Birth and development of product stewardship

László Rácz
Ret. Advisor
MOL Group SD&HSE
E-mail: liracz@gmail.com

Abstract

In 2008 MOL Group has introduced a product stewardship guidance formally requesting affiliates to apply the internationally accepted requirements.
The article focuses on the background of product stewardship, its birth and development. Lists the most important governmental and chemical industry's commitments in this field. Recalls the professional international associations' related guiding principles. Underlines that introduction of product stewardship is a result of the change to life-cycle thinking, of the change in the management system and of the suppliers' attitude shift.

Összefoglalás

A termékgondozás születése és fejlődése

A MOL-csoportban 2008-ban bevezetésre került útmutató formálisan is azt igényli a tagvállalatoktól, hogy alkalmazzák a nemzetközileg elfogadott termékgondozási követelményeket.
A közlemény a termékgondozás hátterére, születésére és fejlődésére összpontosít. Felsorolja a témában létező legfontosabb kormány- és vegyipari szintű elkötelezettségeket. Felidézi a nemzetközi rokon szakmai szervezetek vonatkozó útmutató elveit. Kihangsúlyozza, hogy a termékgondozás bevezetése az életciklus-gondolkodásra való átállásnak, a menedzsment rendszerek és a szállítók magatartás-változásának a következménye.

Introduction

Following a series of environmental disasters, product stewardship is an initiative of the North-American chemical industry born in the middle of the '80s; it is regarded as Responsible Care® applied to products. Its synonym, the Extended Product Responsibility (EPR) emerged in the Scandinavian countries in the late '80s as they were facing severe landfill shortage. Their appearance is aimed at addressing public concerns about the manufacture, distribution, use and waste handling of chemicals and at achieving improvements in environmental, health and safety performance of products beyond levels required by legislation. Their introduction is a result of the change to the life-cycle thinking, furthermore, of the management systems' and suppliers' attitude's change.

The 2002 Johannesburg World Summit on sustainable development gave a new impetus to the process through adopting a goal that by 2020 chemicals should be used and produced in a way that leads to minimize their effects on health and the environment. This led to a number of governmental initiatives (Marrakech Programme, Strategic Approach to International Chemicals Management) and industry commitments. Originally, most of the actions were voluntary initiatives of the industry later manifested in sectorial or regional standards and/or in governmental legislation. Thus, the European Union's 'command and control' approach has resulted in strict regulations like REACH covering a large number of elements of product stewardship.


75
50

The article provides an insight into these developments with special regard to the product stewardship issue.

Chemical industry's environmental disasters – Responsible Care®

By the mid-1980s, a series of environmental disasters around the world had increased public fears about chemicals and their by-products. Disasters like Bhopal became synonymous with the chemical industry that appeared careless and arrogant. As an aggressive and politically effective activist movement has stated the chemical industry seemed more concerned about profit and secrecy than about its employees, neighbours and customers.

The initiative of the responsible care ('go beyond what is required') has been developed in North-America's chemical industry. The initial response in Canada was to direct its immediate attention to the technical aspects (of the Bhopal incident), while the Chemical Manufacturers Association of the USA (its new name from 2000 is American Chemical Council, ACC) focused more on public concerns.

Responsible care as an expression seems to be appeared first in July 1981 in a report of B. Boldt, Dow Canada vice-president and chair of the Canadian Chemical Producers' Association (CCPA) Technical Management Committee (TMC) („Responsible care in the Canadian Chemical Industry"). That time the paper concentrated on the Dow Chemical's principle of 'operating discipline', i.e. 'discipline yourself to operate the plants the way that they were designed to be operated'. It wasn't until 1983 that the responsible care guiding principles surfaced in any formal sense when at the request of the Canadian federal government a special petrochemical industry task force of CCPA has included the guiding principles of responsible care in the report to the government (sawing the industry as responsible in the way it manages its HSE obligations, in addition to its economic role). This policy statement has been signed by all CCPA members by April 1984.

In December 1984 'the unthinkable has happened' in Bhopal Union Carbide plant. In December, CCPA TMC has set up a special task force under DuPont leadership to develop a safety audit system both for the plant and for its interface with the community. The task force has produced a document titled 'Safety assessment process' (note, it is an assessment and not an audit, due to industrial confidentiality issues). Mr Jean Bélanger, the CCPA president urged to emphasize proactivity behind each of the 'guiding principle' elements, with particular emphasis on 'product stewardship'. They developed a community awareness and emergency response code similar to that implemented in the USA in 1985.

Thus, the chemical industry's voluntary initiative Responsible Care® was first conceived in Canada in 1985. Under Responsible Care® the chemical industry is committed to continuous improvement in all aspects of health, safety and environmental performance and to open communication on its activities and achievements. It achieves this objective by meeting and going beyond legislative and regulatory compliance, and by adopting cooperative and voluntary initiatives with government and other stakeholders.

Presently, the CCPA's member companies have to accept the Responsible care 'Ethic and six guiding principles' as well as 'the six codes of practice' (commitments). The Ethic is a moral code of conduct, it means doing the right thing, confirming to accepted standards of professional conduct, stating the following guiding principles:

„We are committed to do the right thing and be seen to do the right thing. We are guided towards environmental, societal, and economic sustainability by the following principles:

- We are stewards of our products and services during their life-cycles in order to protect people and the environment.
- We are accountable to the public, who have the right to understand the risks and benefits of what we do and to have their input heard.
- We respect all people.
- We work together to improve continuously.
- We work for effective laws and standards, and will meet or exceed them in letter and spirit.
- We inspire others to commit themselves to the principles of Responsible Care."

The CCPA's codes govern the way a member company operates within its community, and

contain over 150 requirements that control each step in a chemical's life-cycle. Compliance is independently monitored and verified. The six codes of practice are the following:

- Community awareness and emergency response (CAER) code
- Research and development code
- Manufacturing code
- Transportation code
- Distribution code
- Hazardous waste management code [1].

Additionally, in 2001 the ACC adopted the responsible care security code, an aggressive plan to further enhance security of facilities, communities and products. The code addresses facility, cyber and transportation security and requires companies to conduct comprehensive security vulnerability assessments (SVAs) of their facilities, implement security enhancements, and obtain independent verification that those enhancements have been made. The code also requires companies to create security management systems, which are documented to provide quality control and assurances. Participation in responsible care (thus measuring and publicly reporting performance, implementing the security code under a strict timeline, applying the modern responsible care management system and obtaining independent certification that a management system is in place and functions according to professional standards) is mandatory for ACC members, all of which made CEO-level commitments [2].

In 2002, the ACC adopted a new management system approach for the implementing responsible care in the USA, incl. mandatory independent third-party verification [2].

Even now, the failure to follow procedures, a moment of distraction would lead to tragic consequences. In April 2004, US Public Interest Research Group (PIRG) issued a report that documented through statistics the failure of ACC's responsible care voluntary initiative („Irresponsible care: the failure of the chemical industry to protect the public from chemical incidents"). They underlined that big companies (BP, Dow and DuPont) had the most accidents at their facilities in 1990 and they were responsible for nearly one third (32.7%) of all the accidents at ACC member facilities in the period of 1990 to 2003. As they stated the voluntary precautions of 'Responsible Care' are not enough to protect Americans from accidental chemical releases or the possibility of terrorist attacks. Instead, all chemical facilities should be required to meet mandatory federal standards for security. Most importantly, new federal standards must focus on reducing or eliminating the possibility of accidents and attacks through the use of safer chemicals and processes [3].

Now, the International Council of Chemical Association (ICCA) (with the membership of HU and SK) acts as the guardian of responsible care and manages it at the global level.

Since 1988, USA and other chemical companies and associations joined the initiative and it become a unique 'ethic' and commitment for the safe and environmentally sound management of chemicals in more than 50 countries (incl. HU and SK) around the world. Each national association is responsible for developing and running its own national programme with its member companies, and for overseeing implementation of responsible care by those companies. Some associations require all member companies to sign on to responsible care, others do not. There are further variations between the national responsible care programmes in order to suit national legislation, work practices and cultural situations, for example.

Johannesburg World Summit on Sustainable Development, 2002 – minimize HSE-effects of chemicals by 2020

An Intergovernmental Forum on Chemicals Safety (IFCS) has been set up after the 1992 Earth Summit (Rio de Janeiro) to take forward recommendations in Chapter 19 of Agenda 21 on sound chemical management. One of its recommendations was to relaunch a strategic approach with a goal of governments and others to achieve the safe use of chemicals. The September 2002 World Summit on Sustainable Development called for the development of „a 10-year framework of programmes in support of regional and national initiatives to accelerate the shift towards sustainable consumption and production". Thus, countries adopted a goal that by 2020 chemicals will be used and produced in a

way that lead to minimization of significant effects of human health and the environment based on sound risk assessment and risk management, following the precautionary approach.

As a consequence, two governmental initiatives were developed in parallel by UNEP (United Nations Environmental Programme): the Marrakech Process and the Strategic Approach to International Chemical Management (SAICM). In addition to that, the chemical industry made public commitments and introduced programmes to enhance chemical safety throughout the value chain: these are the responsible care global charter, the global product strategy, the long-range research initiative, the high production volume chemicals programme and the SusChem.

GOVERNMENTAL INITIATIVES: THE MARRAKECH PROCESS

The Marrakech Process was launched in Marrakech (Marocco), in June 2003, with a global aim at supporting regional and national initiatives to promote the shift towards Sustainable Consumption and Production (SCP) patterns. The Marrakech process calls for a plan of developing the 10-Year Framework of programmes on sustainable Consumption and Production (10YFCP).

In the EU the Marrakech process led to a renewed European Sustainable Development Strategy and to the development of an EU Sustainable Consumption and Production (SCP) action plan.

The aims of the EU Sustainable Consumption and Production (SCP) action plan are:

- Improving the way we produce
- Improving the design of products available on the market
- Improving the way we consume.

SCP aims to „promote sustainable consumption and production by addressing social and economic development within the carrying capacity of ecosystems and decoupling economic growth from environmental degradation". The two building blocks of the SCP action plan are the Integrated Product Policy (IPP) and Green Public Procurement (GPP).

Integrated product policy (IPP) might be better termed 'environmental product policy'. It is an attempt by the European Commission to create conditions in which environment-friendly products, or those with a reduced impact on the environment, will gain widespread acceptance among the European Union's member states and consumers.

The IPP, when it emerges, will have a dual role. On the one hand it will provide a framework in which member states, local authorities, businesses and non-governmental organizations can adopt green product policies. On the other, it will lead to specific EU-wide policy initiatives designed to foster green consumerism. The Commission's IPP Communication has been adopted in June 2003 [4].

GPP means that 'public purchasers take account of environmental factors when buying products and services'. In July 2008 the Commission presented a proposal to set ambitious targets for green public procurement linked to common green procurement criteria. Main actions in the frame of GPP:

- Determination of the extent of greener public procurement in the EU (a report has been published in 2003)
- Encouragement of the Member States to develop by the end of 2006 publicly available action plans for greening their public procurement (national action plans)
- Elaboration of information measures for public authorities (practical handbook for public authorities, product group database, GPP website).

In the European Union, the Marrakech process initiated the following key programmes and initiatives: thematic strategy on sustainable use of natural resources, green public procurement, integrated product policy, environmental technology action plan, eco-management and audit scheme and eco-label scheme.

GOVERNMENTAL INITIATIVES: THE STRATEGIC APPROACH TO INTERNATIONAL CHEMICAL MANAGEMENT (SAICM)

SAICM is a non-binding agreement launched in 2003 and adopted by more than 100 countries in the world. It is aimed to achieve the sound management of chemicals throughout their life-cycle so that, by 2020, chemicals are used and produced in ways that lead to the minimization of significant adverse effects on human health and the environment. The objective is to be achieved, among other ways, through the implementation of activities set out in the global plan of actions

with the following elements: risk reduction, knowledge and information, governance, capacity-building and technical cooperation, and elimination of illegal international traffic [5]. Today, IFCS contributes to the implementation of SAICM.

The European Union's main historical contributions to SAICM, though not necessarily designed as such, are REACH, GHS and three conventions (Basel, Rotterdam and Stockholm). Additionally, it is worth mentioning that the OECD guidance on safety performance indicators (SPI), issued in 2003 for industry, public authorities and communities for developing SPI programmes related to chemical accident prevention, preparedness and response contains product stewardship indicators (a checklist) to help ensure the safe management of hazardous substances throughout their life-cycle [6].

CHEMICAL INDUSTRY COMMITMENTS – THE RESPONSIBLE CARE® GLOBAL CHARTER AND THE GLOBAL PRODUCT STRATEGY

After the 2002 World Summit on Sustainable Development following an update and revitalizing, in February 2006, the ICCA launched the Responsible Care® Global Charter and additionally, the Global Product Strategy.

The Responsible Care® Global Charter creates a common global vision for Responsible Care and offers the opportunity to achieve greater harmonization and consistency among the national programmes currently implemented. The Responsible Care® Global Charter goes beyond the original elements of the 1985 responsible care guidance, extends the process of continuous improvement beyond chemicals manufacturing to other activities, especially those associated with the safe use and handling of products along the value chain. It contains the following nine key elements:

1. Adopt global responsible care core principles (continuously improve; use resources efficiently; report openly; listen, engage and work with people; cooperate with governments and organizations; provide help and advice).
2. Implement fundamental features of national responsible care programmes (establish and implement guiding principles; adopt a title and logo; implement management practices, develop a set of performance indicators; communicate with interested parties; share best practices; encourage others to commit to responsible care; introduce and apply systematic approach to verify).
3. Commit to advancing sustainable development.
4. Continuously improve and report performance (periodically assess; commit to providing technical help; adopt a management systems approach to implement responsible care commitments; utilize clean and safe technologies; go beyond self-assessment of the implementation of responsible care).
5. *Enhance the management of chemical products worldwide – product stewardship (re-commit to full implementation of responsible care product stewardship commitments; improve product stewardship performance and increase public awareness; encourage and sustain support for education, research and testing approaches; implement enhanced product stewardship commitments and periodically assess practices).*
6. Champion and facilitate the extension of responsible care along the chemical industry's value chain.
7. Actively support national and global responsible care governance processes.
8. Address stakeholder expectations about chemical industry activities and products.
9. Provide appropriate resources to effectively implement responsible care [7].

The ICCA Global Product Strategy (GPS) incorporates two key elements of the *Responsible Care® Global Charter*. It is designed to improve the global chemical industry's product stewardship performance by recommending measures to be taken by the companies, working together with their chemical associations, and in cooperation with activities of other companies and associations along the chemical value chain.

Its key components are:

1. Develop global guidelines for product stewardship.
2. Develop a product stewardship management system approach.
3. Define a tiered process for completing risk characterizations and risk management recommendations for chemicals in commerce.
4. Improve product stewardship cooperation with industry groups and companies and address product challenges throughout the chemicals value chain.

5. Develop partnerships with inter-governmental organizations and other interested stakeholders.
6. Make risk characterization and relevant product stewardship information available to the public.
7. Participate in scientific inquiry to address new and emerging health and environmental concerns.
8. Develop a process to communicate internally and externally.
9. Develop global advocacy principles to promote consistency of chemical regulatory systems across geographies [7].

ICCA developed comprehensive product stewardship guidelines for the industry and downstream users [8].

CHEMICAL INDUSTRY COMMITMENTS – LONG-RANGE RESEARCH INITIATIVE (LRI)

LRI has been launched in 1999 by ACC with the goals:

1. Increase the knowledge of the potential impacts that chemicals may have on the health of humans, wild-life and the environment;
2. Ensure informed decision-making; and
3. Improve public confidence with decisions based on a scientific understanding of risk.

This is done through the sponsoring of independent, high-quality research on the interaction between chemicals, health and the environment. Results are published and shared freely with the public, regulators, industry, and academic and government community. The renewed research programme focuses on high priority topics such as human bio-monitoring, endocrine disruption, persistent, bio-accumulative and toxic substances (PBTs), the development of intelligent testing strategies as alternatives for animal testing, and the acceptance of new products and technologies.

The conduct of the LRI is governed by the following principles: scientific excellence, open process, results and action, fair and unbiased conduct and chemical industry relevance.

LRI has been also adopted by CEFIC and JCIA (Japan Chemical Industry Association). ACC, CEFIC and JCIA with independent scientists undertook a State of the Science (STOTS) study related to the potential impact of chemicals on health and the environment. The first STOTSs were published in 1998 and some were reviewed later (in 2001).

CHEMICAL INDUSTRY COMMITMENTS – HIGH PRODUCTION VOLUME (HPV) CHEMICALS PROGRAMME

In 1998, the ICCA established a goal to deliver to the OECD initially by 2005 completed information data sets (named Screening Information Data Sets, SIDSs) for 1 000 global High Production Volume (HPV) chemicals, representing more than 90% of global chemicals production. Under the US extended HPV programme companies will provide by 2010 use and exposure information on all US HPV chemicals, as well as screening-level hazard information. Under the Japanese Challenge Programme, in a partnership between industry and government, companies will provide hazard data and available exposure information on HPV chemicals which are not addressed by other international or regional programmes. Under the European Union's REACH regulation, companies are required to provide hazard data, use and exposure information, conduct risk assessments and take risk mitigation measures for chemicals in commerce or imported into the European Union by deadlines depending on their hazard and volumes [7]. Now, the demands placed on company resources by REACH in the European Union have limited industry's ability to move more rapidly on its HPV commitments.

As of 30 June 2008 1,201 (43%) of the 2,782 HPV challenge core list chemicals has final data sets, incl. Screening Information data sheet Initial Assessment Report (SIAR): 760 chems in final US submissions plus 9 US chems and 273 ICCA chems and 159 OECD chems. Another 522 (19%) have test plan or posted SIARs only, 429 (15%) are exempted or removed, 356 (13%) have no test plan or SIAR and 274 (10%) are unsponsored orphans [9]. In December 2008 the head of the US Environmental Protection Agency (EPA) and Canadian and Mexican Environment Ministers signed a 'statement of intent' on North American chemicals cooperation, affirming the commitment made by the countries' heads earlier. The statement includes approval of a Framework for Regulatory Cooperation in the Area of Chemicals which says all three countries will strive to establish and update chemical inventories by 2020. Despite a decade of effort under the HPV Challenge, final data sets have yet to be submitted for nearly half of the chemicals sponsored, and remaining gaps have

been identified in at least a third of those data sets that have been submitted.

CHEMICAL INDUSTRY COMMITMENTS – SUSCHEM

The European Technology Platform for Sustainable Chemistry (ETP SusChem) initiated in 2004 brings together a wide spectrum of organizations and individuals looking to boost sustainable chemistry, research, development and innovation in Europe. Three technology sections coordinate activities in the defined key technology areas: industrial biotechnology, materials technology and reaction and process design.

The SusChem's Strategic Research Action Plan (SRA) focuses on three projects. The Smart Energy House, SHE project wants to demonstrate the individual achievements in energy conservation in a real house with intelligent energy supply. The Integrated Biorefinery project aims at producing chemicals and energy from biofeedstock through biological processes. The F³ Factory (Faster and more Flexible Future production) project intends to produce chemicals and intermediates in processes with minimal environmental impact and applicable to fast changes in the production slate.

General waste handling shortages – Extended Product Responsibility

The major impetus for Extended Product Responsibility (EPR) came from northern European countries in the late 1980s and early 1990s, as they were facing severe landfill shortage. As a result, EPR is generally applied to post-consumer wastes which place increasing physical and financial demands on municipal waste management.

According to an OECD 2001 definition, EPR is an environmental policy approach in which a producer's responsibility, physical and/or financial, for a product is extended to the post-consumer stage of a product life-cycle. Thus, EPR is generally described as a pollution prevention policy that focuses on product systems rather than product facilities. Its goals are cleaner production and waste prevention. The most efficient and effective point at which to reduce waste and encourage reuse, reduction and recycling, is at the product development stage. It is at that point in the product's life-cycle that decisions can be made to minimize the environmental impact of the product. This would be one reason *why EPR is used as a synonym of product stewardship by the US Environmental Protection Agency* (the other one is the EPA's product stewardship programme has primarily focuses on end-of-life considerations as a means of driving environmentally conscious design and resource conservation) [10]. *Notwithstanding ICCA's global product stewardship guideline, EPR covers not only chemicals, but full range of products.*

The first EPR programme, the German Packaging Ordinance in 1991 shifted responsibility for packaging waste to industry. Later, progressive expansion of EPR took place from packaging to other products (batteries, electronics, refrigerants, tires, appliances, end of life vehicles, paint). OECD has started work on EPR in 1995 and its guidance manual has been published in 2001. The EU electronics directive (WEEE, RoHS) issued in January 2003 mandates EPR, and sets toxic substance limits (its implementation started in 2006). EPR is spreading through Canada, Europe, Asia, the USA and Americas.

EPR is based on 'the polluter pays' principle. EPR internalizes the external (pollution, disposal etc.) costs by shifting responsibility for product and packaging waste from government and taxpayers to producers and consumers. Some EPR instruments are in use today, e.g. deposit refund systems (return the product or package), targeted product taxes (for influencing the choice of materials used), advanced disposal fees (also for influencing the choice of materials used and for fund-generation) [11].

Extended producer responsibility is listed among the general requirements of directive 2008/98/EC of the European Parliament and of the Council of 19 November 2008 on waste. According to the directive, in order to strengthen the re-use and the prevention, recycling and other recovery of waste, member states may take legislative or non-legislative measures to ensure that any person who professionally develops, manufactures, processes, treats, sells or imports products has extended producer responsibility. Such measures may include an acceptance of returned products and of the waste that remains after those products have been used, as well as

subsequent management of the waste and financial responsibility for such activity. The measures may include the obligation to provide publicly available information as to the extent to which the product is re-usable and recyclable. Member states may take appropriate measures to encourage the design of products in order to reduce their environmental impacts and the generation of waste in the course of the production and subsequent use of products and in order to ensure the recovery and disposal of products [12].

Responsible care and product stewardship in selected associations

The *European Chemical Industry Council* (CEFIC) has set up fundamental features and Core guiding principles of responsible care. Each national chemical association establishes and manages its own national responsible care programme based on a set of eight common fundamental features, one of which requires the association to establish and implement a set of guiding principles for member companies to sign. CEFIC 'vision' for responsible care performance contains the following:

- No harm to employees, contractors and the general public from the operators.
- No adverse environmental or public impact resulting from the operation of the plants or in the distribution of the products.
- Continuous improvement in the efficient use of the planet's resources.
- Provision of products meeting customer requirements that can be manufactured, transported, used and disposed safely.
- The chemical industry is accepted as an open, honest and credible industry by all its stakeholders and the general public.
- General and public recognition that the chemical industry is a responsible industry playing an important role in bringing a wide range of benefits to society.

Accurate reporting of performance is at the heart of responsible care. Each chemical company that implements responsible care is expected to collect and report data for a core set of environmental, health and safety performance measures. Each national association is expected to collect, collate and report these data from its members in each country. The data are collated and reported publicly on behalf of Europe's chemical industry at CEFIC level, and at international level by the ICCA.

CEFIC updated its Responsible Care HSE Reporting Guidelines in 2006 to ensure that the pan-European indicators of performance continue to be relevant to issues perceived as important by governmental bodies, legislators, pressure groups and other external stakeholders.

The American Petroleum Institute (API) (USA) supports the oil and gas industry in its commitment to a shared responsibility for the industry's HSE performance. An integral part of API's product stewardship programme is API sponsored research with elements of children's health initiative (establishment of databases relevant to children), HPV chemical challenge programme (see above) and strategic health research (of hydrogen sulphide and benzene) [13].

The worldwide *Oil and Gas Producers Association's (OGP)* and the *European Petroleum Industry Association's* (EUROPIA) ordinary members (and among them MOL) shall sign the following environmental guiding principles [14-15]. This text below recalls the main elements of the responsible care guiding principles.

"ENVIRONMENTAL GUIDING PRINCIPLES

Preamble

… EUROPIA, and … OGP, with interests in Europe, fully recognise the need to respond to the concerns of the community as a whole about living and working in a safe and healthy environment. They have dedicated continuous efforts to minimize risks to the environment and to supply high quality products and services safely, economically and efficiently. … They consider therefore that they must define and carry out voluntary measures, precautions, responsible care programmes or whatever actions they may deem necessary to protect the environment insofar as these are reasonably practicable. Within this framework, they pledge themselves to manage their businesses according to the following Guiding Principles:

1. Make the principles set forth herein a high priority in the definition and implementation of corporate strategies.
2. Adapt where necessary internal procedures, industry practices and other operating

guidelines towards the goal of protecting the environment and the health and safety of individuals.
3. Conduct operations and handle raw materials and products in a manner that protects the environment and the health and safety of employees and the public, while conserving natural resources and using energy efficiently.
4. Develop and maintain procedures to reduce the risk of spills or accidental emissions, maintain appropriate emergency response procedures in case of accidents.
5. Develop programmes to reduce overall emissions and waste generation.
6. Ensure that adequate waste management programmes are developed and carried out, which will allow the disposal of wastes as safely as is reasonably practicable.
7. Work with others to resolve problems arising out of the handling and disposal of hazardous substances from members' operations.
8. Provide advice to customers, contractors or others on the safe use, handling, transportation and disposal of raw materials, products and wastes from members' operations.
9. Inform appropriate officials, employees, customers, and the public in a timely manner on significant industry-related safety, health and environmental hazards, and recommend protective measures.
10. Support research and development programmes to study the effects of the industry's activities on the environment, the health and safety of individuals and the prevention of the risks connected hereto.
11. Promote among employees an individual and collective sense of responsibility for the preservation of the environment and protection of health and safety of individuals.
12. Work and consult with authorities drafting laws, regulations or procedures to safeguard the community, workplace and environment.
13. Promote these principles and practices by sharing experiences and offering technical assistance to others who deal with similar raw materials, petroleum products and wastes."

The International Petroleum Industry Environmental Conservation Association (IPIECA) established in 1974 (following the establishment of the United Nations Environment Programme (UNEP)) is the single global association representing both the upstream and downstream oil and gas industry on key global environmental and social issues. Its vision and membership commitment contain elements of responsible care, like

- Developing, sharing and promoting sound practices and solutions
- Enhancing and communicating knowledge and understanding
- Engaging members and others in the industry
- Working in partnership with key stakeholders [16].

The *European Lubricating Grease Institute (ELGI)* (Amsterdam) established in 1989 in its Constitution has set up objectives

- to promote the understanding and to facilitate the exchange of information concerning manufacture and use, handling and selling lubricating grease between organizations and individuals;
- the promotion of research and development; and
- to co-operate with other organizations [17].

Old ethic	New ethic
Do the minimum the law requires	Do the right thing
Low profile	Be seen as doing the right thing
Limit production obligations	Life-cycle stewardship
Downplay public concerns	Seek and address public concerns
Risk information only if necessary	Public and employees' right to know all risks
Every company for itself	Mutual aid

Table 1. Ethic shift connected to the introduction of product stewardship [18]

Epiloque

Product stewardship is responsible care applied to products. Its introduction is a result of the change to life-cycle thinking, of the change in the management system and of the suppliers' attitude changing. The first two elements were already touched upon, the last element may need further clarification.

Attitude change can be described as an ethic shift with the following content [18] (see Table 1).

This new attitude is based on the two thousand years old golden rule: 'Do unto others as you would have them do unto you' [19]; and your care results in growth.

References

[1] http://www.ccpa.ca/ResponsibleCare/
[2] http://www.americanchemistry.com/
[3] http://uspirg.org/uspirg.asp?id2=12860&id3=USPIRG&
[4] http://www.bsdglobal.com/issues/ipp.asp
[5] http://www.chem.unep.ch/saicm/
[6] http://www2.oecd.org/safetyindicators/
[7] http://www.icca-chem.org/
[8] http://www.icca-chem.org/pdf/guidelines.pdf
[9] http://www.edf.org/documents/2734_WelcomeTracker.htm
[10] http://www.epa.gov/
[11] http://www.grrn.org/resources/
[12] Directive 2008/98/EC of the European Parliament and of the Council of 19 November 2008 on waste and repealing certain directives. OJ L 312, 22.11.2008, p. 3.
[13] http://www.api.org/ehs/health/prodstewardship/index.cfm
[14] http://www.ogp.org.uk;
[15] http://europia.be
[16] http://www.ipieca.org/
[17] http://www.elgi.org
[18] Jacques Busson: Product Stewardship. TAIEX presentation. Tatranska Lomnica 17 June 2003
[19] Matthew 7:12

Revised by Dr Gyula Kortvelyessy