge in the form of intensive training and environmentally-sound technologies. In general, chemical companies play a central

role in many capacity building activities.

- Most multinational chemical companies have taken their established policies, standards and practices into the developing parts of the world where they operate and work 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 policy standards and practices.
- Responsible Care also addresses one of the key factors in the improvement of environmental and safety performance – the competence of company management in the science of management. 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 a key 'export' of Responsible Care.
- One of the industry's major aims is to develop Responsible Care throughout the supply chain by establishing partnerships in product stewardship at national, regional and global level. In this way the chemical industry will extend the reach of its message to other sectors, which are themselves part of a truly overarching chemicals management effort.
- There are many examples of developed countries sharing 'best practices' on a wide range of topics with developing countries. Usually such sharing comes in the form of the provision of knowledge, training and expertise.
- However, there is much more still to be done by all the parties involved with chemicals safety. As a consequence, ICCA is committed to identify further scope and opportunities for capacity building.
- There is, however, no doubt that capacity building efforts in countries where ICCA members do not have operations, or sites, pose a major challenge to the industry.

Innovation

- The very notion of sustainable development requires new approaches in a number of areas. 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. Both technological and social innovation can do much to improve quality of life and to address the depletion of resources and the build-up of pollution around the world.
- The chemical industry's contribution and challenge is to continue to maximise innovation of new products which meet new demands for more sustainable products and customer needs. This requires close collaboration with the industry's customers.
- The knowledge and experience of the sector, together with new technological advances, will lead to new manufacturing processes, which will reduce risk to human health and the environment.
- Innovation will be enhanced by strengthening the sector's research and development (R&D) effort; this requires resources which can only be financed from profitable earnings.

Parts 2 and 3 of this report present industry's achievements and define gaps. Building on this analysis, Part 4 details four areas of improvement – chemicals management, further development of Responsible Care, response to social aspects and developing countries. Also, Part 4 proposes specific goals in answer to the gaps previously identified.

The input from stakeholders was important for the preparation of this report. ICCA wants to build on this involvement to more effectively implement the propositions and reach the goals here presented. Therefore, ICCA is ready to explore options to increase stakeholders' involvement beyond existing dialogue, looking at concrete partnerships with the different stakeholders.

Part 2: Implementation of the three dimensions of sustainable development (Sections I and II of Agenda 21)

2.1 Introduction

Sustainable development will only become a reality if the three goals – economic, environmental and social – can be reconciled and integrated. Sustainable development is commonly defined as development which meets the needs of the present generation without compromising the ability of future generations to meet their own needs.

The chemical industry is a key industry. Its products and services are instrumental in meeting the needs of mankind. It is present in all areas of life, from food and clothing, housing, communications, transport – right through to leisure activities. In addition, it helps to solve the problems of other sectors of industry, such as the energy sector; information technologies, environmental industries and the waste disposal sector.

However, the industry must demonstrate that the benefits derived from chemicals do not also create adverse effects on human health and the environment. The industry has been making a significant 'footprint' on the planet, and although the sector has been striving to reduce it in the last two decades, there is much still to do. The environmental footprint includes injuries and illnesses to employees and contractors, incidents such as fires, explosions, accidental releases to the environment, and transportation incidents, global emissions and waste, and use of non-renewable raw materials and energy.

It is recognised that some of the chemicals that are marketed globally pose a potential risk to human health or the environment. However, the industry strives to minimise the risk without jeopardising the benefits that the products offer to society. So, for example, to address the current concerns on many products, the industry has initiated a major

risk-assessment programme, has implemented safer management of chemicals, and is evaluating the long-term impact on human health and the ecosystem created by manufacturing operations and products.

The chemical industry is a large-scale provider of jobs and makes a significant contribution to wealth creation and, hence, to the financing of both public works and the exercise of public responsibilities. This effect is multiplied, because it is a major supplier to a broad range of downstream industries. While chemical production increases with growth in the global economy, it does not necessarily result in new jobs. Productivity improvements in manufacturing and technology have led to substantial job losses in the developed world. But new opportunities are opened up in the developing world as countries use chemistry to upgrade their resources.

The industry has a record of innovation: it makes new products that meet customer needs and adopts new manufacturing processes that reduce risks to health and effects on the environment. This is possible because of the knowledge and experience the industry has acquired from applying innovation not only to making, handling and use of chemical compounds, but also to reprocessing, recycling and solving environmental problems.

The products of the chemical sector's innovation enable other industries to use resources more efficiently with less environmental impact. Although there are many examples of successful product substitutions bringing enhanced health, safety, or environmental compatibility, there is enormous scope for improvements over full product life cycles.

To maximise innovation, which needs increased levels of R&D, resources that can only be financed from profitable earnings are required.

Wealth creation and profits are fundamental to sustainable development. They sustain economies (not just the chemical industry), and contribute, via re-investment and R&D, to new technologies and environmental improvements. Profits are needed to create flexible company structures oriented towards economic, environmental and society-related requirements.

Because it operates on a global scale, the chemical industry makes an important contribution to the attainment of economic goals. 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, it is vital that efficient technologies are transferred to them, together with high environmental, health and safety standards. Global chemical companies have a major role to play in such transfers and in improving education and training and furthering the knowledge of their staff and customers.

The chemical industry considers a functioning, pragmatic social partnership to be a key factor in sustainable development. This form of co-operation is the best way of allowing a company to compete effectively in the global market-place and prosper, thus making it possible to ensure the future, safeguard jobs in the long term, give proper recognition to performance, be consistent in labour protection, and show concern for the problems of developing countries.

Increasingly society is defining its needs and articulating them clearly to the business community. The chemical industry needs to respond to this trend and continue to demonstrate and expand its willingness to engage in a genuine process of interaction based on mutual respect. The chemical industry intends to demonstrate its willingness to be publicly responsible for its contribution to sustainable development by becoming part of the constructive form of debate within society.

The results of efforts to achieve consensus will be influenced to a significant extent by the differences in the way the partners involved in the debate perceive the risks and benefits. The chemical industry attaches great importance to environmental reporting and risk communication, and recognises that there is an urgent need to further debate these issues openly within society.

Chemical federations/associations and companies are now seeing this three-dimensional, integrated approach to decision making as vital to responsible corporate citizenship. Many of the necessary values and implementation practices of the principles of sustainable development are still to be established, but they are being actively debated both internally and with stakeholders. Measurement and management systems will need to be developed to ensure that practice delivers on principles.

An increasing number of chemical companies of all sizes are finding that Corporate Social Responsibility, (CSR) has become a core issue for many businesses. Companies that choose to adopt CSR principles not only achieve benefits to society, but find it helps them enhance their reputation, improve competitiveness, and strengthen their risk management. Given the increasing commitment of chemical companies to the UN Global Compact and the huge growth of public interest in socially responsible investment, chemical companies will undoubtedly have to take their CSR responsibilities even more seriously in the future.

Companies have broader responsibilities in society than simply the obligation to be profitable. Typically they consider that their social performance has to do with; their behaviour; that is, whether they live up to the values expressed in their business policies; their impact on people; their overall contribution to society. Many chemical companies are now devoting a section of their annual corporate or

health, safety and environment (HSE) reports to CSR, where their principles are clearly stated and approaches to projects set out in a transparent way.

Throughout Part 2 of this report, ICCA accounts for the activities of the chemical industry against those chapters of Agenda 21 for which it sees itself accountable. Some of the projects, topics or activities that are presented clearly have relevance to more than one chapter:

2.2 Social and economic dimensions (Section I of Agenda 21)

2.2.0 Industry profile

World chemical industry production exceeds USD1.7 trillion annually, and almost 30% of this production is traded internationally. ICCA estimates that member countries account for about 85% of this total. The geographic breakdown of production, based on value, is given in the table below for 1999:

The chemical industry is very diverse – there is no one typical product or one typical company. Starting with such raw materials as oil, coal, gas, air, water and minerals, the chemical industry converts these materials into a vast array of substances for use by other chemical companies, other industries and consumers.

These include, in no particular order, fertilizers, paints, coatings, crop protection chemicals, solvents, plastics, resins, plasticisers and stabilisers, pharmaceuticals, human and animal health care products, cosmetics, food additives and preservatives, refrigerants, flavours and fragrances, starches and derivatives, photographic chemicals, soaps and detergents, synthetic fibres, dyes and pigments, inks, building and insulation materials, electronics chemicals, biocides, water treatment chemicals, flame retardants, synthetic fuels and additives, catalysts (e.g. for emission control), synthetic rubbers and adhesives, waxes, industrial and medical gases, explosives and timber preservatives.

The types of company involved in producing this vast array of products also vary considerably. Some chemical companies are ranked amongst the largest companies in the world – the top ten have revenues in the range of USD10 billion to USD30 billion. These firms employ many thousands of workers and they have multiple manufacturing sites located throughout the world. Other chemical companies may make a few products at one site and are relatively small in size.

The chemicals industry is also a major employer with over ten million people employed worldwide, though as the industry has become more productive and automated, world employment levels have fallen by 7.5% over the last ten years.

Economies	Percentage share of world chemicals production
Asia	13
Japan	14
United States	30
Central and eastern Europe	4
Other western Europe	2
European Union	29
Latin America	3
Other	5

Source: European Chemical Industry Council (CEPIC)

Given the complexity of the processes and the constant need for innovation, the chemicals industry is very research-intensive. Most bigger companies allot 4% to 6% of their annual sales for R&D, although this varies from one product type to another. Unfortunately, these numbers fall to around or less than 1.5% in developing countries, where structural as well as financing deficiencies usually reduce the levels of local R&D.

Research costs are greatest for the life sciences companies and lowest for producers of commodity chemicals. Chemical industry research and technical development spending in the European Union (EU), the United States and Japan is given in the table below.

The appetite for capital spending in a continually developing and innovating business is also very substantial. Chemical industry capital spending as a percentage of sales for the same three countries or regions was as shown in the table below.

In the past, most of the investment in chemical plants has been from one OECD country to another. Over the next ten years, the rate of investment from OECD countries to non-OECD countries is expected to increase

considerably. But the licence to invest, innovate and operate is gained from the communities where the chemical industry manufactures, and securing this vital licence to operate around the world has been a great contributor for the industry's major commitment to Responsible Care.

Based on past trends and drivers, it is predicted that demand for chemicals will continue to increase, particularly in some of the developing countries. Globalisation of the industry will also continue, with production in non-OECD countries steadily growing. Projections of growth up to the year 2010 by the United Kingdom Chemical Industry Association (CIA) and the American Chemistry Council (ACC) predict world chemicals output will increase by 63% in real terms compared with 1996 – annual growth rates ranging between 2.6% (OECD Reference scenario) and 3.5% (CIA).

Between 1979 and 1996, growth in chemicals demand in the developed world at 2.4% per annum in real terms was exactly in line with growth in GDP. By contrast, in the same period in the developing world, a chemicals demand of 6.1% per annum exceeded GDP growth by 2% per annum. Forecasts for 1996 to 2010

Economies	R&D expenditure as % of annual turnover		
	1990	1995	1999
EU	5.1	4.7	5.1
United States	5.2	5.4	6.8
Japan	4.9	5.3	5.6

Economies	Capital expenditure		
	1990	1995	1999
EU	7.5	5.3	6.2
United States	7.2	7.3	7.7
Japan	9.9	6.5	6.9

Source: European Chemical Industry Council (CEFIC)

predict the same pattern for both economies. The chemicals demand in the developing world at 5.9% per annum is again expected to exceed GDP by 1.6% per annum.

2.21 International co-operation to accelerate sustainable development in developing countries and related domestic policies (Chapter 2, Agenda 21)

The chemical industry is an intensely competitive and increasingly globalised one, and this leads to common technologies and practices throughout the world. Through its federations and multinational companies, ICCA is a strong advocate of sustainable development and is convinced that liberalised trade and effective environmental protection are, or should be made, mutually supportive.

Trade liberalisation can support sustainable development when countries develop sound environmental policies that are properly integrated with trade and investment policies, and the World Trade Organisation (WTO) promotes this. However, it cannot be the role of WTO to adopt international environmental or social standards. This is the responsibility of international organisations or institutions such as UNEP or the International Labour Organisation (ILO), and related agreements.

ICCA welcomes and supports the efforts to develop the necessary structures of co-ordination at the international level. ICCA has contributed constructively to these fora, and to negotiations of Multilateral Environmental Agreements (MEAs) such as the recent Rotterdam and Stockholm Conventions.

The private sector also has a role, and indeed a responsibility, to see that trade liberalisation and environmental protection go hand-in-hand. Chemical companies ensure that their facilities meet, and often exceed, local standards wherever they operate in the world. They strive for continuous performance

improvement beyond current local practices, and the following examples show how global trade and investment in the chemical industry have contributed to improvements leading to the achievement of sustainable development goals.

- Liberalised trade and investment in chemicals result in best technologies with constantly improving environmental performance being made available in both developed and developing economies, and this results in 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 has taken leadership in improving the environment in Venezuela's Lake Maracaibo district. A \$1.1 million investment in a joint waste water treatment system for two plants the company operates on the lake, makes them 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 International Finance Corporation to help develop the first manufacturing process safety and environmental control criteria for World Bank-funded industrial plants in developing countries.

- Multinational chemical companies committing to Responsible Care bring worldwide standards into each of their

countries of operation where they can be adopted by local chemical companies.

DuPont, for example, decided to apply its 'zero emissions' goal to its worldwide operations, partly because it makes sense environmentally and partly 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 (manufacturing, for example, 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.

Eastman Chemical is implementing Responsible Care in the Asia Pacific region. Together with its prime contractor, Foster-Wheeler Eastern, Eastman implemented construction safety programmes and completed construction of its Kuantan plant without a lost workday injury. Employees from the plant then participated in the Chemical Industries Council of Malaysia committee which developed the initial Responsible Care pollution-prevention code of practice for the country. 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.

Malaysia has an excellent research institute, the Standards and Industrial Research Institute of Malaysia (SIRIM). Once every year from 1999 to 2001, SIRIM scientists have been visited by a risk management expert from Japan who is sent by the Japan Chemical Industry Association (JCIA) under a four-year programme called 'Risk management of hazardous chemical substances'. Each time, the expert held a seminar on the methods and processes of risk assessment of chemical substances, and discussed problems in conducting risk assessment for risk-based decision making. The programme is carried out under the auspices of the Japan International Co-operation Agency (JICA).

- Multinational chemical companies provide local social infrastructure.

On 30 June 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 280 square meters. 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.

Foreign direct investment (FDI) is thus essential for global merchandise trade and global modern manufacturing in the ongoing integration of the world economy. The interrelationship between trade and FDI is very tight and increasing. For example, intra-firm trade among multinational companies already accounts for one-third of world trade. FDI has become a key element of corporate strategy to respond to the challenges of global economic integration. FDI is creating and complementing trade in chemicals.

FDI has a positive impact on growth, development, productivity and competitiveness. The investors' host countries

of FDI benefit from the transfer and use of technology, the creation of new market opportunities and a greater integration in the international division of labour, which increases competition, innovation and capital formation.

In order to safeguard investors' and host countries' interests, countries have concluded a great number of multilateral, regional and bilateral agreements on FDI, or agreements that contain provisions on FDI. This situation, however, generates a lack of transparency causing obvious risks of distorting FDI and international trade flows. Most importantly, the chemical industry encounters barriers, discriminatory treatment and legal uncertainties in host countries of FDI.

The chemical industry therefore supports the establishment of principles related to FDI in the WTO that would provide for clear, transparent and predictable rules. This would allow the chemical industry to invest globally, and at the same time provide host countries with the types of investment that complement their national development priorities. However, although globalisation has the potential to benefit all the world's peoples, developing countries do not yet see many of its benefits, and this is an issue that ICCA collectively wants to tackle in conjunction with others. Official development aid needs to be harnessed with the institutional structures and with assistance from the international chemical businesses, so that developing countries can better access global markets.

The share that developing countries have in world trade and investment has increased considerably since 1980 and, therefore, developing countries should have an enhanced role in the formulation of trade policy in the international arena. The globalisation of the world economy is a challenge for individual governments and for civil society as a whole. ICCA believes the new WTO round of negotiations, launched in Doha on

14 November 2001, should contribute to the goals of further growth and sustainable development to the benefit of all WTO members.

ICCA recognises that a number of developing countries signed on to Uruguay Round Commitments without fully appreciating some of the implementation difficulties they would face, and have raised legitimate concerns. ICCA believes increased technical assistance may be needed by some developing countries to assist them with implementation. In position statements on investment, anti-dumping, market access, intellectual property and dispute settlement, ICCA acknowledge the continuing need for transitional measures, and in some specific cases, technical assistance for developing countries.

ICCA believes the new round will not be successful without the effective involvement of the developing countries. The negotiating agenda must reflect their legitimate interests. The view of developing countries is that the approach to market access should be comprehensive and include sectors which are important to them, including agriculture and textiles. This is supported by the chemical industry negotiations covering such sectors, and should lead to balanced concessions from all parties involved. Exploring the idea of granting, for a negotiated period, duty-free access without quantitative restrictions for all products originating in the least developed economies, is also supported.

In accordance with the principles of sustainable development, ICCA is in favour of high environmental standards and the respect of fundamental labour rights as provided for in, for instance, ILO Convention 87 and 98, wherever companies operate. However, the concerns of the developing countries that environmental and social standards could be misused for protectionist purposes is shared by ICCA. ICCA is opposed to the use of unilateral trade measures taken to enforce

such standards. WTO can provide the best guarantees that such standards are not applied in a discriminatory manner and that the competitive advantages of developing countries are respected in this area.

2.22 Combating poverty (Chapter 3, Agenda 21)

The long term objective is to enable all people to achieve sustainable livelihoods within a framework of policies that address issues of development, sustainable resource management and poverty eradication simultaneously. From a chemical industry perspective, achievement of this objective requires sustainable economic growth within a coherent policy and regulatory framework that promote social development and sound environmental management.

The chemical industry has participated in the activities identified in Agenda 21 to address the problem of poverty, by supporting government policies that promote sustainable competitiveness in the sector, which in turn can leverage downstream employment.

Operating worldwide, the chemical industry contributes very much to reduce poverty in developing countries. Direct job creation is only one aspect to be considered, together with taxes collected at various levels of government and downstream economic development, which usually follows the installation of chemical production sites. In developing countries it is common to find local recruiting as early as the construction and start-up phases of new plants.

The salaries paid by chemical companies are normally placed among the highest of all sectors. In Brazil, for example, the average salary in the chemical industry is comparable to that of the United States chemical industry.

The last decade of the 20th century was particularly important to the chemical industry. It faced a lot of restructuring and expansion as

many developing countries gradually opened their national markets to international competition, as a way to promote economic and social development. As an example, since the early nineties, the South African chemical industry has restructured to ensure the establishment of globally competitive manufacturing capacity. Planned future investment in the sector will further improve the competitive position in some markets. These investments will unlock the potential for downstream employment opportunities.

Economic empowerment of the previously disadvantaged sectors of South African society remains one of the greatest challenges facing South Africa since democratisation. The chemical industry is playing its part in seeking out opportunities for meaningful partnerships with potential entrepreneurs. Sasol has recently established Chemcity, a venture which aims to facilitate the entry of young entrepreneurs into the chemical industry by providing raw materials and environmental services in an integrated way. This allows the fledgling company to focus on the business of making chemicals.

The 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 promoting economically efficient resource productivity so that the local population benefits from productive use of natural resources.

The gas-to-liquid technology developed and implemented in South Africa has provided the foundation for a thriving downstream chemical industry, which unlocks job creation potential in the plastic conversion and paint industries.

Lack of access to safe drinking water is one of the most pressing needs for about ten million of South Africa's population. The South African chemical industry recognises the need to extend basic services to all citizens of South

Africa, and to this end has supported rural water supply schemes in proximity 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.

Education is one of the essential components of a strategy to lift the living standards of a society. The chemical industry in South Africa supports improvements in the teaching of chemistry by arranging study tours for science teachers to chemical plants. It has also presented a teaching aid on chemistry for secondary schools to the Department of Education. In addition, the industry has sponsored the publication of 'Chemistry and the Environment', a teaching aid for primary schools.

2.23 Changing consumption patterns (Chapter 4, Agenda 21)

The chemical industry has a role to play in delivering chemicals, goods or services that satisfy human needs and bring quality of life improvements, while progressively reducing ecological impacts and resource intensity throughout the life cycle. Another way of saying this is to find the optimal ways of harnessing and utilising chemistry for meeting societal needs, rather than only seeking to provide chemical products.

Chemical companies around the world compete with each other in developing technological innovations that bring about the same quantity of the product, with less input of raw materials and energy and less output of wastes and effluents. Mitsui Chemicals, for example, has put into commercial use a new process to make hydroquinone, an important material for photographic development, which has substantially less environmental impact than the conventional process.

Similar examples in Japan include the direct oxidation of methyl methacrylate monomer and gas-phase polymerisation of polyolefins.

Recently, Enichem of Italy and Sumitomo Chemical of Japan have worked together jointly to develop a new process to produce caprolactam in gas phase which eliminates the traditionally inevitable by-production of ammonium sulphate.

Some leading chemical companies are beginning to sell services rather than kilograms of chemicals. Contracts between the company and the customer ensure that, for example, the end user has a clean stack or painted part rather than providing a specific product, and this provides greater scope for creativity in finding the most efficient way of fulfilling customers' needs. This trend is very important for the sector in particular as a supplier of materials – or services – to many others, and ICCA must help by spreading best practice in this area.

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.

The sustainable technology (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 research and technological development between companies in Europe's process industries, 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. The SUSTECH programme operates a network whose prime objective is to generate practical collaboration in the pursuit of solutions to common problems - imposing an environmental imprint (material and fuel-efficiency, waste-reduction at source) that the public at large will find acceptable and sustainable in the long-term.

A new partnership of two major United States 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.

Many ICCA companies are following the WBCSD eco-efficiency approach with its seven characteristics, which if addressed properly can contribute to qualitative growth:

- reduce the material intensity of goods and services,
- reduce the energy intensity of goods and services,
- reduce toxic dispersion,
- enhance material recyclability,
- maximise sustainable use of renewable resources,
- extend product durability,
- increase the service intensity of goods and services.

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 the industry can play a major role in sharing the techniques that work.

2.24 Promotion and protection of human health (Chapter 6, Agenda 21)

This is a very important issue for the chemical sector, and the two programme areas of chapter 6 that the industry can contribute to most are reported here:

- a better understanding of the effects of chemicals on human health,
- the provision of solutions – chemical products and drugs – which help to alleviate or eradicate human illnesses.

For the first one, the global chemical industry has set up its Long-Range Research Initiative (LRI), a systematic programme of research into the effects of chemicals on health and the environment, coupled with genuine stakeholder dialogue at every stage (see also section 3.3). It provides financial support for external research to focus on the development of sound scientific understanding of the impact of chemicals on people and the environment, showing that it is willing and able to manage its products responsibly. The chemical industry will work with the scientific community on a series of worldwide programmes to gain a clearer understanding of endocrine disruption and other mechanisms by which chemicals might have an impact on human health and the environment.

The European detergents industry and its suppliers in the European Chemical Industry represented by CEFIC have recently launched a joint voluntary initiative, the Human and Environmental Risk Assessment project (HERA). 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. This process is intended to support a risk-based approach in the EU, 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. More information is available on <http://www.heraproject.com>.

ICCA is fully behind the WHO initiative on Good Practice in Health, Environment and Safety Management (GPHEM). The industry's Responsible Care initiative works with HSE management systems. We believe that occupational health matters should be managed as an integral part of each company's safety, health, environment, quality (SHEQ) management system and that this can in a cost-effective way satisfy any proposed regulatory demand.

Over 25 years already, JCIA has given its annual 'Chemical Safety Award' to promote process safety, disaster prevention and occupational health and safety in the industry. Each year four to six sites are given the award. The award ceremony is followed by a Safety Symposium during which the excellent safety practices and expertise of the awardees are shared with industry peers. In 2000 the Japanese Responsible Care Council (JRCC) joined the programme as co-sponsor.

Despite the variation in laws and regulations around the world that reflect regional and local preoccupations, most multinational chemical companies now have policy statements that commit them to operate according to global standards for health, safety and the environment. It is, of course, essential that companies honour these commitments. Sites should be given equal attention to control workplace risks and provide health care when needed. This is monitored by sound management processes and open reporting.

The chemical industry has a long tradition in reporting health and safety performance. Since 1998 aggregated data on 'number of fatalities' and 'lost-time-injury frequency rate' has been published at European level and since 2000 for the first time at global level.

Due to the many differences in legislation, culture and occupational health practices within countries and companies, the reporting at this point in time is very varied and incomplete. Nevertheless, the European Chemical Industry Council (CEFIC) has piloted an occupational-illness-frequency measurement based on the experiences of multinational chemical companies and the results will be first reported in 2002.

One of the mechanisms used to prevent occupational illness and injury is the use of hazard communication. 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. In Asia the chemical industry associations have worked with the government on the use of Material Safety Data Sheets (MSDS), to supply information to the users of chemicals, for example.

In China, the Hong Kong based chemical association, the Association of International Chemicals Manufacturers (AICM), worked with the regulatory authorities to develop the regulation, and supported the translation of the common elements of an MSDS so that there would be common language used. It is of course essential for companies to ensure that appropriate and adequate training of workers, management and contractors are part of their general policy and practice.

Procter & Gamble has recently 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 world-wide could prevent hundreds of millions of cases of diarrhoea and more than a million childhood deaths a year.

Some 40 million people in the world are HIV positive, 90% of these are in Sub-Saharan Africa. While comprehensive data on the scale of the HIV/AIDS epidemic are difficult to compile, existing research indicates the epidemic has already reached very serious proportions in some parts of the world. Some estimates put the deaths of children under the age of 15 years at 3.6 million by the end of 1999.

In South Africa testing of women attending antenatal clinics indicates a growth of 5% in the rate of infection between 1997 and 1998 to 22.8%. AIDS-related deaths are projected to increase dramatically to a peak of 900,000 deaths per year in 2009 and thereafter a slow decline in the death rate is projected. In addition to the human tragedy, this will have a dramatic impact on the working population and overall levels of productivity in the South African economy.

The chemical industry along with other sectors in South Africa has joined forces with government and organised labour in a concerted effort to stem the spread of the disease. At an individual corporate level, a number of South African chemical companies have extended their corporate social investment programmes to support institutions working with AIDS orphans and other people whose lives have been adversely affected by the epidemic. In this regard education of employees is receiving particular attention.

Dow is working with two pharmaceutical companies to supply a life-saving drug for the treatment of late-stage human African trypanosomiasis or sleeping sickness. The supplies of this drug had been expected to

run out in June 2001, and Dow is involved with the World Health Organization and Médicines Sans Frontières in this project.

2.25 Promoting sustainable human development (Chapter 7, Agenda 21)

As a manufacturer of practical products for solving problems, the chemical industry is able to provide materials for building, for dosing, for remediating, for feeding and for sustaining. And with strategic stocks of such materials around the world, it is well placed to provide relief at times of disaster. Some examples of the industry's contribution are given below.

The Chlorine Chemistry Council (CCC) of the United States works with the American Red Cross in the Water Relief Network to provide chlorine-based materials to communities which 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, United States 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.

Nexen, formerly Canadian Oxy, (a Canadian member of the World Chlorine Council), is committed to providing local nationals with increasing roles in the running of Nexen's production, operation and administrative facilities in Masila, (Yemen). Since 1993, they have offered an extensive training programme which provides English teaching, training and hands-on experience to national applicants. As a result, from 1993 to 1999, the number of Yemenis employed in their operations has increased by an average of 9% annually. In 1999, they represented approximately 64% of the Masila operation's total workforce of 670.

Employees of Norsk Hydro (a member of Euro Chlor) 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, but also to demonstrate that 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.

JSR Corporation started its environmental and safety training programme for technicians in developing countries in 1992 in co-operation with the International Centre for Environmental Technology Transfer (ICETT). This is a joint initiative covering industry, academia and government, to promote the smooth transfer of Japan's environmental conservation system, in order to contribute to the sustainable development of the world economy.

Up to now, more than 400 technicians have finished this programme which includes air pollution control, water management, industrial waste treatment, odour control, environmental management systems and Responsible Care. Furthermore, in collaboration with ICETT, JSR continues the R&D of energy conservation systems in the solvent-elimination process of synthetic rubber manufacturing plants and for the control of atmospheric emissions of hydrocarbons.

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 out-patients 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. Today, the university has schools in medicine, engineering, and management, with a total of 15 departments and nine graduate study programmes.

2.26 Integration of environment and development in decision-making (Chapter 8, Agenda 21)

More and more companies are using or developing indicators of the three pillars of sustainable development to help the management in decision-making and to report to external stakeholders. Social indicators are especially difficult and also the integration of social indicators in meaningful reporting remains difficult.

One of the most successful initiatives at international level to develop standards for integrated reporting is the Global Reporting Initiative (GRI). In a multi-stakeholder process it designed and built acceptance of a common framework for reporting on the linked aspects of sustainability. This provides a clear picture of the human and ecological impact of business, to facilitate informed decisions about investments, purchases and partnerships.

The GRI sustainability reporting guidelines, with participation from the chemical sector in the pilots, have provided economic, environmental and social indicators which encompass the three linked elements of sustainability. The power of the GRI approach has been to involve a very wide range of international stakeholders from the outset.

The environmental indicators include, for example, impacts of processes, products and services on air, water, land, biodiversity and

human health. Such indicators are beginning to help ICCA companies and federations to communicate trends in an internationally consistent manner for the first time, and to illuminate the relationship between the linked elements for clearer decision-making.

The chemical industry's associations in both South Africa and New Zealand are currently investigating the incorporation of recommendations of the GRI into their management practice standards which deal with reporting.

A Shell Chemicals ethylene oxide/glycols plant in Scotford, Alberta (Canada) was the first to be built in line with the Shell Group's commitment to sustainable development, which requires integrating economic, environmental, and social considerations into all aspects of decision-making. A 12-member sustainability advisory panel was involved in the design of the plant. As a result, the design team made several changes, including deciding to recover and sell waste carbon dioxide which was to have been released to the atmosphere.

2.3 Environmental Dimension (Section II of Agenda 21)

2.3.1 Protection of the atmosphere (Chapter 9, Agenda 21)

ICCA members take global climate change very seriously and recognise that the accumulation in the atmosphere of greenhouse gases resulting from human activities (anthropogenic), including activities of the chemical industry, may impact the earth's climate, ecological, social and economic systems.

For many years the chemical industry has sought to improve energy efficiency primarily for reasons of cost and waste reduction. Now it recognises the improvement required to minimise greenhouse gas emissions. The

chemical sector and its products could be part of the solution to the challenge of potential climate change.

The industrial, transportation, and residential/commercial sectors each account for about one-third of carbon dioxide (CO₂) emissions (when electric utilities' emissions are allocated to electricity consumers). Due to its relatively large efficiency improvements and other changes, the chemical industry's CO₂ emissions per unit of production have generally improved significantly with the result that the chemical industry's CO₂ emissions, historically a small share of global emissions, are a smaller share now than before.

ICCA members plan to continue the chemical industry's energy-efficiency improvement, greenhouse gas emissions reductions, and technology improvement and transfer. They believe that voluntary measures such as energy-efficiency improvements and other measures to reduce, avoid and sequester greenhouse gas emissions are the preferred alternative, and more economically efficient than energy or environmental taxes, emissions caps, or other legally-binding measures or instruments to address climate change.

ICCA members have already achieved major successes in reducing and avoiding greenhouse gas emissions of particular concern to the chemical industry. Emissions of CO₂ are mainly energy-related and their abatement clearly constitutes the single most important challenge. The chemical industry has avoided large volumes of CO₂ emissions through years of sustained energy-efficiency improvement, switching to less carbon-intensive fuels and installation of high efficiency cogeneration (combined heat and power: CHP) facilities. CHP is a very attractive option for the chemical sector; but its successful penetration requires deregulated power industries which are prepared to purchase exported electricity at competitive rates.

In Japan, 293 companies belonging to the JCIA have succeeded in 2000 to reduce their average unit consumption by 7% compared with the 1990 level. It should be recalled that Japan is highly dependent on imported energy sources and was one of the world pioneers in energy saving already before 1990. JCIA's goal now is to achieve further 3% reduction by 2010. In Europe, CO₂ 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 United States, ACC members achieved an average annual improvement in energy efficiency of 2.4% from 1992 to 1998, for a total improvement of 13.5%.

The South African chemical industry supports an international approach to reducing the adverse effects of emission from the energy sector. This is done in a way which takes into account the situation of countries like South Africa which are highly dependent on income generated from the production, processing and export, and/or consumption of fossil fuels and associated energy-intensive products. The chemical industry supports measures to promote energy efficiency within the framework of national socio-economic development and environment priorities.

The promotion of appropriate energy efficiency and emission standards or recommendations at the national level, aimed at the development and use of technologies which minimise adverse impacts on the environment, is also supported. The chemical industry promotes resource efficiency through the Responsible Care initiative and requires signatories to report on use of energy on an annual basis.

As part of its effort to protect the stratospheric ozone layer, the chemical industry has provided HCFCs and HFCs. Market use analysis indicates that CFCs are being replaced by much lower amounts of the

alternative fluorochemicals. HCFCs and HFCs are being used at only the rate of 20% to 25% of the prior CFC consumption. Tightened systems, improved repair practices, emissions reductions, recycling and where genuine alternatives exist, sectors in all developed countries have largely contributed to reduce the emissions.

In the chemical industry, substantial nitrous oxide (N₂O) emissions result from the manufacture of adipic acid, which is primarily used in turn to produce nylon 6/6. The largest producers of adipic acid have taken and are taking steps that will reduce N₂O emissions related to adipic acid production by up to ninety percent by the year 2000. The Rhodia Alsachimie plant in Chalampe (Haut-Rhin) produces nylon salt from adipic acid and adiponitrile. To celebrate its 40th anniversary in June 1998, the company organised an 'Open Doors' weekend. On this occasion, the new N₂O unit (treating atmospheric emissions) was inaugurated.

The plant will be able to treat its nitrous oxide emissions by converting a part of them into nitric acid, to be reused as a raw material. Rhodia Alsachimie will thus make an exceptionally large contribution to reducing greenhouse gas emissions in France. In fact, taking into account the CO₂ equivalent of the N₂O, the new treatment represents a CO₂ reduction equivalent of 18 million tonnes, about 5% of the total French emissions of CO₂.

ICCA members and their products are part of the solution to the challenge of potential climate change. As an example of significant contribution to CO₂ reduction through product innovation, a comparison on behalf of the American Plastics Council showed that the relative saving from polyurethane insulation, instead of glass fibre, in refrigerators and freezers in the United States, amounted to a greenhouse benefit of 41 million tonnes of carbon dioxide equivalents per year. The industry is continually engaged in process

improvement and over the years this has led to reduced energy consumption and a reduction in other emissions to air. These latter are highlighted in section 2.41.

2.32 Conservation of biological diversity (Chapter 15, Agenda 21)

The conservation of biological diversity has lagged behind the chemicals and atmosphere areas of Agenda 21 in maturing as a focus for specific, co-ordinated action. This is despite the adoption in 1992 of the Convention on Biological Diversity (CBD) as its operative vehicle. The early years of CBD activity have focused heavily upon putting in place national and global programmes for documentation of biodiversity and related measures.

With the adoption of the Cartagena Protocol on Biosafety in January of 2000, however, the CBD now appears poised to assume a much more prominent role in the global evolution of sustainable development. It is anticipated that this will result in elements such as access and benefits sharing, the role of indigenous peoples and local communities, and other elements of the larger biodiversity getting more attention, along with related issues of intellectual property systems, and legal relationships, etc.

Companies of the global chemical industry have begun to focus more attention on biodiversity as well. This is a function of two major evolutionary trends. One is the emergence of globally co-ordinated initiatives such as those discussed above, and their implication upon traditional areas of enterprise for those companies involved in pharmaceutical manufacture, crop protection chemicals, etc.

The second, and perhaps more significant in looking ahead to the coming decades, is the evolution of many chemical manufacturing companies into biotechnology as a major focus of their enterprise. This anticipates the potential for broad societal benefits from application of this technology. Besides its long-standing beneficial use in pharmaceuticals,

agricultural applications enhance the productivity of agriculture in marginal lands, the nutrient content of various grains, etc. There are also industrial applications, with the promise of biosynthesis of chemicals as a means of reducing energy and natural resource inputs required for manufacture of chemicals.

These broadening applications pose the potential for benefits for developing countries from plants or pharmaceuticals better adapted to their needs, but also pose implications for biodiversity which require attention. To this end, a number of chemical companies participated in the development of the Cartagena Protocol, the primary intergovernmental agreement to ensure protection from potential impacts of biotechnology on the environment. These companies support the negotiated agreement and are working with the Interim Committee on the Cartagena Protocol to ensure its effective implementation.

Although ICCA, as such, has not co-ordinated these efforts, a number of chemical companies involved with biotechnology have long given attention to developing countries and capacity building, technology transfer and information sharing. Working with other sectors, governments, Non-governmental organisations (NGOs) and research institutions, these efforts go back as far as the mid-1980s. Some examples include:

- Biosafety Internship Programme. Focusing on risk management and assessment, this project educated officials from Costa Rica, Indonesia, Kenya, the Philippines, South Africa, and Uganda on the field-testing of transgenic crops. It also covered the theory and practice of risk assessment and management in agricultural biotech applications. Funding came from the group Agricultural Biotechnology for Sustainable Productivity, and was carried out by the Asgrow Seed Company in collaboration

with Michigan State University, Virginia Tech, and USDA.

- Biosafety Fellowship. This project familiarised Filipino biotechnology authorities with the workings of biosafety regulatory agencies in the United States and Canada, reviewed transgenics in corn, and developed a draft application. Funded by Cargill Seeds and the International Service for the Acquisition of Agri-Biotech Applications (ISAAA), it led to the first field trial application by a national institution of transgenic corn in the Philippines.

Benefit sharing, or technology transfer, for example:

- 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. It has set up an early-warning system to inform and consult with key stakeholders whenever they intend to work in sensitive environments. It has committed to assessing potential impacts on biodiversity prior to all new

activities or significant changes to existing ones, and to developing conservation plans where appropriate.

- Shell has made a \$2.8 million 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). This brings together five energy companies and five 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.

Information sharing, which consists of the dissemination of general biotechnology information not necessarily specifically related to benefit sharing, risk assessment or risk management. Some examples include:

- ASEAN seminar on risk assessment and public awareness of agricultural products derived from biotechnology. This seminar, which took place in January 1999 and included AgrEvo, DuPont, and Monsanto, helped ASEAN members better understand how to carry out risk assessments for products derived from agricultural biotech. It aimed to help meet the goals of the ASEAN task force on the harmonisation of regulations for agricultural products derived from biotechnology.
- A number of companies have co-sponsored with governments, and provided expert resources for a series of CBD capacity building workshops around the African continent, organised and

conducted by the Global Biodiversity Institute.

- Development of transgenic maize. This ongoing project has brought together officials from Egypt, Pioneer Hi-Bred (DuPont), Egypt's Agricultural Genetic Engineering Research Institute, and Michigan State to train a team of scientists in genetic engineering and develop stemborer-resistant maize (corn).
- To help ensure developing countries are able to comply with and benefit from the provisions of the Protocol, industry has several initiatives in the pipeline. These included a biosafety information demonstration project for the December meeting of the Intergovernmental Committee for the Cartagena Protocol (ICCP-1) to assist delegates in accessing existing biosafety information resources.

2.33 Protection of the quality and supply of freshwater resources – application of integrated approaches to the development, management and use of water resources (Chapter 18, Agenda 21)

Many people in the developing world still lack two of the most basic requirements for health and dignity, namely safe water supplies and environmental sanitation.

The chemical industry has made significant contributions to the implementation of the realistic strategy proposed by Agenda 21, namely the development of lower-cost but adequate services that can be installed and maintained at the community level. It has also contributed to water-purification and water-treatment technologies in general.

The chemical industry has contributed to water-pollution prevention and control through the Responsible Care initiative. It has adopted the precautionary approach in water-quality management, where appropriate, with a focus on; pollution minimisation and prevention

through use of new technologies; product and process change; pollution reduction at source; effluent reuse, recycling and recovery, treatment and environmentally-safe disposal. With product stewardship (see section 3.31), it is already actively involved in how products are used down the product chain.

Identification and application of best environmental practices must be secured at reasonable cost. The chemical industry encourages limited, rational and planned use of nitrogenous fertilisers and other agrochemicals (pesticides, herbicides) to avoid diffuse pollution as a result of runoff from the use of these chemicals.

Industrial waste discharges are controlled through the application of low-waste production technologies and water recirculation, in an integrated manner and through application of precautionary measures derived from a broad-based life cycle analysis.

Chlorination of drinking water began in the early 20th century in the United Kingdom, where its application sharply reduced typhoid deaths. Shortly after this dramatic success, the rest of the developed world also began chlorinating their drinking water, virtually eliminating waterborne diseases. Yet, untreated or inadequately-treated drinking water supplies remain the greatest threat to public health in developing countries.

In June 1996, the United States Chlorine Chemistry Council joined with the American Red Cross to launch the Water Relief Network (WRN) – a humanitarian effort to help restore public health in the wake of disasters (see section 2.25). Today, WRN is a World Chlorine Council programme.

The chlorine industry has spawned initiatives to help guarantee the ongoing safety of municipal water systems. For example, in 1999, the Chlorine Chemistry Council signed an agreement with the Pan American Health

Organisation (PAHO) to help improve drinking water safety in 19 nations in Latin America. Clorosur, the chlorine association in South America, along with Abiclor, the Brazilian Association for the alkali and chlorine by-products industry, regularly donate large amounts of products to poor communities. Clorosur and Abiclor have also been working with the PAHO/WHO on water-quality projects. It publishes educational materials, such as a *Chlorine Prevents Cholera* brochure, and holds conferences to help increase access to safe water supply systems in urban and rural communities.

Eurochlor, the European chlorine producers' association, has contributed to the costs of translating the WHO booklet *Drinking Water Disinfection* into 19 languages and making it available to local authorities and water undertakings across Europe (including the former USSR), North Africa and the Middle East.

While chlorine chemistry serves many of society's critical needs, from water disinfection and medicines to building materials, the industry does face challenges both with some past practices and some specific products. The majority of the 12 persistent organic pollutants (POPs) slated for action under the Stockholm Convention are chlorinated. There may be others identified in the future. The global chlorine industry is committed to address these challenges, to working with concerned stakeholders, and to following a sustainable development model.

2.34 Environmentally-sound management of toxic chemicals including prevention of illegal international traffic in toxic and dangerous products (Chapter 19, Agenda 21)

ICCA strongly supports Chapter 19 of Agenda 21, which is seen as a blueprint for policy on international management of chemicals. The

chemical industry recognises that the ultimate goal of chemical management is to ensure on a global level that chemicals can be handled safely from production, processing and use to disposal. This is why the chemical industry is committed to providing the necessary information for the safe intended and foreseeable use of its products.

It is ICCA's clear view that risk-management measures have to be based on a sound scientific risk assessment as a key principle. Any risk-reduction measures based only on intrinsic properties are not justifiable, and therefore are not acceptable to industry. A science-based approach to risk management is fundamental to the industry's health, safety and environmental protection efforts. It is consistent with the application of Principle 15 of the Rio Declaration, which the chemical industry fully supports. ICCA, through Responsible Care, encourages companies to work towards characterising products with respect to their hazards and their risks and, in concert with their customers, taking appropriate risk-management actions.

ICCA believes that the Intergovernmental Forum on Chemical Safety (IFCS) should play a leadership role as a deliberative body. Through this the stakeholders can better understand and identify possible international problems associated with chemicals, prioritise those problems, and then recommend the most reasonable strategy approach to deal with high-priority international chemical issues.

The chemical industry also supports the Inter-Organisation Programme on the Sound Management of Chemicals (IOMC), an international mechanism to promote and to improve co-ordination of policies and activities of the participating organisations. Moreover, ICCA recognises and is further supporting the role of UNEP in chemicals management, and welcomes its proposal to optimise responsibilities on chemicals management within the UN system. National associations in

developing countries are supporting their governments in the implementation of multilateral environmental agreements dealing with chemicals.

2.341 Programme area A, expanding and accelerating international assessment of chemical risks

Countries are establishing data and information necessary for assessing chemicals and to set up the basis for exchange of information. ICCA involvement in existing national and international programmes in providing data for an internationally-acceptable risk assessment, is key to getting results. The following areas need to be developed further to expand and accelerate international assessment of chemical risks:

- strengthening co-ordination and co-operation between governments and regional and international organisations and fora,
- Improvement of setting priorities (harmonisation),
- developing principles and instruments for mutual acceptance of data, and assessments on chemicals globally,
- further development of risk-assessment methodology and its scientific basis,
- ensuring a globally-shared understanding of how to apply the precautionary principle in decision-making involving chemicals.

Co-ordination and mutual recognition should be focused on an internationally acceptable risk assessment of chemicals in order to achieve a sound scientific basis for selection of risk-management options at the national, regional or international level, including developing countries. With co-ordination and co-operation between all committed stakeholders, this would also lead to recognition of the broad range of chemical assessments being undertaken at an international level.

In 1998, ICCA established a framework for a series of major actions and a programme to

develop further its co-operation with international authorities. Part of this framework has become the ICCA global HPV initiative (see section 3.3). Because of the nature of the industry, the approach to the management and assessment of risk needs to be done in the same spirit across the world.

2.342 Programme area B, harmonisation of classification and labelling

ICCA strongly supports and actively contributes to governmental, inter-governmental and NGO work in the field of the harmonisation of classification and hazard communication of chemical substances and preparations.

The harmonisation of classification systems should reflect and be based on the most up-to-date scientific knowledge and principles, in order to gain worldwide acceptance of harmonised classification criteria. Existing data collected in accordance with such harmonised criteria and methods should be accepted. To provide demonstrable benefit to all concerned parties, harmonisation should involve a balanced approach which would minimise the reclassification of existing substances and preparations, and take into account the significant downstream effects of hazard classification on existing regulatory requirements.

A harmonised system for the classification of chemicals is necessary to ensure consistency of hazard information and the provision of safe handling and use advice on chemical products. Any initiative resulting in the removal of existing ambiguities and inconsistencies in hazard communication has the full support of ICCA.

ICCA supports the adoption and implementation of the Globally Harmonised System (GHS) within an agreed timeframe. It is equally important to ensure that there is consistency of application of the agreed methods and criteria to substances and

preparations in existing expertly-classified systems and databases. To date, New Zealand is implementing the GHS, and while progress is determined by the availability of toxicity data, their results will become available to the rest of industry.

Industry has endeavoured to play an active and constructive role in the development of this area, and it is important that industry is allowed to continue with this proactive role. Therefore, in the implementation of the GHS, provision must be made for industry to be able to participate fully and effectively.

2.343 Programme area C, information exchange on toxic chemicals and chemical risks

The ICCA supports programmes 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, such as Chemical Safety Data Sheets (MSDSs or SDSs), and labelling of products.

Although the dissemination of MSDSs with chemicals is an element of Responsible Care, and mandatory in many countries, stakeholders have indicated a number of difficulties in the current approach. Difficulties include; lack of access to the MSDS by the end user or employees; MSDSs on the same chemical manufactured by different companies reflect different information; toxicity data are often not sufficient for investigations into suspected cases of poisoning; MSDSs only based on current knowledge. The ICCA recognises the need for a more systematic consideration of the development of MSDSs and, in particular, access to them.

Pollutant Release and Transfer Register (PRTR) programmes provide information on releases of substances to the environment, and on offsite transfers of the substances for final disposal. They also communicate information

to key audiences. ICCA supports emissions reporting and all ICCA members are committed to Responsible Care which has its own extensive reporting requirements (see section 3.1).

To help ensure that the objectives of PRTR programmes are met, JCIA in 2000 has prepared and published a manual for the management of chemicals emissions and reporting of the results. Intended for use by SMEs mainly, the manual embodies a good example of the product-stewardship principles by which the chemical industry abides. During the same year, JCIA held 25 seminars for an aggregate of 5,000 participants, not only from the JCIA members but also from non-member chemical and other industries. Another 2,000 participants are expected to the 2001 series of PRTR seminars.

ICCA welcomes the Rotterdam Convention on the trade in hazardous chemicals, also known as 'PIC Convention'. The chemical industry is particularly pleased with the clear definitions, the maintenance of the existing scope, the risk-based approach and the transparent procedure which have been agreed upon. Since the convention corresponds to a large degree with the scope and obligations of the voluntary PIC procedure, ICCA hopes that this will ensure a broad participation in the scheme. ICCA considers that the PIC Convention constitutes a very useful element in the safe management of chemicals, especially in developing countries, but has all along stressed that it cannot substitute for an effective national chemical regulatory programme.

ICCA is of the view that there is also a need to develop more effective means to communicate in an open and transparent process with stakeholders and the public. The communication process should be used to provide information not just on chemicals and risks, but also on any industry initiative or action related to the sound management of

chemicals. Recently, for example, the United Kingdom government set up a chemicals stakeholder forum. Its purpose is to advise government on managing risks in the environment and to human health, from chemicals entering the environment through commercial production and use. This takes into account the views of international bodies and the public, and has due regard to sustainable development and the precautionary principle.

2.344 Programme area D, establishment of risk reduction programmes

The 'Stockholm' statement has acknowledged that risk management includes a range of risk-reduction measures, from product information to legally-binding use restrictions. It is our view that Responsible Care has a proven role in reducing risks, without the high costs of a strict government regulatory regime. It calls for a continuous improvement in the reduction of health, safety and environmental risk that may be posed by its products. This is achieved by establishing product stewardship programmes which manage the risk of products throughout their life cycle, and this is developed in section 3.31.

The global chemical industry has supported the development of the Stockholm Convention on Persistent Organic Pollutants (POPs) throughout the process of its negotiation. This has included participation in the development of UNEP Governing Council decision 19/13c and the subsequent negotiating process until the Convention's adoption in May 2001. The POPs treaty needs to be workable and based on science. It needs to promote actions that are feasible, and that will lead to realistic and meaningful levels of environmental improvement.

To ensure that this instrument contributes to the reduction and/or elimination of risk without imposing unnecessary social or economic consequences, harmonised criteria and procedure should be used to identify POPs pollutants. The POPs criteria should be

based on risk and risk-reduction measures, and be the least restrictive necessary to reduce the specific risk.

In its position paper *Principles for Risk-Based Decision-Making*, ICCA has laid down key elements and principles for sound scientific risk-based management of chemical products. This also includes the application of the precautionary principle embodied in principle 15 of the Rio Declaration, which 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.

2.345 Programme area E, strengthening of national capabilities and capacities for management of chemicals

Through Responsible Care, ICCA has also provided manpower and financial resources to allow the UNEP Awareness and Preparedness for Emergencies at the Local Level (APELL) to mobilise country resources to prevent accidents which may result from chemical manufacturing operations. This is discussed in section 3.3.

In addition, the global chemical industry is prepared to further promote and to support capacity building activities in developing countries and countries with economies in transition such as:

- training programmes for regulatory authorities and local chemical industry with focus on safe use of chemicals,
- developing chemical safety information instruction tools and producing guidance tools for the safe handling of chemicals,
- establishment of expert networking to help countries to develop national chemical safety programmes,
- developing product stewardship programmes in collaboration with national chemical federations and public authorities,

- enhancing management capabilities and spreading effective management systems.

2.346 Programme area F, prevention of illegal international traffic in toxic and dangerous products

The chemical industry is concerned about illegal international traffic in toxic and dangerous products. Industry supports the starting point for discussions as being the definition of illegal traffic contained in programme area F of Chapter 19, viz. 'Illegal traffic refers to traffic that is carried out in contravention of a country's laws or relevant international legal instruments'.

This part of the definition is very clear, in that it refers to existing national legislation and relevant international conventions, such as the Rotterdam Convention. The industry supports this as the basis for consideration of activities related to 'illegal international traffic', and is willing to contribute to help define terms like 'compliance' and 'enforcement'. The industry is also willing to co-operate with the IOMC, as appropriate, to facilitate the assessment process outlined.

Indeed, while ICCA members are in favour of free and fair trade, they fully acknowledge the need for trade and production controls for certain chemicals which pose severe health or environmental hazards, or chemicals which can be misused for illicit purposes. The chemical industry prefers multilateral solutions to unilateral approaches and constructively co-operates with regulators in helping to establish conventions which meet the environmental or societal concerns, whilst respecting the legitimate interests of the industry.

The chemical industry's efforts have not remained limited to chapter 19 areas. ICCA has for instance given sustained support to the establishment and implementation of an effective and efficient Chemical Weapons Convention (CWC), thus contributing to the eradication of the threat of chemical warfare.

Also in the area of precursors for illicit drugs manufacture, ICCA constructively co-operated with the authorities to prevent the diversion of chemicals for this purpose (example: Memorandum of understanding between ICCA and the World Customs Organisation). ICCA members are thus fully aware of their broader societal responsibilities, and enthusiastically wish to contribute to the establishment of manageable and efficient control regimes for commonly shared objectives.

2.35 Environmentally sound management of hazardous wastes including prevention of illegal international traffic in hazardous wastes (Chapter 20, Agenda 21)

ICCA members are committed to the safe management and reduction of waste, and pollution prevention codes are built into most federations' programmes and management systems.

The ACC version of the Responsible Care pollution prevention code is a typical example. It is designed to achieve ongoing reductions in the amount of all contaminants and pollutants released to the air, water, and land from member-company facilities. These reductions are intended to respond to public concerns with the existence of such releases, and to further increase the margin of safety for public health and the environment.

The code is also designed to achieve ongoing reductions in the amount of wastes generated at facilities. These reductions are intended to help relieve the burden on industry and society of managing such wastes in future years. In implementing the code, each company should strive for annual reductions, recognising that production rates, new operations, and other factors may result in increases. Despite these fluctuations, however, the goal is to establish a long-term, substantial downward trend in the amount of wastes

generated and contaminants and pollutants released. In some cases, quantitative reduction goals will be established for giving priority to those pollutants, contaminants and wastes of highest health and environmental concern.

This code also includes practices which address the broader waste-management issues, beyond source reduction and other waste- and release-reduction efforts. Each member company must manage remaining wastes and releases in a manner which protects the environment and the health and safety of employees and the public.

In South Africa, large empty containers are in high demand, particularly for purposes of water storage. The Chemical and Allied Industries Association (CAIA) is preparing an audit protocol which will be used to certify all drum reconditioning firms which recondition drums for the chemical industry.

Companies represented by CropLife International have collaborated with donor agencies from countries like Denmark, Germany, The Netherlands, Switzerland and the United States to achieve safe disposal of government-owned obsolete crop-protection products from a number of developing countries. In order to hasten the disposal of its member companies' products, which account for a proportion of these stocks, members of CropLife are committed to providing assistance.

A co-ordinating industry team – in place since 1995 – has successfully worked with donors, concerned governments and other stakeholders to facilitate industry's input. To prevent the build-up of such stocks in the future, demand-driven procurement of crop-protection products is essential. As many countries continue the transition from centrally planned purchasing to market-driven conditions, the commitment of governments and donor organisations to addressing the issue remains crucial.

Up to June 2001, CropLife International member and associated member companies 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). POPs are no longer produced by the CropLife International member companies.

Obsolete pesticides began accumulating over thirty years ago in countries receiving donations provided under various development assistance programmes. CropLife International will continue to contribute its expertise and support for the disposal of stocks of obsolete products worldwide and, furthermore, will seek the active participation of others in bringing about the changes necessary to prevent the recurrence of this problem. In 2000 alone, 1,200 tonnes of obsolete pesticides were incinerated in Brazil in a joint government and industry project. Approximately 180 tonnes were also successfully retrieved from Gambia, Madagascar, Pakistan and Uganda.

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

Several recycling models, including Canada's 'Stewardship First' programme, the recycling efforts of which (fence posts, guard-rails, energy) reaches a 65% recovery rate, have been adapted to other countries' local conditions. The Latin American Crop Protection Association (LACPA), for example, has organised recycling programmes in Argentina, Brazil, Colombia, Dominican Republic, El Salvador, Guatemala, and Mexico. Programmes first focus on educating farmers about triple rinsing requirements, which form the basis for any further recycling. Up to 20% of plastic pesticide-containers used in the above-mentioned countries have been

collected. Each programme expects growth in the percentage of recycled containers now that farmers understand the benefits and procedures involved.

2.4 Conclusions

2.4.1 Where have been the key areas of progress?

The contributions we wish to underline are the environmentally-sound management of toxic chemicals, initiatives in the developing world and the performance improvement delivered by Responsible Care.

The chemical sector has particular responsibility for Chapter 19 of Agenda 21, and in section 2.34 of this report we have clearly set out our policies and intentions on the six programme areas. This will be followed by our programme set out in section 3.2, which outlines the substantial commitments made by the industry to deliver results.

A number of the sections in Part 2 of this report have a relationship to improvements in consumption, the reduction of waste, the minimisation of pollution, the improvement of feedstock utilisation, safer handling of chemicals and the extended life or better design of products. The way the industry measures progress on these is through our 'indicators of performance' record. The indicators used are invariably based on extensive dialogue with stakeholders, and many chemical companies and associations have been publishing their HSE results since the early-1990s.

ICCA started with its first data collection in 1999, when 32 countries reported on safety performance – the number of fatalities and number of lost-time injuries per million working hours (LTIR) – in their Responsible Care companies. The LTIR for 27 countries in 1996 was 11, falling to 10.5 in 1997 and 10.3 in 1998. The 27 countries are those for whom we have a consistent set of data and which employ in total some two million employees.

Unfortunately in 1998, 70 fatal accidents occurred in the Responsible Care companies which reported data to their federations. Due to the large differences in legislation, culture and occupational health practices, all countries have not yet agreed on an occupational health measure.

In Europe, a system of indicators of environmental performance, in addition to the safety and health measures already mentioned, has been agreed by CEFIC. Their guidelines provide a reporting and monitoring framework with a comprehensive set of core parameters to be used as a basic template by sites, companies and CEFIC federations.

This facilitates the aggregation of data and will lead to the convergence of our publications, while providing flexibility for participants to add parameters reflecting local concerns. Each national federation is able to compare its performance with the European trend and by benchmarking, CEFIC is able to identify areas in need of collective support and additional guidance. At global level, ICCA has agreed on a similar approach, but it will take some time to complete its goal of reporting on all 46 countries, HS&E performance.

CEFIC has published a considerable range of indicators to show the performance of the majority of the European chemical manufacturers, which also provide a trend based on a matched sample – a common comparative basis. Over the period 1996 to 1999, the achieved reductions are shown in brackets for the following indicators: fatalities, lost-time injury frequency (20%); phosphorous (28%), nitrogen (28%) and heavy metals (20%) to water; chemical oxygen demand (17%); SO₂ (42%), NO_x (18%) and volatile organic compounds (34%) to air; distribution incidents (35%).

In the United States, the American Chemistry Council has been tracking toxic release inventory reductions for a core list of chemicals at more than 900 facilities. Since 1988, member companies have reduced releases of toxic chemicals to the air, land and water by 58%. During that same period, chemical production increased by 18%.

In Canada, the Canadian Chemical Producers Association (CCPA) reported a 60% reduction in emissions of chemicals to air from the first year of reporting, 1992, up to 1999, with a further projected saving of 14% by 2003. CCPA employee injuries were reduced by 33% and transport incidents per 100,000 shipments reduced by almost 50% over the same period.

The PRTR legislation in Japan came into effect in April 2001. As early as in 1992, however, JCIA launched its own voluntary initiatives to manage air pollutant emissions. The chemical industry chose 12 highest priority substances out of the list of 22 air pollutants that the government's Central Environmental Council had designated as harmful. JCIA set a target of a 30% reduction on average, of the chemicals emission from the 1995 levels by the end of 1999. This target was met by the deadline, the 2000 results represented a 52.1 % reduction.

In Mexico, the National Association of Chemical Industry (ANIQ) has begun the documentation of the HSE performance improvement achieved by its member companies. The data currently available shows that the lost-time injuries frequency rate was reduced by 44% in the period 1996 to 2000 (from 13.02 in 1996 to 7.2 in 2000).

During the period from 1997 to 2000, the water consumption rate was decreased 10% (from 7.088 m³ per manufactured tonne in 1997 to 6.364 in 2000). From 1997 to 2000, the average wastewater generation rate was 4.37 m³ per manufactured ton and the average hazardous waste generation rate was

0.10 tonne per manufactured tonne. Both these measures are key targets for reduction by ANIQ's member companies in the short term.

The Australian Chemical and Plastics Manufacturers Association (PACIA), recorded a 60% reduction in employee lost-time injuries from 1990 to 1999, and an overall downward trend in distribution incidents. The South African Association (CAIA) started collecting safety and health data and number of prosecutions in 1998, first publishing in 1999. Though it is early days, the figures indicate an improvement for employee accidents, a small increase for contractor accidents and a reduction of occupational diseases.

In the period 1990 to 1997, the French Union des Industries Chimiques (UIC) published results showing a 44% reduction in Sulphur oxides (SO_x), a 17% reduction in Nitrogen oxides (NO_x) and a 32% reduction in solid particulates to air. The German Federation, the Verband der Chemischen Industrie (VCI), published data recording reductions of 66% in SO₂, 20% in NO_x and 45% in volatile organic compounds to air in the period 1995 to 1999. The Chemical Industries Association (CIA) in the last decade in the United Kingdom has reduced its employee-injury rate by a factor of two, virtually eliminated the discharge of Red List substances to water by a reduction of 96%, improved specific energy consumption by 19%, and reduced distribution incident frequencies by 67%.

Most 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.

2.42 Where does the future progress need to be made?

- support the 46 countries' commitments to address the additional two dimensions of sustainable development;
- ICCA continues to urge developing countries to have an effective involvement in establishing the negotiating agenda for a new WTO round of trade negotiations and, in turn, greater participation in the negotiations themselves. Their interests must be reflected in the negotiating agenda;
- those developing countries facing legitimate difficulties in implementing Uruguay Round commitments should be given appropriate assistance so that they, too, can fully participate in the new round of negotiations and move toward the goal of sustainable development;
- progress the HPV and LRI projects to a satisfactory conclusion and actions;
- work towards global product stewardship which considers the entire product life cycle;
- promote best practices to anyone who uses, handles, distributes or manufactures chemicals;
- encourage all international companies to adopt global HSE policies and standards;
- continue to develop global HSE reporting and extend coverage to all responsible care (RC) countries. Meanwhile companies and federations are encouraged to collect data and publish their own reports, and pioneer new indicators for the sector to consider. In particular, responding to the challenge of sustainable-development reporting is an issue being discussed with GRI;
- continue to pursue energy-efficiency improvements to reduce greenhouse gases;
- promote efficiency and conservation in the use of water resources;
- extend Responsible Care to all countries which manufacture chemicals – the major potential members being Russia, China and Saudi Arabia, which are not yet involved;
- identify further scope for capacity building;
- play a full role in the continuing discussions on improved chemicals management;
- seek out all natural partners for dialogue on HSE issues in the chemical sector and work toward greater transparency in the industry.

Part 3: Means of implementation

Commitment by the world chemical industry to the concept of sustainable development requires words and ideas to be transposed into company-specific action programmes in order to provide a framework for all those working in the sector. Its 'Responsible Care' initiative has been a very useful umbrella for a wide range of activities including self-monitoring systems. Other voluntary programmes such as Sustainable Technology (SUSTECH), education-industry partnerships and energy-efficiency programmes are also part of this framework.

The chemical industry, like any other business or industrial sector, acts within the regulatory frameworks of the countries in which it operates, and places compliance with legislation as the minimum standard of performance for Responsible Care. However, the Responsible Care initiative is about performing in the health, safety and environmental fields beyond the minimum, and to achieve continuous improvement. A number of approaches are used to promote continuous improvement, one of which is to set performance targets, which are beyond the levels set by legislation.

3.1 Status of Responsible Care in 46 countries

3.1.1 Description of the programme and commitments

The Responsible Care initiative is concerned with continuous performance-improvement at national and global level, and was first established in 1985 by the Canadian Chemical Producers' Association (CCPA). It was conceived to address public concerns about the manufacture, distribution and use of chemicals, and has been extended to partners in related industries who are encouraged to tailor the initiative to fit their own organisations.

Now chemical industry associations in 46 countries have embraced the ethic of Responsible Care. Together, these countries produce more than 85% of the world's total chemical products. Companies ranging from huge multinationals with billions of dollars in revenues, to small family-owned companies with only a few employees, have adopted Responsible Care in countries as diverse as Austria and Uruguay.

National chemical industry associations are responsible for the detailed implementation of Responsible Care in their countries. The individual countries' Responsible Care programmes are at different stages of development and have different emphases, but are monitored by the ICCA co-ordination group, the Responsible Care Leadership Group (RCLG), which assists in the cross-fertilisation of ideas and best practice. Each Responsible Care programme now incorporates eight fundamental features, detailed below. The last feature, verification, was incorporated into the programme in 1996.

Eight 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;
- 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 communications on health, safety and environment matters with interested parties inside and outside the industry;
- provision of fora in which companies can share views and exchange 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 and participate in Responsible Care;
- systematic procedures to verify the implementation of the measurable (or practical) elements of Responsible Care by the member companies.

Responsible Care, however, is much more than simply a checklist of activities that a company must undertake, it is an 'ethic' for chemical businesses which fundamentally changes the way to think and act. Much of the ethic has to do with the relationships between companies and the communities in which they operate. Companies adopting Responsible Care are encouraged to reach out to the community, and instead of downplaying concerns, a company is expected to seek out and to address them.

More and more members of the public are concerned about the effects of chemicals on their health and on the environment. They are worried about chemical plants in their neighbourhoods, the transportation and disposal of chemicals, and the use of chemicals in products all around them. Responsible Care is the chemical industry's response to these concerns. It is a commitment by every Responsible Care company, made by their most senior executive and carried out by all employees, to the responsible management of chemicals through the entire life cycle.

At the heart of the Responsible Care initiative are the codes of management practices or guidance notes to assist companies to implement the commitment. Most ICCA member countries have adopted codes, which deal with the following areas:

- community awareness and emergency response/communication,
- pollution prevention,
- process safety,
- distribution,
- employee health and safety,
- product stewardship.

3.12 Implementation report

ICCA endeavours to ensure the global consistency of Responsible Care by monitoring the progress of its national associations. There are many challenges because of the sheer number of different facilities and different countries involved, and there also are language barriers, cultural barriers and regulatory barriers. For instance, in some countries, it is not yet common for corporations to have open communications with the public.

However, the chemical industry is increasingly becoming a global one, and these barriers must be overcome in order for Responsible Care to thrive. By applying Responsible Care in all the places where ICCA has members and more, a common language for managing the manufacture of chemicals, and moving towards a common understanding of the necessary standards for health, safety and environment in operations throughout the world has been successfully developed.

ICCA's intent is to spread the implementation of Responsible Care as broadly as possible within the chemical and allied industries, and to be inclusive of new country participation. But it also has an obligation to the global industry to ensure that the national associations that it endorses are representative, committed and capable. ICCA is committed to assist a new applicant to develop its most effective Responsible Care implementation plan by sharing the experiences of recent and longer-established member associations.

Prospective new members must demonstrate that the association is the nation's primary chemical association and represents significant chemical production and/or distribution in the

country. The association's board must have taken action formally to ratify Responsible Care, with a significant number of the association's members having committed to implement the initiative. An ICCA mentor endorses the applicant's acceptance, based on detailed knowledge of the implementation programme proposed by the association and ICCA guidelines for associations implementing Responsible Care.

Each national association signed up to Responsible Care is then required to make an annual report on its progress in the implementation of Responsible Care. The survey results are summarised below and show the implementation status percentages for each fundamental feature progress in the association's members, many of whom have started with Responsible Care fairly recently:

Worldwide some 58% of the total 34 elements in the eight fundamental features of Responsible Care have been implemented, level D. A further 20% are at the developing and implementing stages, B and C. Implementation has improved worldwide for each fundamental feature, and is highest in the initial phases of the programme – commitment to the guiding principles and publishing codes or guidelines.

- 28 countries have published the required codes or guidelines for implementation;
- 29 countries are reporting on a range of performance indicators such as emissions, incidents and injuries, and 20 of these are making these indicators public and discussing them with interested parties;
- 22 countries have established effective stakeholder dialogue;
- 29 countries have in place peer support and information-sharing processes;
- all countries still have significant potential for continued improvement in the area of verification.

Worldwide the Responsible Care initiative will benefit from increased focus on communication with interested parties and on encouragement/sanctions for participating companies. The survey of individual countries' implementation is already being used internally for benchmarking and to identify countries which would benefit from the help that the membership support subgroup can provide. It will also help identify those countries where ICCA/RCLG requires more information to demonstrate a continuous improvement in implementation and thus qualify for ongoing membership of Responsible Care.

3.13 Implementation assurance and environmental management systems
 Assessment of the degree of implementation of Responsible Care at site and company level calls for checking that the Responsible Care fundamental features, guiding principles, and associated codes of practice or guidance have been applied, with practice in place to sustain continuous improvement. The methods by which implementation and performance are judged range from internal self-assessment processes to third party verification. Some of the different approaches are reviewed here.

3.131 Self-assessment by the CEFIC
 CEFIC has translated the fundamental features into core requirements which define an HS&E management system, something it strongly promotes as a way of delivering continual HS&E performance improvement. The national federations ensure that the core requirements are incorporated into national codes and guidance, and are at various stages of developing self-assessment questionnaires which incorporate CEFIC core set as a minimum.

The environmental standards EMAS and ISO 14001 can play a central role in implementing part of the Responsible Care requirements. One of the CEFIC federations, the United Kingdom Chemical Industries Association, has developed this into a third-

party certification process, carried out by trained certification body staff, and compatible with published ISO standards. One reason for this is that other industries – our customers – are increasingly asking us to adhere to their standards – such as ISO 14001

3.132 Management system verification by the American Chemistry Council (ACC)

A peer review process which can include people external to the industry from local communities, or Responsible Care advisory panels, has been the route chosen by the American Chemical Council (ACC) in the United States with its Management Systems Verification (MSV).

MSV is a process for evaluating evidence of a company's management system for practising Responsible Care by trained industry verifiers from other companies and members from the general public. It has been completed by a majority of ACC members and one result is the compilation of company 'examples of excellence' for use by the industry in improving its overall performance.

3.133 Verification by the CCPA

In Canada the verification process is required once a member company CEO has attested that the company has completed its three-year Responsible Care implementation process. It involves a three-day visit to every CCPA member company by a team comprising two industry experts, an activist (usually from the CCPA national advisory panel) and a citizen selected by each visited site community. The team interviews management, workers, neighbours, customers, carriers and others, as well as reviewing documentation, to verify that the company has indeed implemented all codes of practice and instilled the Responsible Care ethic. It produces a consensus report on whether or not the company has indeed fully implemented Responsible Care. The company makes the findings available to its employees, communities, peers and any other interested parties.

3.134 Verification by the PACIA

In Australia in 1994, it was decided that the credibility of the initiative could be significantly enhanced. A programme of independent external verification of internal company self-assessments of progress, would be aimed at implementing the various Codes of Practice. A formal verification protocol was developed, and three firms of independent auditors were selected and provided with training on the codes. A company site and relevant code is selected by the PACIA and the site asked to nominate one of the auditing firms (usually the firm already involved in the auditing of that site for quality system accreditation to the ISO 9000 series). Sites are encouraged to include as observers in the verification team, members of the local community or government authorities.

3.135 Verification by the JRCC

The Japan Responsible Care Council (JRCC) is in the final stage of developing its Responsible Care verification system. Three companies have successfully completed a pilot-level verification, based on the final drafts of Responsible Care codes for practice and an evaluation guideline. The programme will formally start in April, 2002.

3.136 Self-assessment by the CAIA, South Africa

The CAIA undertakes self-assessments on a biannual basis and is in the process of developing a system for third-party verification starting with transportation, which will be introduced in 2001.

3.137 EMAS and ISO 14001 certification by German chemical companies

Environmental management systems are an important module in German chemical companies' voluntary environmental protection efforts within the Responsible Care initiative. In 2000, 153 companies were registered in accordance with the EU Eco Audit Regulation (EMAS) and 227 are certified after ISO 14001. Moreover many companies develop their own integrated management systems.

3.14 Peer review and mutual assistance.

In order to be credible, the Responsible Care initiative must be maintained at a high quality level worldwide. Key actions in this area will include the development of processes to obtain and assess implementation plans from each association, while ensuring the plans meet the associations', stakeholders', and the responsible care leadership group's (RCLG's) expectations. Following this, we must regularly measure and report progress against associations' implementation milestones.

The RCLG developed and introduced in 1999 an association 'peer review' process to encourage candid dialogue and constructive input among participating national associations. We believe this process has been valuable in advancing the continuous environmental, health and safety improvement of the participating countries.

Responsible Care benefits also from a global network of associations and companies willing to help one another through information exchange and mutual assistance in other fora. Those associations and companies with greater resources have demonstrated leadership by helping those with limited resources, and the spirit and practice of openness and collaboration often leads to new approaches and performance improvements.

Examples are:

The Canadian Chemical Producers Association (CCPA) gave a major teach-in on verification at the annual Chilean Responsible Care conference and the French Association (UIC) participated in the last two annual Responsible Care days organised by the Moroccan chemical association for its members. UIC shared its own experience in the practical implementation of Responsible Care on HSE management systems and implementing product stewardship.

Developing nations whose chemical associations or clubs are new to Responsible Care, and consist primarily of many small and medium-sized enterprises (SMEs), face completely different challenges from national associations with mature programmes. We must maintain the quality of the initiative while allowing sufficient flexibility for associations to attract and motivate SMEs to sign on and strive for continuous performance improvement.

Where used, mentoring programmes and mutual assistance have proven successful. These mentoring efforts, however, must be expanded to ensure all needs are being met. By building on existing company-to-company and association-to-association mutual assistance successes, particularly in developing nations, we will meet our objectives.

The French Association (UIC) initiated a SMEs awareness programme in 1999 to help SMEs adopt Responsible Care with assistance from larger companies and retired experienced engineers. Fifty-six SMEs took advantage of this programme and the results were very positive, since this approach provides straightforward solutions to their actual HSE problems. In other words, this makes Responsible Care practical and practicable. Three interregional meetings, which included potential SME candidates, provided the opportunity to share the lessons from this programme, which is ongoing.

In the last few years the German VCI organised an intensive series of 25 workshops to introduce a new *Responsible Care Guide to Implementation*. The workshops were held at regional level, supported by VCI's regional associations, in order to reach as many member companies as possible. Exchange of experience and discussion of implementation tools were the goals of the workshops. The feedback of the almost 1,000 participants was positive, especially members from SMEs which have great need of practical hands-on implementation tools.

The RCLG is also responsible for recruiting, advising, assessing and approving new country associations to Responsible Care.

Neighbouring countries are nominated to assist the new association in getting up to speed by offering advice, speakers, guidance literature and examples of local initiatives. JRCC, for example, works closely with the Federation of Thai Industries (FTI), as a part of the action plans on environmental issues nominated by the Working Group on Chemical Industry (WGCI).

In the spring of 2001, JRCC experts were sent to evaluate the status of Responsible Care in Thailand. By visiting and interviewing policy makers, company leaders and seven companies, evaluation and recommendations were offered. JRCC believes that this programme was helpful for the enhancement of the Responsible Care initiative in Thailand. For JRCC this has set a good precedent for possible further mutual assistance with other associations.

3.2 Voluntary action on products – product stewardship and global initiative on HPV chemicals and the LRI

There are three voluntary programmes on products, all of which come under the Responsible Care initiative and which involve considerable interaction with stakeholders.

3.2.1 Product Stewardship

Every company, up and down the supply chain, is concerned about impacts of chemicals on human health and the environment, throughout their life cycle. Each is confronted with a multitude of safety, health and environmental issues regarding its products. Customers, environmental groups, and regulatory authorities may voice these. They may arise from societal expectations and

public concern or from the industry's own internal assessments.

Product Stewardship is the responsible and ethical management of the health, safety and environmental aspects of a product throughout its total life cycle. It is Responsible Care applied to products. Implementing product stewardship helps companies to manage these issues more effectively, taking into account health, safety and environmental as well as technical and economic aspects to ensure best customer value.

Chemical products must be managed and used safely along the supply chain, through manufacture, packaging, distribution, use and ultimate disposal. No company operates in isolation. Everyone involved in the production, handling, use and disposal of chemicals has a shared responsibility to ensure their safe management and use.

Formal Responsible Care partnerships (see section 3.5) seek to promote continual improved HS&E performance through the supply chain. They provide a common language to talk to companies and associations downstream of chemical manufacture. They are a practical response to the challenges posed by product stewardship, and the need for effective communication with distributors, resellers, hauliers and others involved in the marketing of chemicals. It ensures that the work done through Responsible Care does not stop at plant gates.

3.2.2 The Global Initiative on High Production Volume Chemicals (HPV)

For the existing chemicals – chemicals which had already been on the market when regulatory frameworks for new chemical substances were introduced at regional or national level – the availability of the relevant hazard and risk information merits further improvement.

Special concerns are related to HPV chemicals (chemicals with a production of > 1,000 tonnes a year in at least two regions) because – due to high production – there are associations with higher risk. In 1987 the OECD, with industry's support, therefore decided to launch a special programme on HPV chemicals using the advantages of global burden-sharing.

There are six basic test-categories which have been internationally agreed for screening HPV chemicals for toxicity: acute toxicity, repeated dose toxicity, reproductive toxicity, mutagenicity, eco-toxicity and environmental fate (Screening Information Data Set – SIDS). About 100 substances have been assessed for their hazardous properties under this programme so far; around 275 additional substances are in the programme at present.

The slow progress of national, regional and global programmes on data availability of HPV chemicals is causing increasing public concern. The development and publication of lists of 'unwanted' chemicals by some countries, environmental groups and also sectors of industry are the results of the growing public disquiet about the internationally accepted risk-based decision-making.

The ICCA initiative on HPV chemicals is to promote an efficient and effective process for systematic data gathering and hazard assessment of HPV chemicals within a reasonable time frame, using the existing OECD programme and thereby the advantages of global burden-sharing. Once these common elements have been established, then risk assessment and risk management of specific substances will, in general, be carried out at regional or national level.

Use and exposure is triggering the necessity and the extension of data for a sound assessment of hazard and risk. Therefore ICCA, in agreement with the OECD, selected chemicals of widespread use or exposure, as

well as those with intrinsic properties of concern, as priority chemicals for the ICCA working list of 1,000 chemicals. 'Intrinsic properties of concern' generally means toxicological and/or ecotoxicological end-point properties which raise concern (like chronic toxicity, mutagenicity etc, or high aquatic toxicity). These properties lead to the definition of hazard categories according to which chemicals are classified.

The following parameters have been established:

- the initiative should take into account all of the 5,100 chemicals in the OECD HPV list;
- SIDS data are to be regarded as a basis for the testing process;
- the aim initially is to complete the SIDS data for 1,000 chemicals by the end of 2004, a significant portion of the world's chemical production will thus be covered;
- hazard assessment is a necessary but insufficient basis for management actions – it will provide valuable data for subsequent prioritisation and risk assessment;
- to be of the greatest value, the publicly available information should be contained in a single database repository;
- ICCA members should work closely with the authorities in their region;
- the work programme is managed by the ICCA secretariat.

We expect that the scientific information provided by this global initiative will be considered as an internationally accepted and harmonised basis for further steps of chemicals management.

3.23 The Long-Range Research Initiative – LRI

The Long-Range Research Initiative (LRI) is a new global, generic, research programme aimed at improving risk assessment methodology and filling gaps in the understanding of the effects of chemicals on human health and the environment. It is being

carried out in collaboration with academia and government, funded jointly by the European Chemical Industry Council (CEFIC), the United States American Chemistry Council (ACC) and the Japan Chemical Industry Association (JCIA) with a budget of \$25 million a year, for at least five years. The broad areas to be covered include endocrine disruption, exposure assessment, risk assessment methodologies, respiratory and immunotoxicity and chemical carcinogenicity.

The first public announcement on the LRI was made in London on 16 June 1999, at the third WHO Ministerial Conference on Environment and Health, when Luciano Respini (Chief Executive Officer of Dow Europe) gave a keynote presentation. He addressed the importance of the programme for the chemical industry and its relevance to the WHO's environment and health research programme for Europe.

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.

Current situation

Requests for proposals for research have been issued in the following areas:

- chemical carcinogenesis,
- marine risk assessment and ecosystem dynamics,
- environmental exposure modelling,
- uncertainty analysis in risk assessment,
- respiratory toxicology and immunotoxicology,
- human exposure,
- endocrine disruption.

Internationally recognised, independent research experts are carrying out the research. An external science advisory panel, comprising leading scientists from academia and research institutes, is overseeing the programme to ensure its scientific integrity. Results of the research will be published in peer-reviewed journals and communicated widely via workshops, open literature and the Internet.

3.3 Capacity building

The sector has a prime interest in capacity building since, as a manufacturer and distributor of chemical products worldwide, it needs to ensure that wherever such materials are handled, they are handled by well-trained and well-organised people, who have had the benefit of the right training and have access to the right technologies.

Capacity building of the many parties interested in increasing chemical safety is a complex process. It involves a number of initiatives, primarily aimed at promoting awareness of chemical hazards and managing the risks associated with the use of chemical substances. These initiatives may take different approaches, depending on the existing legal framework and the needs of the parties involved.

ICCA believes that capacity initiatives should be designed in order to promote the safe production and use of chemicals in the most efficient and cost-effective way. To allow this to happen, some basic principles are to be followed:

- 1) Sufficient safety information about the chemicals should be available to all users and the public in a transparent way. To this end, chemical safety data sheets (MSDSs or SDSs) and labelling are essential parts in any capacity building structure, since they lie in the foundations for a solid chemical management system – for a company or even for a nation.
- 2) All participants of a national management system should be educated and trained in the aspects related to the part they play in the process. To this end, awareness can be raised and expertise built by promoting, for example, seminars and specific training courses.
- 3) The resources needed to implement a national capacity building project should be available and directed towards priority areas identified nationally. Preferably this should be through an open and transparent process which includes all interested parties involved with chemical safety issues. To this end, funds and people should be provided in a balanced way, from national governments, industry and other parties as needed.
- 4) Legal obligations and voluntary initiatives should be applied and integrated, in order to promote participation and synergy among different efforts to be implemented within a national capacity building structure. To this end, safety legislation and programmes like ICCA's Responsible Care and UNEP's Awareness and Preparedness for Emergencies at the Local Level (APELL) should be used by the parties involved.
- 5) Sound, and whenever needed, best available, technologies and practices designed to protect human life and the environment must be encouraged by national legislation. In the absence of regulations in a country, they should be voluntarily adopted by the industry and users of chemicals. To this end, technology co-operation, defined as: *'a process by which two or more parties identify individual and common interests to share information,*

knowledge, know-how, and managerial skills, regarding the utilisation of technologies which are more environmentally friendly, more energy efficient, less resource intense, less polluting and oriented towards recycling, in order to contribute to the aim of sustainable development' should be stimulated by governments, industry associations and technology/academic institutions as a fundamental feature for technology development initiatives.

The chemical industry is committed to help spreading the use of sound technologies and expertise around the world, and while some good examples are presented here, there is still much to be done.

3.3.1 Capacity building – the APELL Programme

UNEP's Awareness and Preparedness for Emergencies at Local Level (APELL) works to effectively improve worldwide emergency response capabilities. The programme's goal is to prevent technological accidents and to reduce their impacts by assisting decision-makers and technical personnel to increase community awareness of hazardous installations, and to prepare response plans in case unexpected events at these installations should endanger life, property or the environment.

Programme support includes the provision of specialised expertise and information through APELL's network of international experts, enabling cities to launch local activities in partnership with industrialists and communities.

The chemical industry provides direct support for APELL from ICCA, United States American Chemistry Council (ACC), the European Chemical Industry Council (CEFIC), the Canadian Chemical Producers' Association (CCPA) and the Japan Chemical Association (JCIA). Support also comes from large international corporations including Dow

Chemical, Shell, Nalco, OxyChem, Du Pont and Rhodia. The industry is also an expert provider of training and expertise

The Responsible Care Community Awareness and Emergency Response (CAER) code brings together the chemical industry and the local communities through communication and co-operative emergency planning. It is this kind of expertise which companies feed into the APELL programme through a number of channels. For example, the ACC, with its CHEMTREC organisation and its emergency response network, is working to enhance emergency response capabilities in Asia, and CEFIC with its International Chemicals in the Environment (ICE) programme is similarly active throughout Europe

Thorough implementation of Responsible Care was very effective in averting the potentially catastrophic consequences of a major chemical (acrylonitrile) release from one of the world's largest acrylic fibre manufacturing facility (AKSA Acrylic Fiber Co.) in Western Turkey following the devastating earthquake in August 1999. The main success factors in overcoming this major incident without fire or fatality were judged to be well-established means of communication with the community, and procedures for process safety and emergency preparedness and response, as recognised by the regulatory authorities and the industry. A follow-up groundwater remediation programme was very effective in site clean-up.

3.32 Transfer of knowledge on crop protection products

Sustainable agriculture requires access to information, sharing of experiences and knowledge. This means that training at all levels, on issues related to product distribution and use is essential, and is best done in partnership with all relevant stakeholders. The plant science industry, as represented by CropLife International, recognises these needs and meets them through a variety of avenues, as illustrated through the examples presented

below (more information is available on <http://www.croplife.org>).

In line with the objectives of the FAO Code – to promote practices that encourage the safe and efficient use of pesticides – CropLife International initiated in 1991 the Safe Use Initiative (SUI). SUI is a comprehensive programme which emphasises education and training at all levels of involvement with crop protection products in Guatemala, Kenya, and Thailand. Partners include national, community and health authorities, co-operatives, NGOs and international donor organisations in selected countries.

SUI project elements have included all family members, given their role in farming. In Thailand, an emphasis was also given to improve the environmental performance of local crop-protection producers, which are non CropLife International members. Positive results in these countries have led to the extension of SUI to over 20 neighbouring countries in Africa, Asia and Latin America. For example, in Uganda training of agricultural workers and plantation management was jointly undertaken with the International Union of Food and Agricultural Workers (IUF).

To upgrade the standards of warehousing, transport, storage and handling of crop-protection products, the Philippine Crop Protection Association and the Fertiliser and Pesticides Authority (FPA) jointly initiated a 'good housekeeping' project. It has become a licensing requirement for dealers and distributors, who have realised that improvements in their facilities and good practices will ultimately pay off. Their training is particularly important, as they are a crucial link in the communication chain for the dissemination of information to farmers.

An Integrated Crop Management programme which trains all family members demonstrates the role that knowledge transfer through the household can play in capacity building for

crop protection. Farmers in the south of Brazil, their wives and older children as well as local schoolteachers, participated in training that started in 1995. Bayer organised this and subsequent approaches in Mexico, Guatemala, Colombia, Argentina and Chile, and a survey showed that the campaign contributed remarkably to knowledge transfer in the area of ICM and thus to more sustainability in product use.

Lessons learned:

- capacity building should be targeted at actors at all levels, from farmers, agricultural workers, dealers and distributors, trainers of trainers, teachers, agricultural researchers and children;
- integrated programmes such as family training can be particularly useful. In the end all play important roles in ensuring sustainable agriculture activities;
- the critical nature of partnerships between industry and other stakeholders was revealed in all training projects;
- an important factor underlying these lessons concerns a country's overall basic education level. The lack of basic education creates a barrier to efforts to promote sustainable agriculture. Governments should assign a high priority to the promotion and improvement of basic education, including literacy and life skills. Industry is aiming to use all methods of communication to get the message across. Indigenous knowledge has to be nurtured if it is to survive.

Looking ahead:

- since 1991, the Global Crop Protection Federation, now CropLife International, has engaged in capacity building through Safe Use Projects in developing countries. Member companies of CropLife International are performing similar activities and the industry is committed to continue its efforts in this area at all levels.

Building on its experience, CropLife International is taking actions to support three Regional Technology Centres (RTCs) in Asia, Middle East/Africa and Latin America. The RTCs will foster the exchange of information, knowledge, technologies and expertise, while addressing the needs identified by those who will benefit from them. The industry invites all stakeholders such as governments, academic institutions and donor agencies to join these efforts.

3.33 Capacity build-up and preparation of chemical industry federations from Central and Eastern European Countries (CEEC) for the EU enlargement

In December 2000, the EU Commission and CEFIC launched a two-year twinning programme to strengthen the capability chemical industry federations in the candidate countries of central and eastern Europe. This is designed to effectively support and represent the interests of their associate companies, and to prepare themselves for European Union (EU) enlargement. This twinning programme is co-financed by CEFIC, CEEC Federations and the Phare business support programme, and includes two projects built up jointly with the Chemical Industry Federations in central and eastern Europe: CHEMFED and CHEMLEG.

The CHEMFED project 'Capacity build-up and preparation of CEEC chemical industry federations for the EU enlargement' aims to boost the CEEC federations' organisational strength and capacity. This is done by further developing their professional activities and capacities in effectively supporting and representing chemical companies. This will bring about a step-change in their preparation for EU enlargement and their ability to help the CEEC chemical industry meet the accession challenges by aligning the CEEC industry to EU best practices. This includes development of Responsible Care initiative in central and eastern Europe.

The CHEMLEG project 'Product Regulatory

Support Services in CEEC Chemical Industry Federations' disseminates practical information and advice on the requirements of the chemicals 'acquis' and best practices. This is done in the form of guidebooks, secondments of experts and practical advice provided using help-lines. These actions will be implemented by setting up product regulatory support services in the CEEC Federations. These services will help associate companies adjust to the Community requirements on chemicals.

3.4 Stakeholder dialogue and promoting public awareness.

The Responsible Care Communication Code of many countries calls for extensive candid community outreach, supply of information, and integration of company emergency plans with local emergency plans. This code, built into all national programmes, requires each member-company to have ongoing processes to identify and respond to community concerns, inform the community of risks associated with company operations, and the decommissioning of old units. It requires systems to be in place to protect employees, neighbours, the community and the environment from any harmful effects. Neighbours include people along transportation corridors wherever chemicals are shipped.

One response to these challenges is community advisory panels (CAPS), which have sprung up in the neighbourhoods around Responsible Care companies in many countries and have become a very active part of the real dialogue on what the community deems is acceptable – and what is not. They discuss a range of issues from: unacceptable odours; worst case scenarios; the organisation of open door days, when the community is invited to visit the manufacturing plant; advising on the participation with local schools.

At a national level, the American Chemistry

Council Public Advisory Panel draws, from different constituencies and different parts of the country, 15 Americans actively involved in a range of public issues. The panel provides independent advice to the industry on the development and implementation of Responsible Care, and has helped to broaden American Chemistry Council's understanding of public concerns surrounding the use of chemicals in our society.

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.

Another possibility is the use of APELL together with Responsible Care as a way to promote community awareness and local government involvement in emergency response to chemical incidents.

3.5 National and international partnerships, including the Global Compact

ICCA commends the UN's effort to advance sustainable development and engage the business sector through voluntary participation in the Global Compact. Many of the activities described in this report are supportive of this new international initiative and ICCA looks forward to participation with the UN to advance the environmental principles of the Global Compact. In April 2001 an ICCA letter of support was sent to the UN Secretary-General Kofi Annan.

Improving the management of chemical products down the supply chain involves sharing the problems with other key organisations, and in the last few years the ICCA has agreed Responsible Care partnership arrangements with a major international organisation, the International Council of Chemical Trade Association (ICCTA).

ICCA and the International Paint and Printing Ink Council (IPPIC) are discussing the possibility of working more closely together, and issuing a joint statement which recognises that the safe manufacture, distribution, disposal, handling and use of paint and coatings, as well as their chemical raw materials, is paramount. This includes joint training and collaborative initiatives which will help ICCA to advance the practice of product stewardship. Coatings care programmes are now very widespread (United States, Canada, Mexico, United Kingdom, France, the Netherlands, Japan, Australia, Malaysia and Brazil).

Following on the development of a Responsible Care programme for chemical distributors, an umbrella Responsible Care memorandum with ICCTA has been signed. National chemical industry associations are responsible for the detailed implementation of Responsible Care in their countries. They

establish partnership agreements with national associations of chemical distribution and trade, and on the basis of these agreements the use of Responsible Care logo is granted. With regard to chemical distribution, each Responsible Care/distribution programme is based on the eight fundamental principles issued by ICCTA.

In July 1995, the board of directors of the Brazilian Chemical Association (ABIQUIM) approved a partnership programme. The programme is open to chemical carriers, chemical distributors and chemical treatment companies. To become a partner, the prospective company must be sponsored by an ABIQUIM member and commit itself to follow Atuação Responsável® as if it were a chemical company.

This approach by ABIQUIM has been repeated by a number of chemical federations. In some chemical industry associations such as in Singapore (SCIC), Hong Kong (AICM) and South Africa (CAIA), the membership extends out beyond chemical manufacturers. Examples include terminals, transportation companies as full or associate members, and hence the supply chain is encompassed directly in Responsible Care.

The success of Responsible Care is largely dependent on the personal commitment of the employees and their willingness to take the initiative on their own responsibility. In November 1999 the German Chemical Association (VCI) therefore concluded a 'social partnership agreement on Responsible Care' with the German Trade Union of the Mining, Chemical and Energy (IG BCE) and the Association of German Chemical Industry Employers (BAVC). This agreement lays down that workers and their representatives should be involved in the 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.

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 the Responsible Care programme, initiatives were started, 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 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 results of an SQAS assessment, carried out by an independent body, do not lead to a certificate but are used by an individual chemical company to evaluate the performance of its service providers. SQAS helps, along with other tools and criteria, in the process of selecting service suppliers and in defining improvement areas with each of them. In this way the SQAS approach greatly helps to create or strengthen the basis for a true partnership between the two parties.

3.6 Conclusions: What has succeeded, what has not?

Many of the examples given in this report have been related to international progress in environment, health and safety, with some examples of social and economic aspects. Although many individual companies have begun to succeed in getting to grips with all three pillars of sustainable development, as an association there remains much more to be done about the social and economic aspects, particularly in the developing world. ICCA needs to follow the Responsible Care process which was based on the adoption of guiding principles, to jointly set and implement social and economic principles to take the chemical sector into the 21st century.

3.61 Factors of success for Responsible Care.

Responsible Care does not seek to impose one country's ways and means on another, but rather seeks to have Responsible Care adapt to the unique culture, regulatory regime and needs of each developing and developed country. To provide an insight as to how developing countries have succeeded with Responsible Care, the following table shows the format of national mutual assistance, activities and programmes.

Country	Year accepted by RCLG as Responsible Care member	Responsible Care mutual assistance activities and programmes
Argentina	1992	CIQyP's Responsible Care Committee meets monthly to track implementation and share best practices and experiences, with an average attendance of 25 Responsible Care co-ordinators. CIQyP is helping the Uruguayan association ASIQR to launch Responsible Care with presentations, technical meetings with industry co-ordinators and general administration
Brazil	1992	More than 60 CAPs in operation throughout the country. Eight regional executive leadership groups. Seminars and courses held for membership.
Chile	1994	Various events including workshops, conferences and seminars, involving Responsible Care issues, are prepared regularly for company members.
Colombia	1994	Training sessions for new members' Responsible Care co-ordinators and teams. The Responsible Care Steering Committee meets each couple of weeks. Executive leadership groups, regional meetings and workshops are held. Technical committee for each code of practice set up as main vehicle for sharing experiences. Action plan for 2000/2001 defined and underway. Responsible Care co-ordinators fully trained.
Ecuador	1999	Yearly plan for technical training in the four codes has been drawn up and implemented. Ten training meetings and exchange of experiences in safety, environment and emergency response. Eight visits to industrial plants for technical training. Training courses for Responsible Care co-ordinators in self-evaluations and following of the process. Links established with other Responsible Care programmes in Latin America, Spain and Portugal. Twice-yearly evaluation meetings organised with member companies' general managers.
Hong Kong Special Administrative Region (SAR)	1992	In 1999, AICM organised the fifth annual Responsible Care Asia Pacific (RCAP) meeting in Shanghai. Conference attended by many Chinese government officials with more than half of the attendees from local Chinese companies. AICM previously staged regional conferences

Country	Year accepted by RCLG as Responsible Care member	Responsible Care mutual assistance activities and programmes
Hong Kong Special Administrative Region (SAR)	1992	<p>in Hong Kong and Beijing. Meetings with Responsible Care co-ordinators are held when required. AICM continues to help industry to improve EH&S performance. AICM and member companies have been active in supporting seminars in China on safety in specific industries for example phosgene safety. Support was obtained from ACC and CEFIC for the AICM Chief Representative in China to develop his understanding of global EH&S activity and Responsible Care implementation. At the Shanghai Asia Pacific Responsible Care conference, an informal Asia/Pacific Responsible Care network was established to provide a forum for exchanging ideas and finding common solutions.</p>
India	1993	<p>Ongoing activities including Responsible Care co-ordinators' group meetings at member companies' plant sites involving presentations on safety policies and Responsible Care briefings. ICMA organised seminars on prevention and management of chemical accidents with the Federation of Indian Chambers of Commerce & Industry, MoEF and Directorate of Industrial Safety & Health. ICMA also organised a one-day programme on managing improvements in occupational safety and health for chemicals and petrochemicals industry – challenges in the new millennium. Local government officials chaired the event and gave the inaugural address.</p>
Indonesia	1999	<p>Meetings in 1999-2000 for CEOs and Responsible Care co-ordinators; five workshops/training sessions on process safety, Community Awareness and Emergency Response (CAER), pollution prevention, and transportation and distribution. Events also include the second Responsible Care Indonesia Seminar & Workshop 1999 and a touring road show/seminar on Introduction to Responsible Care attended by chemical companies and transport firms. The third Responsible Care Indonesia Seminar 2000 and KNRCI AGM will be held in October. To take account of the fact that Indonesia is an archipelago consisting of thousands of islands and industry is widely spread, co-ordinators have been appointed to co-ordinate and supervise self-assessment programmes and other Responsible Care activities for various industrial zones.</p>

Country	Year accepted by RCLG as Responsible Care member	Responsible Care mutual assistance activities and programmes
Malaysia	1994	CICM holds industry road shows, seminars and fora for members. Training and awareness is carried out as a continuous and ongoing activity with at least four road shows per year apart from other seminars. Regional cells or branches also conduct seminars and workshops in their area, independent of CICM.
Mexico	1991	Small groups work together on Local Information Exchange Programme, organise meetings etc. ANIQ has set up working groups of Responsible Care co-ordinators by sector and they share information to improve the HSE company's activities. Executive Leadership Group communicating Verification process with SMEs. Workshops dedicated to specific codes.
Morocco	1998	Responsible Care seminars held in 1999 and 2000 with the participation of CEFIC and UIC to take advantage of previous experience in the implementation of Responsible Care.
Peru	1996	CIQ-SNI plans a series of fora bringing together Responsible Care companies and official organisations, in addition to regular meetings with member companies and management. Workshop on treatment of chemical plants effluent treatment held in May 1998.
Philippines	1996	There are regular monthly meetings to update SRCC on the status of activities and projects undertaken. SRCC is devising a 'benefits feedback mechanism.' The council has a regular section in the association's bimonthly newsletter, the SPIK Bulletin. It covers Responsible Care news and updates as well as directions for actions. It also sends out communications on related topics to the association membership. SRCC is working on an emergency response framework under the Distribution Code by end 2000. In 2000, SPIK held a seminar to launch their Responsible Care manual that includes all the requirements for Responsible Care in the Philippines.

Country	Year accepted by RCLG as Responsible Care member	Responsible Care mutual assistance activities and programmes
Singapore	1990	<p>Training workshop on Responsible Care codes of practice in May 2000 to provide implementation guidance was attended by more than 100 people. The committee has also started a networking process among member companies via e-mail to gather feedback, information and share best practices. The plan for 2000 is to have a discussion forum among member companies on the SCIC Web site. SCIC hosted the 2000 Asia Pacific Responsible Care conference which was attended by people from all over Asia and many other countries. Participants also included Singapore government officials.</p>
South Africa	1994	<p>One discussion/networking group for interested Responsible Care co-ordinators has been active since 1992 in Natal, and a similar forum was launched August 1998 in the Cape. The Gauteng (Johannesburg) forum has its main focus on all aspects and modes of packing, storage and transport both nationally and internationally. A series of workshops on various Responsible Care and related topics are held annually</p>
South Korea	1999	<p>The Public Activities Committee is responsible for holding education sessions, seminars and other related activities. KRCC is creating both in-house and council-based training processes to help improve member companies' awareness of Responsible Care</p>
Taiwan - China	1997	<p>Experience-sharing workshops held in June and December in 1999; a further two workshops are scheduled for September and November 2000. Quarterly meetings for Responsible Care co-ordinators introduced mid-2000. TRCA has also developed the 'Buddy System' and started an experts group to assist member companies to implement Responsible Care.</p>
Thailand	1998	<p>CICT has held a series of workshops to introduce the initiative and enable those companies already implementing Responsible Care to share experiences with others</p>

Country	Year accepted by RCLG as Responsible Care member	Responsible Care mutual assistance activities and programmes
Turkey	1993	The Environmental Working Group meets regularly every month to evaluate the progress made on implementation of Responsible Care and share experiences. Regular biannual workshops are held to discuss current ICCA-level RC issues and implementation concerns at the country level. Regular presentations on Responsible Care are made at university chemistry and chemical engineering departments to familiarise academics with industry practices. Annual site visits are made to reinforce self-assessment verification of the chemical plants.
Uruguay	1998	Environmental Committee meets every month to track Responsible Care implementation and share best practices and experiences.

3.62 What has been unsuccessful?

In late 1999, following an ILO tripartite meeting on 'Voluntary Initiatives' in the chemical industries, ICCA opened a discussion with the International Federation of Chemical, Energy, Mine and General Workers' Unions (ICEM), to explore the possibility of a global agreement on Responsible Care. In December 2000, following a series of meetings, a draft agreement was reached. However, one of the major members of ICCA was unable to 'take a position' on the draft agreement, and thus, in accordance with its constitution, ICCA was unable, at this time, to sign this agreement. However at regional and national level, some ICCA members already have agreements, see section 3.5 and the Social Partnership Agreement with the German VCI, while others intend to explore the possibility of arrangements with ICEM affiliates.

Zimbabwe, which adopted Responsible Care some years ago, has recently indicated its intention to withdraw from membership of the Responsible Care Leadership Group. This

resignation has been accepted with regret. Zimbabwe can return to membership in the future if it expresses willingness to do so, provided it meets current Responsible Care requirements.

National federations continue to encourage chemical enterprises which are not yet signed up to Responsible Care – particularly small and medium enterprises – to join the initiative. However, progress is slow in some cases, and there are still many candidate companies in both the developed and developing world which need to be recruited into Responsible Care membership. Work is needed to understand countries' key barriers, and to ensure that support is given to help them in implementing the initiative. There are examples where this is successful and we must learn from those countries.

Moving Responsible Care through the supply chain is still problematic. Greatest progress has been in the manufacturing of products, the effort to get the Responsible Care ethic into

suppliers 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 agreed.

ICCA has been slow to recognise the need for, and implementation of, effective partnerships with critics.

Part 4: Future challenges and goals

4.1 Areas for improvement

As shown in this report and elsewhere, the chemical industry has improved its performance and increased its contributions towards sustainable development in the last ten years. Nevertheless, there is recognition within industry itself, and clear requests from stakeholders, that the chemical industry should adopt a more visionary and ambitious programme of actions, possibly one in which stakeholders would be more actively involved.

ICCA recognises the request to be more ambitious, and is committed to further the dialogue with its stakeholders in this respect. As we enter a new millennium, the challenge of pursuing sustainable development will demand not only better dialogue with our stakeholders but also effective partnerships whenever possible.

At its 5 October 2001 meeting, the ICCA Steering Committee adopted a new vision for the future: '(to be) ...widely valued and supported for its economic, social and environmental contribution to society. This vision is complemented by a mission 'to help the global chemical industry improve profitability and reputation by tackling global issues, and by helping the industry to improve continuously its performance'. This vision and mission represent the industry's commitment to fulfil its environmental, health and safety responsibilities, increase its contributions to sustainable development, and be seen as a positive force within society.

4.1.1 Chemicals management

In many ways the chemical industry is proud of its accomplishments and is encouraged to further improve the way it manages its chemicals. Since the Rio Summit of 1992, the industry has continued to advance Responsible Care. Launched in 1985 in Canada,

Responsible Care was a great innovation at that time and is still the most sophisticated, comprehensive and ambitious voluntary HS&E programme conducted by any industry sector in the world. As a result of the chemical industry's work in the last ten years, Responsible Care is being implemented in countries which account for more than 85% of global chemical production, with 46 countries engaged in its implementation (only six countries had adopted Responsible Care in 1992).

In pursuing the implementation of Responsible Care since 1992, the global chemical industry launched several new initiatives aimed at providing more knowledge and information on chemicals and their potential effects on human health, safety and the environment:

- the Long-Range Research Initiative (LRI),
- the High Production Volume (HPV) programme.

These initiatives are already quite ambitious and constitute a sound basis towards a more comprehensive approach on chemicals management. We understand there is pressure on our industry to do more, however, in particular on the following topics:

Extend Product Stewardship up and down the supply chain

One of the main requests from stakeholders is to spread Product Stewardship along the supply chain. As described in section 3.5 of this report, such an extension requires close co-operation with all relevant partners. Extension of product stewardship along the supply chain requires attention to be given to initiatives focused on logistics partners, like transporters, and on the use of chemical products by customers.

In the transport area, the Safety and Quality Assessment System (SQAS) for road transport is well established in Europe. It is intended to promote implementation of similar systems in other countries.

SQAS for the transport of chemicals by road has been slightly modified in Brazil by the Brazilian Chemical Industry Association (ABIQUIM). Under the acronym of SASSMAQ, it was officially launched last May with a list of more than a dozen transport companies already scheduled to be evaluated in 2001. As part of the ICCA network, copies of this system, also available at ABIQUIM's Internet site, have been distributed to all chemical associations in Latin America. CAIA has completed a modification of the SQAS for implementation in South Africa.

In February 2000, CEFIC and the Union International des Chemins de Fer (UICF) signed an agreement to develop a common system for managing the safety of chemicals transported by rail. SQAS for rail will be implemented in France, Germany, Belgium and the Netherlands; other countries are to follow soon after.

In respect of co-operation between chemical producers and customers, some progress has been made and, regardless of where these initiatives are first implemented, the success is replicated by extending implementation to other countries. The chemical industry is also improving and extending co-operation with the automobile, electronic and construction industries in order to ensure the safe use of chemicals in their processes and facilities. Co-operation between chemical producers and the soap and detergent industry in assessment of chemical risks is another example of improving product stewardship along the product chain.

Although the industry is proud of its product stewardship efforts and success, the extension of product stewardship along the supply chain

is clearly one area where more efforts are needed to ensure that chemicals are used safely throughout the product supply chain. Individual chemical companies are incorporating appropriate strategies, as part of their business practices. It is clear, though, that there is a need for stronger connection between the product stewardship efforts of producers and users of chemicals, for example in 'life cycle' studies. Further partnership between the two parties will surely result in better and safer products and services.

The industry and its customers should work together and voluntarily find common solutions to problems caused by chemical exposure. Nevertheless, in the entire product chain from manufacturing to disposal, the responsibility for the safe intended use of a chemical is not only with the producer. The producer provides the necessary information for the safe intended use. The user is responsible for implementing the necessary management measures to protect man and the environment.

A clear understanding of the concept of shared responsibility along the supply chain is absolutely vital if chemicals are to be produced and consumed in a sustainable way. This understanding is still in its infancy, but it must be perfected by industry, its customers, governments and other stakeholders. Chemical companies will be encouraged to pay special attention to cases where the supply chain extends to countries with no local chemical production or with weak chemical infrastructure or legal framework.

To conclude, in response to this request, ICCA understands that the efforts already conducted under the Responsible Care initiative need to be taken even further than in the past. It is prepared to make the extension of product stewardship to the entire supply chain a priority of the ICCA Responsible Care Leadership Group, which monitors the various national and regional activities and co-ordinates the initiative at international level.

Accelerate phasing-out of products which present unacceptable environmental and health challenges

ICCA, its member federations and their companies, have been actively involved in the negotiations of the UNEP POPs Stockholm Convention and support the final result. The Stockholm Convention is the basis for action at a global level to control or eliminate products which present unacceptable environmental and health risks. Another international instrument developed since the Earth Summit is the Rotterdam Convention on Prior Informed Consent (PIC). The Convention is a good example of an information-exchange system used to manage the risks of hazardous chemicals in international trade.

ICCA is encouraging its members to participate in the fast implementation of both the PIC and POPs Conventions. ICCA would like to see the entry into force of the Rotterdam Convention announced at the World Summit on Sustainable Development.

In September 2001, to promote the entry into force of the POPs Convention, ICCA, directly or via its member federations/associations, has sent letters to national governments, encouraging them to ratify swiftly, and implement the convention. Furthermore, the chemical industry is committed to not producing new chemicals presenting POPs characteristics according to the convention's criteria. ICCA is also prepared to participate in an effective implementation of the convention, and will provide expertise for the work of the review committee under the convention.

On the other hand, ICCA is also supporting as part of its general chemicals management policy, the phasing-out of uses of chemicals if unacceptable and unmanageable risks are identified. Concretely, ICCA member federations and their companies are supporting the call of chapter 19 Agenda 21 to consider the wide range of risk-management options for a sound management of chemicals. This should

include consideration of bans or phasing-outs of particular applications of a particular chemical, when risks are unreasonable and otherwise unmanageable.

In response to the demand for more urgent action to reduce the risks of chemicals, ICCA will continue to contribute to the preparation and implementation of MEAs such as POPs/PIC Conventions. Industry contributes, through involvement in all negotiation stages, its knowledge and its technical and scientific expertise to both UNEP and the governments engaged in negotiating sessions. In addition, industry will use the knowledge gained from its HPV and LRI initiatives to meet the demand for new and better products which perform their intended function more effectively with less risk to health, safety, and the environment.

Substitution to more sustainable products

'Substitution' is intrinsic to the way industry conducts its operations. Chemical companies are constantly evaluating alternative products and manufacturing processes. They also face the inquiries of current and prospective customers who are evaluating their products and comparing them with the products offered by competitors. On the basis of this experience, ICCA supports a pragmatic interpretation of the substitution principle.

Choices to select one substance, as compared with others, are never made on the basis of one criterion only, but rather must balance performance, health, environment, safety, cost and other socio-economic considerations. Of particular concern are simplistic proposals to substitute chemicals, without appropriate analysis of the competing products which will take its place in the market. The global chemical industry believes that the risks and benefits of a given chemical candidate for substitution, should first be compared with those of competing products for a given application, using a selected set of criteria.

Although many substitution questions are resolved by the independent analysis and decision-making of customers, there are instances where producers and/or users have conducted a full life cycle analysis. This approach, based on risk and cost benefits analysis, is complex and resource-intensive. As mentioned before, the analysis may be conducted by the chemical producer or by a user/customer. Depending on the case, an independent party may be called to do the study. Some life cycle studies have been prompted by demands from stakeholders and involved their participation. This trend may continue in the coming years.

In response to the demand for more sustainable products, ICCA firmly believes that innovation is the main basis and driving force for continuous improvement of the chemical industry's operations, products and services. The chemical industry's commitment to Responsible Care, sustainable development and product stewardship encourages companies to develop innovative products and services which benefit society and meet the requirements of sustainability. Even though many advances have already been achieved in agricultural and polymeric chemistry, further innovation is necessary in these and other fields of chemistry.

Despite the excitement generated by the industry's R&D potential, it is also recognised that much product-related innovation will spring from the discovery of new applications for those chemicals already existing. Further adaptation and innovation will be necessary as many companies, especially those operating in developing countries, create new solutions to meet the needs of poor or very poor people, who traditionally did not participate in the conventional markets of developed countries. Innovation will be crucial in these situations, making the difference between success and failure. In the majority of cases, the technology already exists, but it has never been adapted to meet

the demands of persons who have not participated in established markets.

Other challenges ahead

- ICCA new initiative on chemicals management, offering to develop a worldwide knowledge base of chemicals**
 ICCA is 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 will be developed in the course of 2001/2002.
- High Production Volume Initiative (HPV)**
 The chemical industry acknowledged requests from stakeholders and some governments to extend the ICCA HPV Programme, to provide possibilities for monitoring progress, and to take further actions.

ICCA in its commitment clearly stated that the initiative is a first step in the process of data gathering and initial hazard assessment of OECD HPV chemicals. The reach of the programme will be extended as the ICCA has stimulated its non-OECD member associations to invite national chemical producers to participate in the international consortia which have been formed or are to about to be created. The ICCA HPV initiative has to be considered as a basis for risk-related

activities like risk assessment and risk management at a regional or national level, if necessary.

The HPV initiative also provides a tracking system as basis for monitoring progress. With the continuation of the programme and the implementation of the global concept (which also includes the availability of understandable information on chemicals to the public), ICCA recognises the need to improve public access to the information at a global level. It is prepared for a dialogue with stakeholders in order to improve the initiative as a whole.

- **Support of the Bahia Declaration as a framework for action and basis for developing future strategies for the sound management of chemicals, which build upon chapter 19 of Agenda 21**

The ICCA is an active member of the Inter-governmental Forum on Chemical Safety (IFCS), which groups together governments, trade unions, intergovernmental organisations and industry. The global chemical industry supports the 'priorities beyond 2000' as identified by the IFCS at its third session, which took place on 15-20 October 2000 in Salvador da Bahia (Brazil), and is prepared to contribute to the implementation of these priorities.

In particular, ICCA has expressed its willingness to participate in the elaboration of a proposal for an additional priority for action under Programme Area A, on providing hazard data on chemicals in commerce.

4.12 Further development of Responsible Care

ICCA, using the experience of its Responsible Care Leadership Group, continuously performs its own critical analysis on its members' Responsible Care programmes. Many stakeholders express their views to the

industry through local or national advisory panels. Some stakeholders have organised their views at the international level, for example the International Labour Organisation (ILO), and in conjunction with the International Federation of Chemical, Energy, Mine and General Workers' Unions (ICEM), made critical constructive comments.

ILO reported on Responsible Care and other voluntary initiatives at the tripartite meeting 'Voluntary initiatives affecting training and education on safety, health and environment in the chemical industries', Geneva, 1999. Its report recognised that 'voluntary initiatives have had positive impacts in terms of improving company HSE performance on an industry-wide basis – impacts that are reaching SMEs as well as large multinational corporations (MNCs), in developing as well as developed countries.'

Among ILO's concerns for the direction of Responsible Care were the following three points:

- low employee and public recognition of Responsible Care. The RC terminology is not used in HSE training and education. Workers and their organisations have generally not been directly involved in the initiative;
- proliferation of voluntary initiatives. RC, EMAS and ISO often merge into one general HSE and even broader quality and product stewardship management systems at plant level;
- monitoring and evaluation. Some companies and associations are choosing self-assessment as the main method, others are moving towards third-party verification. To what extent and in what way should these evaluation results to be communicated to the workforce and the public?

These points and others are raised in a SWOT summary in the table below:

Strengths	Weaknesses
<ul style="list-style-type: none"> • Global RC spread is good with 46 countries now embracing the initiative • RC is seen by many within the chemical industry as a comprehensive and effective framework for voluntary HSE performance improvement and outreach – a common focus • Where performance is measured, RC indicates progress and a change in industry behaviour • RC is increasingly recognised and accepted in international fora • RC benefits from a global network of associations and companies willing to help one another through information exchange and mutual assistance. • Those associations and companies with greater resources are prepared to help those with limited means 	<ul style="list-style-type: none"> • RC suffers from some inconsistent implementation, performance and verification around the world due to variations in understanding, or lack of resources • We are not yet able to demonstrate quantitatively on a global basis that HSE performance is improving • In some cases, performance indicators do not exist or are not internationally comparable • There is insufficient engagement and dialogue with internal and external stakeholders. Internally the programme is seen as run by the developed countries. Externally, NGOs and others are still on the outside – not at the table contributing to future of RC • RC is still not understood well by some internal and external stakeholders. Many employees do not identify their HSE activities with RC. Externally the changed industry performance has not been successfully communicated. • The smaller ICCA members – mainly in developing countries – are faced with basic needs and limited resources when the industry is rapidly evolving, and this challenges the viability of RC

Opportunities	Threats
<ul style="list-style-type: none"> • The overall quality should be improved through more consistent performance improvement, measurement and verification. Promote internationally comparable indicators and verification processes – and enhance peer review • More effectively engage internal and external stakeholders • Communicate RC benefits and progress more effectively. Improve information exchange • Build on existing association-to-association mutual assistance successes to help developing countries • Shift the RC strategy from reactive to continuous and progressive strategies which address the entire chemical supply and distribution chain 	<ul style="list-style-type: none"> • The entire chemical industry must deliver continual improvement – whether RC members or not. Any deterioration of HSE performance or national catastrophe will be seen as the industry not living up to its RC commitments • A lack of consistency in RC initiatives around the world threatens the sector's ability to properly represent itself to international stakeholders • RC credibility at stake without worldwide acceptance of a verification package • Inability of the industry to articulate the relationship between RC and emerging issues such as management systems, precautionary principle • Failure to keep up with stakeholders' new concerns • Any loss of senior commitment to RC through initiative overload, or shortage of resource, could damage the initiative

Based on the outcome of this SWOT analysis, the ICCA Responsible Care Leadership Group aims to advance RC practices and principles throughout the global chemical industry, while maintaining the integrity and credibility of the initiative. See specific plans under section 4.22.

4.13 Social aspects

There is no question that the social dimension of sustainable development is given increasing attention by industry stakeholders. As laid down in the report, ICCA is committed to the goal of sustainable development. The need to achieve a desirable balance between the environmental, economic and social pillars of sustainability is well recognised.

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. Probably, social responsibility may be more difficult to define than HS&E responsibility because, especially with regard to social questions, differences in the societies around the world do matter.

As a result, local, national and, in rare cases, regional approaches seem to be more appropriate, and have been chosen by 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. It is a bit too early to pick up a model, but so far the trend is to modify the ethic of national RC initiatives in order to allow it to cover social considerations as well, always taking into account national circumstances and social customs.

A further complication at the international level is the view in some countries that labour issues are the social leg of sustainable development. It is not within the present mandate of ICCA to address labour issues. Responsibility for labour issues, and in particular negotiations with labour unions on conditions of employment, is in many countries within the mandate of distinct chemical employer's representations, which are not ICCA members themselves. In addition there is no worldwide employers' organisation for the chemical industry.

Overall, the challenge will be to establish systems of governance for sustainable development which integrate environmental, economic and social dimensions. Certainly, this will be one of the key topics for the World Summit on the Sustainable Development. Social aspects at the global level constitute a challenge for the chemical industry. With the experience gained from the continuing dialogue at regional, national and company level, in future there might be the experience necessary to reconsider the ICCA approach.

4.14 Developing countries

The globalisation process has had a strong impact in the world economy, notably in the past ten to 15 years. The chemical industry has responded to globalisation in a very pragmatic way, either by installing new plants or distributing chemicals produced elsewhere.

The decision to invest in operations abroad has been dictated by a variety of criteria, which consider economic, environmental, logistical, political and social aspects. 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 may be summarised below.

- **Foreign direct investment (FDI)**

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. In general, through trade, capital transfers, technology and know-how transfers, and through organisational links, trans-national corporations increasingly bridge economies of north and south. It is acknowledged that there is always a strong concern that these market-oriented actions may not be sufficient.

The chemical industry is an increasingly globalised industry. More and more developing countries use chemistry to upgrade their resources and improve their standard of living. It is a challenge to make sure that production shifts to developing countries do not result in a decline in environmental, health and safety standards, impacting the recipient country in ways unacceptable to the investor country itself. Also, this has to happen in ways which ensure that production shifts to developing countries do not result in a decline in global performance, reflecting in worse conditions for human health, safety and environment in a world scale.

Chemical companies committing to RC 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.

Experience has shown that through RC, upgrades in developing countries' EH&S legislations have occurred as a result of the voluntary introduction of best practices by industry. The positive impact of other voluntary initiatives, like the adoption of ISO 14001 standards, have also resulted in less need for costly enforcing systems, typical in most developed countries but

sometimes not affordable by many developing ones to the extent needed to ensure that adequate performance levels are met by companies.

However, not all national chemical associations are members of ICCA or have joined the RC initiative which brings about, in some cases, the problem of chemicals produced by non-ICCA members companies. 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. As stressed in section 4.12 it is a clear goal of ICCA to extend RC all countries that manufacture chemicals.

- **Increasing capacity building**

Moreover, it is a goal to increase capacity-building efforts. To achieve more effective capacity building there is, among others, the need to strengthen the co-operation with governments, stakeholder and other industries. Capacity-building, indeed, is one of the key challenges ahead. Therefore, the ICCA defined several specific goals in this field which are described in detail under section 4.23.

4.2 Specific goals

ICCA, as any international industry organisation, represents its members in selected area of activities³¹, defined by its statutes and by its members' decisions. ICCA members must abide by ICCA's policies, positions and procedures, but ICCA cannot force its members to take product-specific decisions, or to phase out certain chemicals from the market. It is very important that this limitation is understood by all stakeholders, to avoid unrealistic expectations of ICCA activities. Despite this limitation, there is much that the ICCA can achieve through the sharing of best practices and the co-ordination of the actions of the companies which belong to ICCA member associations.

4.2.1 Product Stewardship

- **Acknowledge the request to develop MSDS-databank**

ICCA acknowledges the stakeholders' request to make Material Safety Data Sheets (MSDS) on chemicals available, and allow them to be collected in a global database, to be used by governments and other interested parties. Although this request was rejected by ICCA in 1998, it may be reconsidered by the appropriate ICCA bodies in the near future.

Stakeholders will then be informed of the outcome of these discussions. ICCA recognises that such a database may help in solving some of the concerns expressed by the stakeholders, in particular the access to the MSDSs by the end-user and that there is different MSDS information for the same chemical.

- **Responsible Care partnership agreements along the supply chain**

ICCA supports the extension of Responsible Care throughout the chemical manufacturing community and to sectors allied with the chemical industry (chemical transporters, distributors, traders, users, etc.). To this end, ICCA encourages all national chemical associations that have been approved to administer Responsible Care to expand participation in the initiative within their borders. This should be done either by encouraging associations whose members have an interest in chemicals to become partners in Responsible Care, or by recruiting companies with such interest to become directly involved directly in the Responsible Care initiative.

The national chemical association shall be responsible for approving the partnership arrangements with prospective partner associations and companies. It retains responsibility for the integrity of the Responsible Care process, logo and trademarks, and ensures that the

prospective partner association or company will use the logo and trademark according to ICCA guidelines.

Many such partnership agreements have already been successfully implemented, for example at the American Chemistry Council (United States), in the United Kingdom, in Germany and also at European level between CEFIC and FECC. One of ICCA Responsible Care Leadership Group's priorities is to extend these partnership agreements to as many RC countries as possible. It has therefore developed ICCA Guidelines for Responsible Care partnerships.

4.22 Responsible Care (RC)

- **Achieve universal understanding of a Responsible Care ethic**

Responsible Care has seen many changes since it was first introduced in Canada in 1985. The way the initiative was conceived has allowed great flexibility, making possible for countries to adjust its 'Fundamental Features' in order to accommodate the different needs and cultures that they might have. Undoubtedly this is one of the main reasons for the programme's success.

The eight fundamental features are developed by the individual federations for their national programmes, taking into account the guidance produced by the ICCA Responsible Care Leadership Group (RCLG). As Responsible Care passed its ten-year anniversaries in various countries, the guiding principles and other fundamental features of such national programmes have generally been brought up to date, based on the natural evolution of industry's and stakeholders' needs and expectations.

The evolution of the chemical industry and of Responsible Care have also been influenced some new factors such as HSE policy statements, environmental reporting

and ISO 14000 standards, which have been developed with the participation of industrial sectors and organisations. ICCA RCLG has proposed that the ICCA should have a universal ethic which encapsulates the philosophy of a strategic stewardship - along the lines of the principles of sustainable development - by which all ICCA members will abide. This universal ethic will take 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 will be considered during 2002.

- **Improve the quality of association**

- **Responsible Care initiatives worldwide**

There is much still to be gained by the further sharing of experience around the world. ICCA already assesses and publishes the implementation status of all its members every two years. 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 the developing countries will probably have to be stepped up to achieve these goals.

It is intended also to measure the global industry's HSE performance improvement through internationally comparable performance indicators. A start has been made by publishing some information for some countries, but it is ICCA's ambition to report and track fully the performance of all ICCA members.

- **Effectively communicate and dialogue with both internal and external stakeholders**

Many company and public surveys conducted by various ICCA member associations/federations and independent reviews, such as the ILO study of 1999 conducted in collaboration with ICEM,

show that there is still much to be done to get the Responsible Care message across to both internal and external stakeholders. ICCA is therefore committed to more assiduously promoting branding of our HSE programmes as RC and to demonstrate the relationships between RC and other related initiatives. Dialogue with targeted stakeholders needs to be improved and in some cases established. There are a number of instances where the stakeholder – as an interested party in the success of the chemical business – can in partnership help get the message across. This needs to happen at national as well as at international level.

- **Extend Responsible Care to all countries that manufacture chemicals**

Russia, China, Saudi Arabia, Venezuela and the emerging European economies which have so far not adopted RC, have been identified as the key targets to extend our global coverage. The interest expressed in RC in these countries is mixed. Some initiatives have indeed been made. Many chemically-oriented trade missions include Responsible Care on the mission's agenda and many transnational companies have already successfully imported RC practices into their operations in these regions.

In some cases there are problems of culture, legal permission to create trade associations or an absence of an identifiable national association structure. However, ICCA is determined to see the ethic of Responsible Care and sustainable development extend to these regions. It is worth noting that in the past few years, ICCA has had an application for membership from a new country approved at every RCLG annual meeting and as done before, champions were indicated by the group to contact focal points in the targeted countries mentioned above.

- **Develop an improved implementation assurance process for Responsible Care**
The eighth Responsible Care Fundamental Feature requires that national initiatives will have systematic procedures to verify the implementation of the measurable (or practical) elements of Responsible Care by their member companies. Several different approaches have been developed and are described in this report, section 3.13. 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, RC needs a solid verification methodology involving third parties. One good example: the automobile industry in the United States (and in some other countries as well) is considering the possibility of accepting RC as a requisite to their demand for ISO 14001 certification from their tier 1 suppliers. In response to this, the American Chemistry Council has been developing an alternative which could be independently verified by third parties.

Nevertheless, 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.

- **Define the relationship between Responsible Care and sustainable development**

During the last few months there has been a widespread debate on the future of Responsible Care and whether it should be adapted to address the three dimensions of sustainable development. Many leading chemical companies have issued statements on sustainable development and/or included discussion of it in their environmental, or (as some of them

already call them) sustainability reports. Several national federations are engaged in internal or external discussions on sustainable development, in response to company, government or public interest.

To be sustainable a company or industry must deliver good results in all three areas of performance: economic, environmental and social – the triple bottom line. The chemical industry already addresses and meets many of these requirements through its commitment to Responsible Care, which covers for instance environmental protection, product stewardship and occupational health and safety.

To fully address sustainable development, additional topics will have to be considered such as; stakeholder dialogue on social issues; human and workforce rights; the reduction of resource use in absolute terms and to a level determined by science-based risk analysis. In addition the development of indicators to measure our progress in these new areas will have to be considered.

As mentioned before, the social component of sustainable development, the greatest gap in Responsible Care, must be treated at national level before ICCA takes a position on how to respond to the demands at international level.

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.

- **Reporting**

Openness and transparency are vital for the chemical industry. Therefore the communication of performance improvement to customers, suppliers, local communities, regulators, employees, shareholders, financial analysts and the general public is a fundamental requirement.

In order 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.

The overall goal of ICCA in this regard is to develop and recommend methods and indicators to compile worldwide chemical industry performance reports, and to publish data showing the impact of the industry on all areas of society and the environment. As a start a common set of global Responsible Care performance indicators ('core indicators') has been adopted, and the data has been collected not only at national and European level, but worldwide.

This data is published in CEFIC and ICCA Responsible Care reports. However, due to large differences in legislation, culture and occupational health practices within companies and countries, data collection is not yet complete. The compiling experience showed the need for broadening the scope and validity of data. Clearer guidance on data collection and reporting procedures will be developed by the ICCA-RCLG sub group 'performance reporting' during the next year.

Nevertheless, the available data at global level country by country will be reported in the next ICCA Responsible Care Status Report, to enable the public to compare and benchmark even within the limits still existing.

In addition, the need for the chemical industry to respond to the challenge of sustainable development requires the development of indicators taking into account all aspects of chemical industry's performance. To make this expanded process meaningful will require significant co-operation with our stakeholders. Such a dialogue will be started as soon as possible. The Global Reporting Initiative (GRI) approach is being considered as model to help whatever approach is adopted.

4.23 Capacity building

The global chemical industry has historically been involved with various efforts which more recently have been included under the umbrella of 'capacity building'. Nevertheless, ICCA acknowledges the fact that many improvements can be made and that new areas for future work can also be developed, especially in developing countries. Future goals on capacity building envisioned by ICCA for the global chemical industry are aligned to the principles laid out in chapter 3.3.

- **Safety information about chemical products**

On this matter, the strategy on capacity building has to be designed as a complement and support for the actions that the ICCA will be promoting on Agenda 21, chapter 19, programme areas B and C.

For Area B, a process of explaining what is the Globally Harmonised System (GHS) for the classification of chemicals, and promoting its use within the industry itself and along the value chain, is a priority.

Some national federations/associations have included this as part of their programmes for the incoming years, or are considering to do so, as the GHS structure gets clearer and widespread. The impacts on national legislations will be a very important topic to be explored on courses and seminars dedicated to discuss the introduction and use of the GHS.

Goal: support the IFCS 'Priority for Action B1' and actively engage ICCA and its federations/associations on GHS promotion and acceptance.

For Area C, the greatest challenges will be attached to the process of preparation of MSDSs and labelling of chemical packaging, and to the understanding and adequate use of the information contained therein. The preparation of MSDSs is complex and highly technical in nature, demanding expertise that is not commonly found inside SMEs, especially in developing countries.

As the labelling depends on the MSDSs for its development, capacity-building activities on information on chemicals should cover the two issues, MSDSs and labels. Chemical companies throughout the world, as part of their regulatory obligations or voluntary commitments, will need to be engaged in various forms of capacity-building activities on information on chemicals, with the support of national chemical federations/associations.

Goal: through Responsible Care, improve, within the industry and research institutions, the knowledge needed to produce new or better MSDSs and labels. As part of product stewardship, reach chemical users so that they understand and use MSDSs and labels effectively.

- **Education and training of people involved with chemical safety**

The world has clearly entered the information era. As a result, the next decade will reinforce the existing pressure to increasingly train and educate people whose daily activities or work expose them to chemicals, or make them responsible for policy issues. ICCA believes that the trend of using the Internet to boost and spread information and training on chemical safety in particular, will be consolidated in many companies and federations/associations. Together with conventional systems, this will reach an ever-expanding number of people from industry itself, governments, chemicals users and customers.

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.

Goal: stimulate companies and federations/associations to develop or support the development of training courses, seminars and materials/publications aimed at chemical safety, especially in the workplace. At ICCA level, share the examples created among its membership.

- **Resources to implement capacity-building projects**

On this issue, ICCA, mainly through its members, can be part of frameworks dedicated to raise or distribute funds and/or human resources needed to carry out capacity-building projects. A general difficulty is to measure the amount of resources needed, usually high, and to determine the donation or financing sources.

Goal: develop strategies for the identification of resources needed for capacity building at international, regional,

national and local levels where industry participation should be considered. Based on elected priorities by the industry and its stakeholders, participate on specific capacity-building projects.

- **Use of legal and voluntary initiatives**

Responsible Care, UNEP's Awareness and Preparedness for Emergencies at Local Level (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.

Goal: continue the efforts to increase the number of countries adopting Responsible Care and support UNEP's APELL programme.

- **Technology transfer and development**

The chemical industry intensively invests in the development of new technologies which take into account the protection of human life and the environment. Global corporations should apply harmonised standards which guarantee the same level of performance for all their facilities around the world, and use local partners to develop national technological solutions whenever needed. On the other hand, national companies should have access to environmentally-sound technologies at reasonable costs or have the means to develop them.

Some national chemical industry federations/associations have their own programmes which try to facilitate capacity building inside R&D institutions and universities. Also, most importantly, inside local chemical companies which may have little access to external technologies and processes, or lack the ability and know-how to develop their own solutions.

Note: The chemical industries associations of South Africa and Brazil are presently carrying out two "pilot projects", aiming at identifying national capacity-building resource needs and priorities

Also, under Responsible Care, the exchange of best practices among the members of national associations/ federations plays a very important role as a means to stimulate the adoption of environmentally-sound processes and technologies.

Goal: develop at ICCA level, 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.

4.3 Stakeholders' role and assistance

Increasingly the chemical industry recognises the need for mutual trust and mutual responsibility amongst all actors in a democratic society. Companies have already acknowledged that constant dialogue with their employees, their neighbours and the public at large is more necessary than ever. Fears, doubts and criticism must be taken seriously.

For companies, the anxiety and worries of individuals or whole groups of society are irrefutable facts and part of the framework conditions – just like laws and tax regulations. If industry wants to build up trust and meet with acceptance it 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 their stakeholders.

The more companies and federations accept their responsibility in society and are willing to do necessary things through voluntary initiatives and agreements, the more they must accept the need for stakeholder involvement in open and transparent monitoring processes. Stakeholders can help the chemical industry by looking at things from a different perspective

and with a different background and different expertise. But participation of course also means taking on responsibility. Being part of a monitoring process is no longer a totally detached activity. 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 Responsible Care Leadership Group Key Strategies);
- To consider the development and establishment of a continuing process of stakeholder involvement as a follow-up to the stakeholder consultation facilitated by UNEP for the development of this report.

The input from stakeholders was important for the preparation of this report. ICCA wants to build up on this involvement in order to more effectively implement the propositions and reach the goals here presented. Therefore, ICCA is ready to explore options to increase stakeholders involvement beyond existing dialogue, looking at concrete partnerships with the different stakeholders.

Annexe I: Multi-stakeholder consultation

'In a multi-stakeholder consultation facilitated by UNEP, the non-governmental and labour organisations listed below provided comments on a preliminary draft of this report. The report was then re-written, benefiting from the stakeholders' perspectives and input. Nevertheless, the views expressed in the report remain those of industry, and do not necessarily reflect the views of UNEP or the following individuals and organisations which participated in the consultation.'

Mr Brian Kohler
Canadian Labour Congress (Canada)

Mr Björn Erikson
Norwegian Confederation of Trade Unions (Norway)

Mr. Nilton Freitas
Central Unica dos Trabalhadores (Brazil)

Mr Reg Green
International Federation of Chemical, Energy, Mine and General Workers' Unions (ICEM)

Ms Jenny Hall
Earthlife Africa Jhb (Southern Africa)

Dr Lynn Panganiban
Pesticide Action Network Asia Pacific (The Philippines)

Ms Elizabeth Salter Green
WWF International (Europe)

The following representatives of the chemical industry participated in the consultation:

Ms Mara Caboara
European Chemical Industry Council (CEFIC)

Ms Annik Dollacker
CropLife International (formerly Global Crop

Protection Federation)

Ms Frauke Druckrey
Verband der Chemischen Industrie (Germany)

Ms Birgit Engelhardt
International Council of Chemical Associations (ICCA)

Mr Marcelo Kos
ABIQUIM (Brazil)

Dr Lorraine Lotter
Chemical and Allied Industries' Association (South Africa)

Mr Naoshi Sugawara
Japan Chemical Industry Association (Japan)

UNEP representatives were Mr Matthew Gubb, UNEP Chemicals, and Ms Clare Cocault, UNEP DTIE, who facilitated the meeting.

So that stakeholders could see whether and how their comments had been taken into account by the chemical industry, the comments were summarised in a checklist (pages 75-79), with a note on how each had been handled.

It was recognised by the stakeholders that the industry would not be able to fully integrate their comments into this report for two reasons:

The limited time available.

The UNEP stakeholder consultation took place on 3 October 2001. The chemical industry had two months in which to revise the report, before re-submitting it to the stakeholders in early December. The stakeholders then had ten days to review the final draft, and make final comments. The industry then had only a few days to make final changes suggested by stakeholders before submitting it to their internal approval bodies in time to meet the publication deadline in January.

The report is not an end in itself.

It is part of a long-term process that neither begins or ends with the World Summit on Sustainable Development. The UNEP stakeholder consultation was not intended to resolve long-standing or emerging societal issues concerning the chemical industry and sustainable development. Rather, its focus was in helping the chemical industry to publicly report on its progress, gaps and challenges in implementing Agenda 21, and in moving towards sustainable development.

Neither the chemical industry nor the stakeholders saw it as an end in itself, but as part of a broader process needed to address the challenging issues facing the chemical industry and global society as a whole. All agreed that ongoing stakeholder consultation, at local, national and international levels, would continue to be needed beyond the world summit.

Stakeholder comment checklist

Comment	How it was handled
1) Structure – there was general consensus that the structure of the report, based on the guidelines developed by UNEP in consultation with stakeholders, was very good.	No action required.
2) Level of detail and examples were also widely appreciated.	No action required.
3) Acknowledgement of stakeholder views and recognition that stakeholder dialogue in the past has been weak and needs to be developed	Fully taken up. New text in 4.3.
4) Fairness in acknowledging the weaknesses of Responsible Care. SWOT analysis was particularly appreciated and some felt it should be moved to the front of the report (overview ?)	Proposal considered. Concluded SWOT was really an analysis tool and was better suited to its place in the body of the report rather than be part of the overview.
5) Focus on the specificity of developing countries/need to address developing countries specific needs.	Partly taken up. New section 4.14.
6) Need for chemical industry to see itself as part of society	Fully taken up. New section 4.3.
7) Not visionary enough. Big picture not addressed (service versus product vision, substitution, precautionary principle, consumers right to know)	Fully taken up. New section 4.1.
8) Not as self-critical as could have been – Missed opportunity of tackling gaps/weaknesses of chemical industry.	Taken up. New Part 4 with areas of improvement and specific goals.
9) Information on chemicals. More is needed but also need to address issues of:	
10) - access to information (such as need for central database of MSDS?).	Fully taken up. New text in 2.343 and in section 4.21.
11) - whether the information actually reaches end-users.	Partly taken up in sections 2.343 and 4.21.
12) - whether it actually respond to their needs (e.g. toxicity).	Partly taken up in 2.343, but no specific reference to toxicity.

Stakeholder comment checklist	
Comment	How it was handled
13) - MSDSs only based on current knowledge	Partly taken up in 2.343.
- MSDS for same chemical produced by different companies reflect different information.	Fully taken up in sections in 2.343 and 4.21.
- additional methods of dissemination of MSDS information should be sought	Fully taken up in section 4.21.
- Toxicity data often insufficient and must be made available aside from MSDS.	Partly taken up in 2.343.
- Examples sometimes replace context in the report.	No new text was developed to address that, due to limited time available.
14) Sometimes difficult to get sense of benchmarks and indicators such as 'improved dramatically'.	Not taken up, due to short time available.
15) What is the responsibility of the industry after having produced data (post HVP)? Will the industry take responsibility for the chemicals it puts on the market or continue leaving the burden of proof to society?	Partly taken up in the new section 4.11.
16) HPV and LRI initiatives should be described in more detail.	Partly taken up in 3.22 and the new section 4.11.
17) Lack of hard data and benchmarks to back-up statements on how much the industry has improved.	Not taken up, first of all due to the short time available and to the ongoing challenge we have in consolidating such information.
18) Baselines from which improvement is measured should be reported.	Partly taken up in new sections 4.11 and 4.21.
Product Stewardship:	
19) To what extent does the chemical industry take responsibility for its products?	Partly taken up in new sections 4.11 and 4.21.
20) What is the involvement of customers?	Partly taken up in new section 4.11.
21) Transparency on priority-setting. Why focus on high volume production chemicals, not on toxicity of chemicals?	Partly taken up in section 3.22.
22) Cradle-to-grave responsibility.	Fully taken up in new section 4.11.
23) Mechanisms to ensure mutual acceptance of data.	Not taken up.
24) Would chemical industry include data on HPV chemicals from other sources than their own?	Not taken up due to the limited time.
25) Balance must be shown between societal need for a particular chemical and risk.	Partly taken up in the reference to the substitution principle 4.11.

Stakeholder comment checklist	
Comment	How it was handled
Developing countries:	
26) Focus on developing countries got lost in the report.	Fully taken up in new sections 4.14 and 4.23.
27) Shift of chemical production to developing countries – what are chemical industry plans to avoid negative health, safety and environment effects?	Partly taken up in new section 4.14.
28) Key areas of progress confined to the developed world, what can industry do to narrow the gap between developed and developing countries?	Point partially taken up. New section on Capacity Building 4.23 relevant in this context.
29) No reference to exemplary EU policy developments on chemicals.	Not taken up, mainly since ICCA still believes that it is not appropriate to deal with this regional development in an international report.
Role of ICCA vis-à-vis :	
30) Companies (for example member compliance to RC, ICCA position on verification)?	Fully taken up in the chapeau of new section 4.2 and in new text on 'reporting' in section 4.22.
31) Non-members (such as national companies producing POPs)?	Taken up in new section 4.14.
32) Role of chemical industry versus role of government unclear (for example setting and enforcing emission/safety standards).	Partly taken up by explanatory text in Part 3.
33) Language sometimes ambiguous (for example safe use of chemicals/safe chemicals).	Not taken up due to the short time available.
34) Glossary of acronyms needed.	Included.
What is chemical industry position on:	
35) Phasing out 'nasty/dinosaur' products.	Fully taken up in new section 4.1.
36) Precautionary principle, PIC, POPs, GHS, other OECD initiatives?	Mostly taken up in new section 4.1, except for other OECD initiatives.
37) Legal compliance?	Not taken up due to the short time available.
38) Backlog of lack of data on 'old' chemicals	Partly taken up in new section 4.1.
39) Report should reflect facts rather than position.	Not taken up due to the short time available.
40) What can be done about companies still producing POPs?	Not taken up due to the short time available.

Stakeholder comment checklist	
Comment	How it was handled
41) Any vision on potential 'new' POP's?	Not taken up, since no official list of 'candidate' POPs has appeared yet.
42) Voluntary withdrawal of product found to be highly toxic?	Partly taken up in the reference to the substitution principle 4.11.
43) Continued ICCA/ICEM dialogue? (the group understood that ICCA can not take a position on this at this time).	Taken up in new section 4.13, however in an indirect way.
44) Implementation of the globally-harmonised system of hazard communication?	Mostly taken up in new section 4.1,
45) Reflect the fact that gap between developed and developing countries has worsened since 1992.	Not taken up due to the short time available.
46) Developed country standards to be adhered to on investment by developed country MNC?	Fully taken up in new section 4.14.
47) Too much emphasis on Responsible Care. Other problems/challenges overlooked (although mentioned in sections 2.42). Same for capacity building, product stewardship.	Fully taken up in completely new Part 4.
48) Need to context RC in broader society framework (e.g. need for legislative framework, role of government).	Partly taken up in new section 4.3.
49) Social aspects. No reference to social aspect of sustainable development. The group understood that ICCA does not have the mandate to speak upon behalf of its members on social issues, but social aspects need to be a part of Part 4 otherwise report lacks credibility as a sustainable development report. Examples of how national associations and individual companies (for example global compact companies) are beginning to address social aspects could be shown as part of the way forward.	Fully taken up in new section 4.13.
50) Extending Product Stewardship (cradle-to-grave; services instead of products, etc).	Mostly taken up in new section 4.11.
51) Overview of goals, timeframe for priorities, involvement of stakeholder (for example in a table).	Not taken up due to the short time available.
52) Verification of performance (participation of stakeholder).	Partly taken up in new section on 'Reporting' in section 4.22.
Developing countries:	
53) Need to focus more on specific needs of developing countries in Part 4. What will the chemical industry do as production shifts to developing world (in both developing countries like HSE issues, and in developed countries, like worker transition programmes, etc)?	Partly taken up in new section 4.14.

Stakeholder comment checklist

Comment	How it was handled
54) Capacity building (which areas, with which partners?).	Fully taken up in new section 4.23.
54) Widening gap between developed and developing countries – what is the chemical industry doing to reverse widening global disparities?	Point not really taken up. However, new section on Capacity Building 4.23 relevant in this context.
55) Remit of ICCA – need to be clear what is and isn't the role of ICCA, where it starts and where it ends.	Fully taken up in the Chapeau to new section 4.2.
56) Education – need to educate future chemical workers on sustainability.	Not taken up due to the short time available.
57) Provide examples and case studies in context, cite sources.	Text reviewed but time too short to take this point up.

Annexe 2: ICCA membership listing

ICCA members

- 1) The North American Council of Chemical Associations:
 - AMERICAN CHEMISTRY COUNCIL** – United States (*formerly CMA*)
 - ANIQ** – La Asociación Nacional de la Industria Química, Mexico
 - CCPA** – Canadian Chemical Producers' Association

- 2) South America: **CIQUIM** - O Conselho das Associações da Indústria Química do Mercosul:
 - ABIQUIM** – Associação Brasileira da Indústria Química, Brazil
 - CIQyP** – Cámara de la Industria Química y Petroquímica de Argentina
 - ASIQUR** – Asociación de la Industria Química de Uruguay
 - ASIQUM** – Asociación de la Industria Química de Chile

- 3) Japan:
 - JCIA** – Japan Chemical Industry Association

- 4) Australasia:
 - PACIA** – Plastics and Chemicals Industries Association, Australia
 - NZCIC** – New Zealand Chemical Industry Council

- 5) South Africa:
 - CAIA** - Chemical and Allied Industries Association

- 6) Europe:
 - CEFIC** – European Chemical Industry Council, representing:
 - 22 full member national trade associations (Austria (FCIO), Belgium (Fedichem), Czech Republic (SCHP), Denmark (PIBF), Finland (KT RY), France (UIC), Germany (VCI), Greece (HACI), Hungary (MAVESZ), Ireland (IPCMF), Italy (Federchimica), The Netherlands (VNCI), Norway (PIL), Poland (PPC ZP), Portugal (APEQ), Slovak Republik (ZCHFP), Slovenia (CRA), Spain (FEIQUE), Sweden (Kemikontoret) Switzerland (SGCI/SSIC), Turkey (TKSD), United Kingdom (CIA);
 - three associate trade associations (Bulgaria, Estonia, Lithuania)

Annexe 3: Glossary of terms

ABIQUIM	Associação Brasileira da Indústria Química
ACC	American Chemistry Council
AICM	Association of International Chemicals Manufacturers (Hong Kong)
ANIQ	Asociación Nacional de la Industria Química, Mexico
APELL	Awareness and Preparedness for Emergencies at the Local Level
ASEAN	Association of South East Asian Nations
ASIQR	Asociación de la Industria Química de Uruguay
BAVC	Bundesarbeitgeberverband Chemie (Association of German Chemical Industry Employers)
CAER	Community Awareness and Emergency Response
CAIA	Chemical and Allied Industries' Association (South Africa)
CAPs	Community Advisory Panels
CBD	Convention on Biological Diversity
CCC	Chlorine Chemistry Council (United States)
CCPA	Canadian Chemical Producers Association
CEEC	Central and eastern European countries
CEFIC	European Chemical Industry Council
CEO	Chief Executive Officer
CFC	Chloro Fluoro Carbon
CHEMTREC	Chemical Emergency Communication Centre
CHP	Combined heat and power
CIA	Chemical Industry Association (United Kingdom)
CICM	Chemical Industries Council of Malaysia
CICT	Chemical Industries Club Thailand
CIQyP	Cámara de la Industria Química y Petroquímica de Argentina
CO₂	Carbon dioxide
CSR	Corporate social responsibility
CWC	Chemical Weapons Convention
EBI	Energy and Biodiversity Initiative
EMAS	Environmental Management Assessment System
EU	European Union
FAO	Food and Agriculture Organisation
FDI	Foreign direct investment
FECC	Fédération Européenne du Commerce Chimique (European Association of Chemical Distributors)
FPA	Fertilizers and Pesticides Authority
FTI	Federation of Thai Industries
GDP	Gross Domestic Product
GHS	Globally Harmonised System
GPHEM	Good practice in health, environment and safety management
GRI	Global Reporting Initiative

HCFC	Hexha chloro fluoro carbon
HERA	Human and environmental risk assessment
HFC	Hexha fluoro carbon
HPV	High Production Volume
HSE	Health, safety, environment
ICC	International Chamber of Commerce
ICCA	International Council of Chemical Associations
ICCP	Inter-governmental Committee for the Cartagena Protocol
ICCTA	International Council of Chemical Trade Associations
ICEM	International Federation of Chemical, Energy, Mine and General Workers' Unions
ICETT	International Centre for Environmental Technology Centre
ICM	Integrated crop management
IFCS	Intergovernmental Forum on Chemical Safety
IG BCE	IG Bergbau, Chemie, Energie (German Trade Union of the Mining, Chemical and Energy Industries)
ILO	International labour organisation
IOMC	Inter-Organization Programme for the Sound Management of Chemicals
IPPIC	International Paint and Printing INK Council
ISAAA	International Service for the Acquisition of Agri-Biotech Applications
ISO	International Standards Organisation
IUCN	International Union for the Conservation of Nature (IUCN – The World Conservation Union)
IUF	International Union of Food and Agricultural Workers
JCIA	Japan Chemical Industry Association
JRCC	Japanese Responsible Care Council
LACPA	Latin American Crop Protection Association
LRI	Long-Range Research Initiative
LTIR	Lost time injuries for million working hours
MNC	Multinational corporation
MSDS	Material safety data sheet
MSV	Management systems verification
NGO	Non governmental organisation
NOx	Nitrogen oxide
OECD	Organisation for Economic Co-operation and Development
PACIA	Plastics and Chemicals Industries Association (Australia)
PAHO	Pan-American Health Organisation
PIC	Prior informed consent
POP	Persistent organic pollutant
PRTR	Pollutant Release and Transfer Register
RC	Responsible Care
RCAP	Responsible Care Asia Pacific
RCLG	Responsible Care Leadership Group
RTC	Regional technology centres

R&D	Research and development
SAR	Special Administrative Region (Hong Kong)
SCIC	Singapore Chemical Industry Council
SDS	Safety Information Data Set
SHEQ	Safety, health, environment, quality
SIDS	Screening information data set
SIRIM	The Standards and Industrial Research Institute of Malaysia
SMEs	Small and medium-sized enterprises
Sox	Sulphur oxide
SQAS	Safety and quality assessment systems
SPIK	Chemical Industries Association of the Philippines
SRCC	SPIK Responsible Care Council
SUI	Safe Use Initiative
SUSTECH	Sustainable Technology Programme
SWOT	Strengths, weaknesses, opportunity, threats
UIC	Union des Industries Chimiques (France)
UICF	Union International des Chemins de Fer
UNEP	United Nations Environment Programme
USDA	United States Department of Agriculture
VCI	Verband der Chemischen Industrie (Germany)
VEEP	Voluntary Energy Efficiency Programme
WBCSD	World Business Council for Sustainable Development
WGCI	Working Group on the Chemical Industry
WHO	World Health Organization
WTO	World Trade Organisation

UNEP contribution to the World Summit on Sustainable Development

The mission of the United Nations Environment Programme (UNEP) is to provide leadership and encourage partnerships in caring for the environment by inspiring, informing, and enabling nations and peoples to improve their quality of life without compromising that of future generations. The UNEP Division of Technology, Industry and Economics (DTIE) contributes to the UNEP mission by encouraging decision-makers in government, business, and industry develop and adopt policies, strategies and practices that are cleaner and safer; make efficient use of natural resources, ensure adequate management of chemicals, incorporate environmental costs, and reduce pollution and risks for humans and the environment.

This report is part of a series facilitated by UNEP DTIE as a contribution to the World Summit on Sustainable Development. UNEP DTIE provided a report outline based on Agenda 21 to interested industrial sectors and co-ordinated a consultation process with relevant stakeholders. In turn, participating industry sectors committed themselves to producing an honest account of performance against sustainability goals.

The full set of reports is available from UNEP DTIE's web site (<http://www.uneptie.org/wssd/>), which gives further details on the process and the organisations that made it possible. The following is a list of related outputs from this process, all of which are available from UNEP both in electronic version and hardcopy:

- industry sectoral reports, including
 - accounting
 - advertising
 - aluminium
 - automotive
 - aviation
 - chemicals
 - coal
 - construction
 - consulting engineering
 - electricity
 - fertilizer
 - finance and insurance
 - food and drink
 - information and communications technology
 - iron and steel
 - oil and gas
 - railways
 - refrigeration
 - road transport
 - tourism
 - waste management
 - water management
- a compilation of executive summaries of the industry sectoral reports above;
- an overview report by UNEP DTIE;
- a CD-ROM including all of the above documents.

UNEP DTIE is also contributing the following additional products:

- a joint WBCSD/WRI/UNEP publication entitled *Tomorrow's Markets: Global Trends and Their Implications for Business*, presenting the imperative for sustainable business practices;
- a joint WB/UNEP report on innovative finance for sustainability, which highlights new and effective financial mechanisms to address pressing environmental, social and developmental issues;
- two extraordinary issues of UNEP DTIE's quarterly *Industry and Environment* review, addressing key regional industry issues and the broader sustainable development agenda.

More generally, UNEP will be contributing to the World Summit on Sustainable Development with various other products, including:

- the Global Environmental Outlook 3 (GEO 3), UNEP's third state of the environment assessment report;
- a special issue of UNEP's *Our Planet* magazine for World Environment Day, with a focus on the International Year of Mountains;
- the UNEP photobook *Focus on Your World*, with the best images from the Third International Photographic Competition on the Environment.

Sustainability profile of the Chemicals industry

• Achievements

- Responsible Care has spread from six countries in 1992 to 46 countries today, representing 85% of global chemical production.
- The chemical industry has contributed to achieving many of the Agenda 21 goals, particularly Chapter 19 dealing with the environmentally sound management of chemicals.
- Technological innovation and capacity building have contributed to continuous improvement in chemical safety, health and environmental protection.

• Unfinished business

- More understanding and information of chemicals and their potential effects is needed. Two recent voluntary initiatives, the Long-Range Research Initiative (LRI) and the High Production Volume programme (HPV), will help meet these needs in the future.
- Extending Responsible Care to all countries that manufacture chemicals (Russian Federation, China, Saudi Arabia, and some emerging European economies)
- Improve the quality of Responsible Care initiatives worldwide.

• Future challenges and possible commitments

- Build capacity in developing countries (in partnership with intergovernmental organisations, governments and societal actors).
- Participate in local, national and international stakeholder dialogue to build mutual understanding, trust and responsibility needed to achieve sustainable development goals.

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