

15. Solid waste for money and the environment, Douala, Cameroon

Introduction

Solid waste management has been identified as one of the major environmental concerns of the city of Douala. Inadequate collection and disposal of solid waste is affecting and changing the environment adversely in many ways. Plastic waste for example is carelessly buried into the soil which modifies soil texture by making it less porous, but more frequently burnt in the open air resulting in the release of persistent organic pollutants (POPs). Pollution of surface and underground sources of drinking water through leaching from abandoned or poorly disposed waste is very common. Uncollected solid waste also attracts insects and rodents—vectors of certain gastrointestinal and parasitic diseases or ends up being washed into the gutters, blocking them and provoking floods. The Cameroon environmental law 96/12 (5 August 1996) regulates the handling of waste and includes requirements for hazardous waste, recycling, treatment and disposal methods. It also has provisions to encourage the reuse of materials through recycling and for training and public awareness.

The Douala IV Urban Council area is seated in Bonaberi which is one of two big ports into the Douala metropolitan area. It is the location of the Douala seaport which facilitates the export of locally produced goods to the outside world and the import of goods into Cameroon and the Central African sub-region. Bonaberi also has an important industrial zone with an increasing number of facilities such as plastic factories, breweries and local cash-crop processing units. Most youth and women in Bonaberi have an annual income of less than 120,000 CFA (or about USD 250).

The problem

The low income communities (more than 75 per cent of the total population) in the Douala IV municipality live in areas poorly served by municipal refuse services. Uncontrolled disposal of the ever increasing amount of solid wastes in Douala poses health and environmental risks. The potential economic benefits of sorting and separating various kinds of plastic and glass waste are not fully realized.

The Douala City Council spends about 7 billion per year on the collection and transportation of municipal waste to dumpsites. It is estimated that non-hazardous glass waste, which includes broken window louvres, vehicle windows and bottles, is produced at a rate of 10 tons per day in the Douala IV council area. Plastic waste production, which includes wrapping materials, containers, drums and plastic buckets (but not tires), is estimated to be 20 tons a day. Biodegradable waste (which accounts for the largest fraction of waste) could be composted and made available for agriculture. This would help improve the fertility of the sandy soils in the Douala municipality. The diversion of these wastes would reduce the amount of waste to be disposed of, lowering costs and extending the lifespan of the landfill.

The approach

The non-governmental organization Environmental Defence and Consumer Interest Forum (EDCIF), is implementing the solid waste minimization and valorisation project with initial funding from the UNDP-GEF Small Grants Program. EDCIF is collaborating with the Douala IV Urban Council and other stakeholders, including women, youth and organized groups, are also involved. The project has the following components:

- *Sorting*
- *Transportation*
- *Temporary storage*
- *Sale or exchange with household consumables*
- *Recycling of plastic and glass collected from households, streets, bars and other enterprises*

Meetings with traditional authorities, quarter heads and heads of households were held to gain support for the initiative and to identify 20 collection points and a temporary storage (transition warehouse) in poorly-served and low income areas. Radio announcements, posters and brochures were used to raise awareness among public, waste collectors and quarter heads of the location of collection points including a warehouse. Recyclable plastic waste is separated and the organic matter collected for composting.

Outcome

Five neighborhoods (Ndoobo, Grand Hangar, Quatre Étages, Mambanda and Quartier Bilingue) which accounts for about 75 per cent of the communities that are poorly served by the municipal authority are involved in this initiative. The project is generating employment for youth and women in the targeted neighbourhoods and helping to increase recycling. It is expected to reduce the amount of waste that the municipality has to dispose of by 30 per cent.

An awareness raising campaign and the distribution of bags to separate waste into different types (plastics, organic waste and glass.) targeted at households, women, youth and six secondary schools is already curbing the uncontrolled dumping and burning of plastics. The waste is separated into various categories and quality and, then transported to recycling facilities and are transformed into new glass bottles and plastic containers for yoghurt and construction plastic pipes.

Sixty one waste collectors are being recruited, trained and equipped with protective gear. They will be involved in the sorting of recyclable materials (glass and plastics). Twelve tons of glass and six tons of plastics have already been recovered and sold to local companies for recycling. Other companies have also shown interest and outlined their requirements for the quality of the materials they can use. At the time of writing, the composting programme for biodegradable waste had not yet begun.

Impacts

The project has had a positive impact on the community. For example, enhanced awareness helped the Bonassama Market in Mambanda to win the competition for the cleanest neighbourhood in Douala. There is less litter in the targeted areas, for example on the grounds of the National Bilingual College. Environmental education has increased in 6 schools thanks to the project. As more and more schools become engaged with the project, more children will be sensitized to environmental issues. In turn, they can talk to or train their parents to foster change in the community as a whole.

A market has been found for the recovered materials. Revenues from the sales of waste to recycling companies are used to compensate waste collectors. Some of the revenues are also ploughed back into the project to help its sustainability. The project has provided jobs to 61 youths in the neighbourhood with the associated social benefits of employment.

Future challenges

Changing the behaviour of youth and women and obtaining stakeholder approval has been critical in ensuring the success of the waste minimisation and valorisation program. Behaviour change followed a six step model adopted by EDCIF:

1. Creating attention
2. Increasing understanding
3. Transforming the old attitude
4. Generating a statement of intent
5. Changing old behaviours
6. Maintaining new behaviour

The biggest challenge ahead is that residents are now aware that the waste has a value and this will make its collection for free difficult.

A presentation of the project during a workshop of municipal officials and civil society resulted in interest at the metropolitan level and in the other five local municipal councils of Douala in extending the project to other areas of the city. Discussions to achieve this are ongoing with the municipal government and donors. In addition to the composting, the inclusion of a biogas component is being explored.

The framework law of environmental management in Cameroon, especially in the context of the 2004 law of decentralisation which will be effective as of January 2010, needs to include and formalise recycling activities of the informal sector.

Encouraging the government and securing support for a policy on persistent organic pollutants in Cameroon is needed. This could include:

- *Development of guidelines for appropriate POPs national policy formulation.*
- *Procedures for developing and implementing supportive legislation.*
- *Institutional issues for POPs control and management.*
- *Planning tools and management guidelines to support the work of decision makers and environmental (waste) managers.*

Conclusion

The effective management of waste collection, storage, transport, treatment and disposal is a major concern not only to the industry producing such waste, but to the government due to the potential impact of waste on the environment and public health. The solid waste minimization and valorisation project in Douala IV is an example of how to improve the collection of municipal wastes, recover useable materials, integrate the informal sector into the overall management of municipal wastes, and address the open burning of waste, an important source of unintentionally produced POPs in developing countries.

16. The Chemical Information Exchange Network

Introduction

Chapter 19 of Agenda 21 adopted at the United Nations Conference on Development and the Environment in Rio in 1992 identified the access to information on chemicals, including pesticides, as critical to capacity building for the sound management of chemicals and the achievement of sustainable development: Every person should have access to information about the environment, be able to participate in decision-making processes affecting the environment, and have access to justice, including redress and remedy. These three “access principles” outlined in Principle 10 of the Rio Declaration are a benchmark for equitable and environmentally sound decision-making.

The sound management of chemicals requires adequate information about the nature, effects, use and control of substances. This information exists in a variety of sources, but these are not always readily available to those who need it. Since 2000, UNEP Chemicals has implemented the Chemical Information Exchange Network (CIEN) project in about 50 countries worldwide and has provided training and electronic equipment to facilitate information access and exchange. In addition, UNEP Chemicals collaborated with the International Environmental Technology Centre (IETC) to introduce the use of Environmentally Sound Technology Information System (ESTIS) as a tool to build national electronic portals for access, exchange and dissemination of chemical information on the Web.

Background

OBJECTIVES

The CIEN project aimed to enhance the capabilities of countries to obtain and share the information needed for their national decision-making, in particular, the sound management of chemicals. It created a framework for access to, and exchange of, chemical information to support related national, regional and international activities. The CIEN project goals were as follows:

- *To eliminate barriers to information exchange.*
- *To facilitate access to technical information on chemicals that can be found on the Internet.*
- *To enhance communication among national and sub-regional stakeholders.*
- *To create synergies between national agencies involved in chemicals management.*
- *To strengthen national capacity for the environmentally sound management of chemicals and participation in international activities and agreements for the protection of human health and the environment.*

APPROACH

Since Internet access was not very widespread, Africa was selected as a priority region. The focal points of the Basel, Rotterdam and Stockholm Conventions and of the Intergovernmental Forum on Chemical Safety were contacted and a national CIEN focal point responsible for implementation of national activities was identified.

To promote national, regional and sub-regional networks, institutions that were identified as national centres were provided with resources (computers, Internet access, reference materials) to facilitate access and exchange on information. As part of this effort, the U.S. Environmental Protection Agency and UNEP developed a website where information about CIEN and links to project partners and information sources on chemicals could be found.

Regional events were also held to strengthen collaboration and create synergies among governments and other stakeholders among neighbouring countries in various regions—CEMAC, ECOWAS and SADC. These demonstrated the use of ESTIS as a tool to promote the networking and information exchange. The Centro de Gestión Tecnológica e Informática Industrial (CEGESTI) provided the mechanism for a regional approach in Central America.

Project activities

At the national level, the project activities included a stakeholder meeting, an Internet training workshop and the initiation of a chemical information exchange network. To avoid any duplication of effort and create and develop synergies, CIEN used existing activities developed by others institutions. This was, for example, the case of the United Nations Institute for Training and Research (UNITAR) National Profile.

STAKEHOLDER MEETING

To optimise the limited funds available to the project the active involvement of stakeholders was crucial. This approach uses the strengths of different partners (the haves and the have-nots) to create synergies. The core group consisted of the focal points of the chemical Multilateral Environmental Agreements (MEAs), such as Basel, Rotterdam and Stockholm Conventions. In addition other organizations including government agencies, environmental NGOs and others who could provide their time and expertise to build the knowledge base were invited to take part.

The representatives from the corresponding institutions were invited to review the existing national information infrastructure and identify gaps and needs. Specifically, participants were encouraged to:

- *Discuss needs and priorities in terms of information exchange.*
- *Suggest ideas on how to meet the identified chemical information needs as well as how to implement networking plans.*
- *Discuss a national chemical information charter, identify other national partners and agree on national needs.*
- *Provide input to the electronic-readiness assessment of each of the key partner chemical management institutions, to ensure the best use of the electronic equipment provided by this project.*
- *Discuss project implementation and follow-up.*

The main expectation from these meetings was to develop an agreement or Information Charter to guide the implementation of CIEN at the national level.³⁶

36 <http://www.sisei.net/nationaux/benin/histo-projet/Charte-Informationnelle.pdf>

CIEN TRAINING COURSE

The CIEN course provided an overview of the challenges to the sound management of chemicals in developing countries, and skills and knowledge in using the Internet to:

- *Access technical and legal information on chemicals for their sound management.*
- *Access specialized data bases.*
- *Access information sources from specialized institutions.*

The workshop also included discussions on a multi-stakeholder approach to resolving issues of chemical management, harmonization of data, information dissemination and the role of the Internet as a tool for improving the environmentally sound management of chemicals. This course provided skill to access information that facilitates decision-making and increased awareness of the potential of networking among various stakeholders to improve the quality and quantity of information available and to facilitate joint problem solving (*see box IV.16.1*).

Box IV.16.1. Participant Comments

Fantastic, rewarding, fulfilling, exhilarating, inspiring. To see a group of professionals, who last year did not know what we meant by "double click", now doing capacity building and creating a periodic newsletter, selecting outreach issues and finding the resources on the Internet?

Amazing. These developing countries need hand holding. These things would not have been accomplished without our efforts or without our follow up visit to Ghana. An annual visit and/or mentorship program is now needed. Each country would benefit from regular emails,

I continue to provide articles and emails to the countries I have trained. OIA should encourage and follow up with the other CIEN trainers to do the same.

The return from just a little moral support is staggering! There is so much to do in these countries. The environmental concerns can be overwhelming. But a positive attitude, an educated U.S. Contact, a good teacher/mentor and some encouragement goes a long way! When can I go again?!

ESTABLISHMENT OF A CHEMICAL INFORMATION EXCHANGE NETWORK

ESTIS is a Web-based tool that facilitates the creation of websites and databases and the exchange of information among partners. It promotes the flow of information and collaboration between various websites at the national, regional and international levels. ESTIS provides users with a simple on-line website builder designed for non-technical people. It enables users to develop their own websites in their own language without the need of specialized web designing skills. It also allows the website owner to link their site to others that share the same linguistic or regional grouping and allows for a single search portal across a defined group of sites. An advantage of ESTIS is that since the tools were developed by UNEP, the service is free to the end-user. ESTIS is a system that can be used and promoted worldwide to improve capacity in exchanging chemical information. The use of ESTIS was introduced at regional workshops. Additional training at the national level was also provided as a follow-up activity. For more information see the CIEN website.³⁷

³⁷ <http://www.estis.net/communities/cien/>

Table IV.16.1. Status of CIEN implementation worldwide (August 2009)

CIEN : A network of countries worldwide ...



Region	Countries	Stakeholders involved	Officials trained/ Webmasters
Southern African Development Community (12)	Angola, DRC, Lesotho, Malawi, Mauritius, Mozambique, Namibia, Seychelles, United Rep. of Tanzania, Zambia, Zimbabwe (and) Madagascar	360	195/17
Central Africa Economic and Monetary Community	Cameroon , Chad, Sao Tome, Congo	130	91/8
Economic Community of West Africa(14)	Benin, Burkina Faso, Cape Verde, Cote d 'Ivoire, The Gambia, Ghana, Guinea, Bissau Guinea, Mali, Niger, Nigeria, Senegal, Togo (and) Mauritania	420	280/54
East Africa countries	Djibouti, Kenya, Rwanda	103	60/21
Other African countries (2)	Morocco and Rwanda	70	50/20
Asian countries	Cambodia, Philippines	66	50/18
Central America(8)	Belize, Costa Rica, El Salvador, Guatemala, Honduras, Mexico, Nicaragua, Panama	231	120
Total	46 countries	1380	846/138

What was achieved

The project has been implemented in almost 50 countries involving a total of 1,380 officials through national stakeholder meetings. Of these officials 846 received training on access to information on the Internet, and 138 webmasters were trained on the use of ESTIS. More than 100 computers were provided to countries as part of the project (*see table IV.16.1*).

In many countries, the stakeholder meeting fostered the development of an “information charter”, which defines how information is exchanged, disseminated and managed, and what the responsibilities of various stakeholders are. This provided an initial road-map to strengthen the institutional infrastructure and, in certain countries, it led to formal interdepartmental arrangements or agreements on information exchange.

CIEN offers many opportunities for integration, adaptation and/or interaction, for example:

- *CIEN is being used to build the capacity of the POPS Monitoring Regional Organization Group of the Stockholm Convention to collect and process data (<http://jp1.estis.net/sites/rog/>).*
- *CIEN provides a platform where national stakeholders can exchange information on harmful substances and hazardous wastes: <http://jp1.estis.net/sites/kenya>.*

- *CIEN provides a electronic platform where people in charge of the national environmental policy can exchange ideas and views on the sound management of Chemicals: <http://www.reic-cien.com/dokeos/>.*
- *CIEN developed a e-learning platform that can serve various communities and projects, including UNEP programme: <http://www.reic-cien.com/dokeos/>.*

National CIEN activities can facilitate the establishment of national information system for reporting as requested under various MEAs such as the clearing house of the Stockholm Convention. The report “Clearing-house mechanism for information exchange on persistent organic pollutants” (UNEP/POPS/COP.4-19) highlights the role of CIEN as a tool which can be used to exchange information under the Stockholm Convention.

Lessons learned and conclusion

Through facilitated discussions, the CIEN project highlighted that the sound management of chemicals needs collaboration among various government agencies and other stakeholders. It was successful in increasing the awareness of the Internet as a tool for obtaining information and provided an opportunity for selected individuals to become more proficient in accessing chemical information. Through the provision of equipment and Internet subscriptions it also made this information more readily accessible in countries that lacked such facilities. Feedback and follow-up communication from the participants has shown repeatedly that this type of training is essential to allow developing countries and countries with economies in transition to participate in the international activities related to hazardous substances and hazardous wastes and thus, the sound management of chemicals.

The project showed that a significant impact can be achieved with a limited investment of resources, time and staffing. With limited funding, the CIEN project was implemented in nearly 50 countries across Africa and Central America. The project is currently underway in Asia. It involved more than 1,500 senior level officials and key cabinet members. Under the project, more than 120 institutions have now been equipped and connected to the Internet. In addition, 20 countries were then trained on how to use ESTIS for developing their own webpage to serve as a portal to national information, to create links to key sources of information on chemicals and to facilitate networking.

It is also important to note that decisions which incorporate local and public inputs generally result in outcomes that are more effective and environmentally sustainable than those that do not. Public pressure will often encourage action at the governmental level. In addition to involving government institutions, the CIEN program made efforts to involve NGOs. A network like CIEN provides a mechanism for greater openness and participation. Empowering governments to use their own tools and structures to create their own network will help ensure follow-up and sustainability of such the efforts.

CIEN was a cost-effective project. It had many applications and potential for future expansion. It demonstrated how improved access can easily help countries close the information gap and facilitate the promotion of sustainable development, including the sound management of chemicals. With the experience gained through CIEN, countries are now in a better position to establish their own information system and to meet obligations under MEAs and, therefore, be effective actors in the implementation of the Strategic Approach to International Chemicals Management (SAICM).

17. The Responsible Care Global Charter and the Global Product Strategy in action: Sound chemicals management

Executive summary

The Responsible Care Global Charter (RCGC) and the Global Product Strategy (GPS) are programmes developed by the International Council of Chemical Associations (ICCA) as part of its commitment to the Strategic Approach to International Chemicals Management (SAICM). The objective of the programmes is to enhance stewardship best practices within the industry and throughout the product chain. The Responsible Care Global Charter reflects a commitment by 53 industry associations. About 80 per cent of the world's 110 top chemical producers and a total of 155 companies are subscribed to the Charter. ICCA recently extended the Responsible Care network to include Russia and other countries in Eastern Europe, established a pilot project with Chinese national companies, and is actively exploring an initiative within the Gulf region.

The aim of the Global Product Strategy (GPS) is to promote the safe use of chemical products working within the context of Responsible Care to enhance product stewardship throughout the value chain. This agreement is a genuine breakthrough and a giant step forward for global chemical safety. GPS is intended to reduce existing differences in the safe handling of chemical substances between developing, emerging and industrialized countries and to ensure that chemicals are not handled incorrectly due to a lack of information or incorrect assessments, thus endangering people and the environment. The initiative thereby meets all the requirements of effective, efficient, modern chemicals management.

ICCA believes that the global chemical industry is part of the solution for an improved environmental performance and a more sustainable society. ICCA is convinced that a balanced combination of regulations and voluntary industry programs is the best way to achieve the safe management of chemicals.

Challenges

In today's world of globalised product flows, problems related to product safety are no longer restricted to their country of origin. Our world is drawing closer together, not just economically but also on political and environmental issues. The chemical industry has expanded and intensified its voluntary programs for demonstrating responsible handling and marketing of all chemical substances. Taking the concerns of the public seriously and addressing them appropriately is a prerequisite for long-term success and our license to operate.

ICCA's contribution to sound chemicals management

In addition to its existing efforts to promote the sound management of chemicals worldwide (including compliance with national and global rules), ICCA publicly launched two voluntary initiatives (see *figure IV.17.1*) as their contribution to the Strategic Approach to International Chemicals Management

(SAICM) at the first International Conference on Chemicals Management (ICCM-1) in February of 2006:

- *The Responsible Care® Global Charter, a renewed commitment to expand the implementation of Responsible Care globally.*
- *A Global Product Strategy, which committed the industry to higher levels of transparency, a sustained commitment to its Long-range Research Initiative (LRI) and global implementation of product stewardship.*

Figure IV.17.1. Responsible Care Global Charter and Global Product Strategy



RESPONSIBLE CARE® GLOBAL CHARTER

The Responsible Care Global Charter (RCGC) is the industry’s overarching initiative to go beyond existing programs and address growing public dialogue over sustainable development, health issues relating to the use of chemical products, and the need for greater industry transparency. The RCGC builds on the original Responsible Care program under which companies, through their national chemical industry associations, worked to continuously improve their environmental, health and safety performance. Presidents of 53 associations and Chief Executive Officers from over 150 companies have signed a letter of commitment to the RCGC. Historical accomplishments under Responsible Care have been widely lauded and the launch of the RCGC was described by former UN Secretary-General Kofi Annan as an “inspiring model of self-regulation that other industries should consider following.”

GLOBAL PRODUCT STRATEGY

The other major initiative launched in 2006 at ICCM-1 by ICCA was the Global Product Strategy (GPS). GPS is designed to advance product stewardship performance, measure and improve product safety performance, and improve communication and transparency about chemical hazards, risks and appropriate safe handling to the public and along the value chain. As part of its commitment to GPS, ICCA established global guidelines for product stewardship and a process for conducting chemical safety assessments that leads to specific safe management recommendations rather than broad bans and restrictions. This approach allows for the benefits of chemicals while minimizing the potential for adverse impacts to human health or the environment.

Under GPS, ICCA has committed to:

- *Establish a base set of hazard and exposure information adequate to conduct safety assessments for chemicals in commerce.*
- *Share relevant product safety information with co-producers, governments and the public;*
- *Work across the chain of commerce so that suppliers and customers can effectively evaluate the safety of their products and enhance their performance.*
- *Make product safety summaries on chemicals publicly available.*
- *Extend their monitoring and reporting structure by including additional metrics to quantitatively track progress and support continuous improvement in the sound global management of chemicals.*
- *Enhance the global capacity to implement safety assessment practices and safe management procedures, especially in developing countries.*

Objectives of the RCGC and GPS

PROMOTE KNOWLEDGE AND SKILLS TRANSFER IN LINE WITH COMPANIES NEEDS

Resources are a key factor for small and medium sized enterprises (SMEs) in developing countries when implementing RC and GPS. An important objective is therefore to find ways for associations and large companies to support SMEs.

ICCA is continuously engaging in longer-term capacity building efforts to improve the competency of SMEs and developing countries, such as RC/GPS Awareness building workshops, Basic Product Stewardship workshops and Value Chain outreach. Examples for GPS workshops conducted and planned in 2009 include: Bangkok-Thailand, Shanghai-China, Moscow-Russia, Buenos Aires-Argentina, Tokyo-Japan and Varna-Bulgaria. Product safety specialists from leading chemical companies are available during the workshops for training and knowledge transfer. The response to these workshops has been very positive; in particular contributions by speakers from companies who can offer practical examples and extensive experience in implementing Product Stewardship are seen as positive and extremely helpful.

In addition, ICCA has developed a comprehensive set of guidance materials for risk assessment and risk management as part of its GPS implementation efforts. This guidance particularly addresses small and medium sized enterprises in developing economies which may need assistance in the assessment of chemicals regarding their hazardous and exposure potential and to develop risk management measures for safe handling of substances throughout their life cycle (incl. value chain activities). Further support will be available via the ICCA GPS network of experts, who will answer technical questions about risk assessment or on GPS safety summaries.

IMPROVE THE AVAILABILITY OF RELIABLE INFORMATION ON CHEMICALS

Under GPS, a base set of information is gathered for any product placed on the market. This basic information includes physical-chemical parameters, toxicological and eco-toxicological data, and information on use and exposure. For substances with an increased hazard potential or higher exposure of humans or the environment, more information is needed as part of an incremental approach. Relevant

information needed for a risk assessment of the chemical will be made available to co-producers and be jointly used by the companies to minimize unnecessary animal testing.

Furthermore, to promote greater transparency, companies will provide the general public and interested stakeholders with information about marketed substances, in an easily understandable format (GPS Safety Summary) and national associations will promote the process. ICCA is currently in the progress to develop a web-based IT-Portal to make the information collected under GPS publicly available. All interested stakeholders will have open access to this portal.

INCREASE RESEARCH ON EXISTING AND EMERGING ISSUES

The objective of ICCA's Long Range Research Initiative (LRI) is to identify and fill gaps in its understanding of the potential risk posed by chemicals and to improve methods available for risk assessment, thereby enabling industry and regulators to make informed decisions based on high quality information. The initiative was launched in 1999 and implemented under the responsibility of three regional centres (US, Japan and Europe). More than USD 200 million have been invested so far. LRI projects seek to:

- *Improve and simplify risk-assessment procedures.*
- *Improve and develop new toxicological and eco-toxicological methods.*
- *Develop and validate in vitro test methods, modelling (e.g. QSAR), and screening methods for assessing e.g. low dose effects, exposure to mixtures and endocrine disruptors.*

The high scientific quality of the LRI results supports the mutual international acceptance of tests, a major breakthrough in minimizing animal testing.

INCREASE AWARENESS ON CHEMICAL MANAGEMENT ISSUES AND INTEGRATE MULTIPLE APPROACHES

ICCA advocates the development of national chemicals management capacities that adhere to common principles and elements in order to foster greater consistency and transparency in regulatory systems. Regulatory convergence (where appropriate) provides greater certainty, and creates an environment in which industry initiatives like the Responsible Care Global Charter and GPS can thrive. GPS was designed to support national, regional and international chemicals management policy expectations. ICCA views GPS as a best practice example which could serve as a basis for the revision of existing regulations in developed countries and for the creation of new policies in developing countries. The ultimate objectives of such policies and GPS are the same: protection of human health and the environment.

ADDRESSING LEGACIES OF THE PAST

ICCA member companies take responsibility to clean up chemical contamination of their facilities. During the past 15 years, the industry has participated in over 25 multi-stakeholder projects in 20 countries, in collaboration with over 30 organizations, leading to the safe disposal of an estimated 10,000 tons of obsolete crop protection products. Via CropLife companies are actively contributing to the Africa Stockpiles Program, a partnership that includes the World Bank, FAO, WWF and the Pesticide Action Network, which seeks to safely dispose of an estimated 50,000 tons of obsolete stocks and associated wastes across the entire continent of Africa in a fifteen year timeframe and to put in place

measures to prevent their re-accumulation. In addition, ICCA is currently exploring potential partnerships with other stakeholders such as UNEP to increase its efforts to address legacies of the past.

Case studies on RC and GPS implementation—knowledge transfer in practice

Within the global chemicals sector, capacity building involves activities as diverse as working with stakeholders such as regulators and the authorities to prevent illegal traffic, developing emergency response programs, training distributors on safe handling and promoting technology transfer. Below are two company specific examples out of many (for more information - ICCA Capacity Building brochure at www.icca-chem.org)

- 1. How successfully the transfer of knowledge between big, medium and small companies can work and thus improve product safety is shown by the “1+3” project, which BASF initiated in China in 2006. Here, sustainability standards were passed on to partners in the value chain. BASF experts formed a team with three business partners to exchange principles, established practices and experiences in areas like product safety. The project produced a snowball effect, in which the SMEs taking part actively continued the project by each inviting three customers from their value chain to exchange experiences. In this way, in just two years more than 55 companies had taken part in the project. Due to this outstanding success, the “1+3” project was recognized by the United Nations Global Compact in 2008 as a best practice case study.*
- 2. Another valuable example is the agreement between MEP officials, UNEP and The Dow Chemical Company signed in September 2008, creating a project designed to support safer production of chemicals and enhance safety management systems in pilot industries. The first of its kind in China, the partnership will also assist organizations charged with improving local awareness and preparedness for industrial environmental emergencies. Lijun Zhang, the Vice Minister of Environment of China, commented, “We face formidable, but reachable goals in China concerning safety and emergency response. This program will draw us closer to where we need to be, in essence, having safer places to live and work.”*

Lessons learned

ICCA has identified several obstacles and constraints to achieving its objectives. One of the biggest challenges is the lack of capacity in certain parts of the developing world to effectively manage chemicals. This lack of capacity can take several forms, for example: lack of appropriate expertise, lack of data and scientific information, lack of resources and lack of infrastructure. ICCA is working with other SAICM stakeholders to address these gaps through capacity building and other relevant initiatives.

A further challenge is to ensure effective chemicals management across the supply chain and throughout the product lifecycle. ICCA has made important progress in strengthening product stewardship and developing sustainable business practices through Responsible Care, but more remains to be done both within the industry and through additional cooperation with other industry sectors, governments and other stakeholders, in order to reach the 2020 goal.

Another important lesson learned is that the capability gaps in chemicals management regimes in certain countries have highlighted the need to promote transparent, science-based and cost-effective regulatory regimes around the world, leading ICCA to develop a set of principles for chemicals management systems based on a combination of regulation and industry-led initiatives

Next steps

ICCA is currently exploring potential partnerships with other stakeholders (governments, IGOs and NGOs) such as UNEP to increase its efforts. The chemical industry has a unique role to play in promoting sustainable development. It is committed to preserving our resources for future generations by reducing emissions, conserving energy, and developing sustainable materials, technologies and business practices. In addition to being committed to achieving sustainable outcomes, the industry helps to provide sustainable development solutions for other industry sectors, including energy, information technology, construction and the waste sector. Chemistry and the chemical industry is also instrumental in meeting human needs, including food and clothing, housing, transport and communications. For all of these reasons, the chemical industry has an important role in efforts to meet the Millennium Development Goals.

18. Crop Protection Stewardship: Sound Management of Pesticides throughout Their Lifecycle

Executive summary

CropLife International and its members promote a lifecycle—or stewardship approach—to managing crop protection products that aims to maximize benefits and minimize risks from their use. This helps fulfil the industry's commitment to the International Code of Conduct on the Distribution and Use of Pesticides—the main guidance for management of crop protection products. CropLife International and its members work with a variety of partners to train up to 350,000 thousand people per year in the responsible handling and use of crop protection products and produces numerous guidelines which are distributed around the world.

Challenges and achievements

CropLife International is the global federation representing the plant science industry that develops, manufactures and sells crop protection and plant biotechnology products and services designed to improve the global production of food, feed, fibre and fuel in a sustainable way.

The global federation represents a network of regional and national association in 91 countries across the world and is led by the major R&D-driven plant science companies—BASF, Bayer CropScience, Dow AgroSciences, DuPont, FMC, Monsanto, Sumitomo and Syngenta.

CropLife International's members are committed to safety, stewardship and sustainable agricultural practices that benefit not just the industry, but its millions of consumers and the environment in which we live. As part of this commitment, CropLife and its members have adopted and promote a stewardship approach to managing its products, described as the responsible and ethical management of a crop protection or biotechnology product throughout its lifecycle—from the initial research and development, through distribution and use, to eventual disposal of any waste.

The industry is committed to stewardship of its products and has adopted a 'cradle to grave' concept of managing products. Stewardship is a core element of the industry's business strategy and is reflected across its range of activities; it is not only important to sustainable agricultural production and development, but also to sustainable business. Stewardship is well established for crop protection products—mainly chemicals, but its overall philosophy and principles are also relevant to, and incorporated in, the management of biotechnology products. Stewardship is emphasized within the International Code of Conduct on the Distribution and Handling of Pesticides—the main guidance tool for management of crop protection products—adopted by FAO member countries in 2002 and supported by industry, NGOs and other international organizations such as WHO; adherence to this Code is a requirement of membership of CropLife International.

The seven key elements of stewardship are (see figure IV.18.1):

- *Research*
- *Manufacture*

- *Storage, Transport and Distribution*
- *Responsible Use*
- *Integrated Pest Management*
- *Container Management*
- *Management of obsolete pesticide stocks*

Figure IV.18.1. The life-cycle of a crop protection product



Looking at each of the elements in turn:

RESEARCH & DEVELOPMENT

The industry is committed to developing innovative products that can be used safely and effectively with minimal environmental impact. Innovation includes the development of more targeted products that can be used at lower volumes of active ingredient per hectare. Improved formulations, as well as innovative chemistry help achieve this.

To reach the market, plant science technologies must be exhaustively tested in the laboratory and field to ensure that they do not unacceptably impact non-targeted species, soil, water or air, while still accomplishing their intended task. Typically, for a crop protection product, approximately one third of the average of Euro 200 million research and development costs are spent on environmental impact assessments. As well as being an important requirement for registration, it is important for sustainable use.

Research also includes development of appropriate containers that do not leak, avoid spillage and can be effectively recycled (see container management below).

MANUFACTURE

Manufacture of products is subject to tight control. Strict regulations, coupled with effective enforcement are designed to prevent accidental release of chemical products into the environment. CropLife International's member companies are also participants in the Responsible Care® programme or similar local schemes aimed at achieving improvements in environmental, health and safety performance

beyond government regulation. Improvements in energy efficiency of up to 40 per cent, reduction in greenhouse gases of up to 76 per cent, improved water efficiency by up to 40 per cent and reduction in waste of up to 63 per cent have all been reported since the 1990s.

STORAGE, TRANSPORT AND DISTRIBUTION

The industry supports and participates in various training programmes and, where appropriate, certification schemes that promote the safe and effective storage, transport and distribution of their products. Global guidelines have been developed and distributed by CropLife International, which form the basis of training programmes for distributors and dealers. Industry associations are active partners in providing training for dealers in crop protection products in several countries; the industry is supportive of government schemes that require training and certification of these dealers. For example, CropLife Egypt has specifically adapted the global training guidelines to provide the required training for certification of dealers in that country. Some countries also require certification of warehouses that store crop protection products—national associations actively support and promote such schemes. In Canada, for example, association members will only deliver products to warehouses certified by the Agricultural Warehousing Standards Association (see <http://www.awsacanada.com/AWSA06/>). To date over 1,300 warehouses have been audited, with re-auditing required every two years. CropLife International has also distributed across the world several thousand copies of guidelines on safe transport and safe warehousing.

INTEGRATED PEST MANAGEMENT (IPM) AND RESPONSIBLE USE

The plant science industry has endorsed IPM practices for many years, and has publicly declared its commitment to promoting IPM. All CropLife International member companies support and abide by the definition of IPM put forth in the International Code of Conduct on the Distribution and Use of Pesticides:

IPM is the careful consideration of all available pest control techniques and subsequent integration of appropriate measures that discourage the development of pest populations and keep pesticides and other interventions to levels that are economically justified and reduce or minimize risk to human health and the environment. IPM emphasizes the growth of a healthy crop with the least possible disruption to agro-ecosystems and encourages natural pest control mechanisms.

The responsible use of crop protection products ensures that their benefits are maximized, while risk to human health and the environment is minimized.

An elementary principle of effective IPM is to develop pest control strategies that take into account all relevant control tactics and locally available methods, and is sensitive to the local environment and social needs. IPM involves careful observation of the crop and an understanding of the impact of both beneficial and pest species and the effect of control operations on their interaction. The successful user of IPM will evaluate the potential cost effectiveness of each alternative as well as the whole control strategy. IPM includes selection of appropriate plant varieties, including those developed through biotechnology, as well as agricultural practices that help ensure a “healthy crop”. IPM is included within the wider concept of Integrated Crop Management and Good Agricultural Practice (GAP), which

includes management of the whole farming system—for example proper land preparation, water and nutrient management, as well as habitat management.

One of the industry's most visible stewardship activities is the ongoing "Safe Use" programme, which provides training in IPM and the responsible use of crop protection products. This programme has been in operation for more than 10 years in Africa, Asia and Latin America and has trained over 2 million individuals. National programmes and companies have trained tens of thousands more. Elements of the programme include when and how to control pests within an IPM system and how to safely and effectively apply crop protection products if they need to be used. The aim is to reduce pest numbers to acceptable levels—not to eradicate the pest—whilst minimizing impacts on beneficial insects and other non-target organisms, as well as to avoiding unacceptable risks to the environment and residues on the crop. Training also concentrates on how to protect farm workers and others from unacceptable risk when using crop protection products.

These programmes have often been carried out in partnership with other stakeholders. Globally, CropLife national associations work with over 100 different partners, including national and local agricultural departments, research centres, NGOs and international donors. Approximately 250,000–350,000 people are trained each year in programmes covering approximately 50 countries, including several thousand trainers, who go on to train more people.

CONTAINER AND OBSOLETE STOCKS MANAGEMENT

The industry supports various schemes for management of empty containers of crop protection products. The ultimate aim is to prevent contaminated containers being discarded into the environment or used for storage of food or water and for all containers to be recycled in an appropriate manner. However, it is recognized that this will not be achievable in all countries, at least in the short term. A minimal requirement that is actively promoted is the "triple rinsing" of containers, where they are washed with water three times prior to appropriate disposal or recycling (see www.usagrecycling.com/triple.html). In some countries, effective recycling programmes are already in operation, for example Brazil, Canada and Belgium—where up to 80-90 per cent of containers are recycled. In 2008 over 43,000 tons of used containers were collected in 30 countries; additional pilot schemes have been established in 19 countries.

Obsolete stocks of crop protection products are those that are unfit for further use or for re-conditioning. Stocks of crop protection products become obsolete mostly because of poor long-term storage during which the product and/or its packaging degrades to a point where it is no longer useable and cannot be cost-effectively reconditioned. However obsolescence may also arise because a product has been de-registered locally or banned internationally. Obsolete stocks can be disposed of efficiently and safely if skilled resources are brought together. CropLife International and its leading companies have worked actively on this issue for more than a decade, in partnership with national governments, international organizations, donors and NGOs, and have facilitated disposal projects in over 25 countries and contributed to the safe disposal of over 5,000 tons of obsolete products from developing countries and promoted initiatives where over 5,000 tons of obsolete stocks have been collected from farmers in developed countries.

We continue to seek partnerships to deal with the overall problem; one such partnership is the African Stockpiles Programme (ASP). The ASP is a multi-stakeholder partnership, which includes the World Bank, FAO, WWF, Pesticide Action Network and CropLife, to dispose of all obsolete stocks and contaminated waste in Africa in an environmentally sound manner. It also aims to provide appropriate capacity building to prevent future build-up of obsolete stocks—for example through appropriate warehousing and stock management. A further important element of the proposed programme is the continent-wide reduction of environmental and health risks by “making safe” leaking and the most hazardous stocks through repackaging and appropriate storage prior to disposal. (See www.africas-tockpiles.org.)

Lessons learned

It is apparent that the elements in the stewardship approach are not isolated, but are related and overlap—thus appropriate research and design of containers is a requirement for effective recycling; good storage and stock control helps prevent build up of obsolete stocks; development of selective crop protection products, and new varieties through biotechnology, provide a wider range of tools available for use in IPM strategies. The industry therefore supports the promotion of stewardship as whole, rather than isolated elements—although there is recognition that at the local level one element may take precedence to address a particular issue.

It is also clear that no one group can meet all of these challenges, and that we must work together in partnership to provide lasting improvements in people’s livelihoods and the environment. This is especially true as one moves through the lifecycle—Research and Development and Manufacture is closely controlled by the industry, but as products move through the lifecycle more and more stakeholders become involved, for example distributors, retailers, users and waste management companies. The Plant Science Industry has to lead and influence through development and demonstration of best practices, distribution of guidelines and working in partnership with the other stakeholders. The role industry plays to support sustainable development, and the need to underpin this with sustainable business practices is recognized, as is the need to continually improve the activities and impact, based on lessons learned by industry and others. The industry is therefore proactive in developing new initiatives, and seeks partnerships with other stakeholders. To be successful, these partnerships must be built on transparency and mutual trust where all have a sense of “ownership” in the programme.