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Implementation of the Strategic Approach: New and emerging policy issues

Synthesis of findings under the Chemicals in Products Project including its draft recommendations

Note by the secretariat

The secretariat has the honour to circulate, in the annex to the present note, a synthesis of findings under the UNEP/IOMC Project on Information on Chemicals in Products, for the information of participants at the current meeting. The synthesis report is provided as received and has not been formally edited.

* SAICM/OEWG.1/1

ANNEX

A Synthesis of Findings Under the UNEP/IOMC Project on Information on Chemicals in Products

UNEP / DTIE
Chemicals Branch

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IOMC

INTER-ORGANIZATION PROGRAMME FOR THE SOUND MANAGEMENT OF CHEMICALS

A cooperative agreement among FAO, ILO, UNEP, UNIDO, UNITAR, WHO, World Bank and OECD

This publication was developed in the IOMC context. The contents do not necessarily reflect the views or stated policies of individual IOMC Participating Organizations.

The Inter-Organisation Programme for the Sound Management of Chemicals (IOMC) was established in 1995 following recommendations made by the 1992 UN Conference on Environment and Development to strengthen co-operation and increase international co-ordination in the field of chemical safety. The Participating Organisations are FAO, ILO, UNEP, UNIDO, UNITAR, WHO, World Bank and OECD. UNDP is an observer. The purpose of the IOMC is to promote co-ordination of the policies and activities pursued by the Participating Organisations, jointly or separately, to achieve the sound management of chemicals in relation to human health and the environment.

Preamble

1. There is a growing understanding that chemicals contained in products can cause adverse effects on human health and the environment. Taking into consideration the global trade of these products, the issue is one of global significance that requires global solutions. The Strategic Approach to International Chemicals Management (SAICM), that was adopted in 2006 at an International Conference on Chemicals Management and endorsed by UNEP and several UN agencies, has as its main objective to achieve the 2020 goal that chemicals are used and produced in ways that lead to the minimization of significant adverse effects on human health and the environment. Specific objectives of SAICM address a number of areas including knowledge and information.

2. The International Conference on Chemicals Management at its second session in 2009 agreed on a project to address the need for increased stakeholders´ access to information on chemicals in products throughout the life cycle. Information on chemicals in products is a key to sustainability. Producers are central in collecting and making available such information, and retailers and consumers should have access to information for informed choices and for proper waste management. With improved information, products can be designed products in such a way that harmful substances are reduced or not present and can be better managed. As well designers can use recycled materials more safely. The majority of current efforts towards product safety are aimed at ensuring that harmful chemicals are not present in a product and legislation and control measures are designed to accommodate that. Few systems are developed to inform on what exactly is in the product. The current lack of information on chemicals in products is one of the obstacles to achieving a reduction of risks from these chemicals and a more sustainable handling of resources, which, with sufficient cooperative action, can be one of the keys to achieving sustainable development.

3. In discussing the issue, care must be taken to differentiate between general chemical information that will lead to product safety and management and systems that contain information on chemicals contained in products, which can also lead to chemical information exchange for given products.

Background

4. In May, 2009, the second session of the International Conference of Chemicals Management adopted a resolution agreeing to implement a project on Chemicals in Products with the overall objective of promoting the implementation of paragraph 15 (b) of the SAICM Overarching Policy Strategy. The project will include the development of specific recommendations for further international cooperative action for consideration at the third session of the Conference in 2012. The Conference invited UNEP to lead and facilitate the project. The Conference agreed that the following tasks be undertaken:

- collect and review existing information on information systems pertaining to chemicals in products including but not limited to regulations, standards and industry practices;

- assess that information in relation to the needs of all relevant stakeholders and identify gaps;

- develop specific recommendations for actions to promote implementation of the SAICM with regard to such information, incorporating identified priorities and access and delivery mechanisms.

5. The resolution recommended that proposals for cooperative actions should take into account the Globally Harmonized System of Classification and Labeling of Chemicals and avoid any duplication of efforts under that system.

6. An investigation into existing systems and stakeholder needs and gaps was carried out in a report by Kogg & Thidell *Chemicals in Products - An overview of existing systems for providing information regarding chemicals in products and of stakeholders' needs for such information* that provided the current status of chemicals information exchange systems. The aim of the report was to conduct an international screening and overview of systems for information on chemicals in products and to describe stakeholders' needs for such information.

7. A first phase of the Chemicals in Products project involved determining the scope of initial project activities. As it would not be possible to work in all areas and on all chemicals at the initial stages of the project, a survey was designed to identify good examples provided through existing information systems, to collect thoughts and views from SAICM stakeholders on the focus and priorities for the upcoming assessment of stakeholder information needs and to determine which priority product sectors should receive first attention. The results were considered at a Scoping Meeting in December 2009. Product sectors of highest priority were: *children's products/toys, electronics, clothing, construction materials*, food packaging and personal care products from which the former four were selected for more in-depth examination. Case studies were carried out through different institutions and are available at (http://www.chem.unep.ch/unepsaicm/cip/default.htm). The case studies were expected to:

- provide reviews of the state-of-the-art for Chemicals in Products information exchange in the sectors (also addressing differences among regions);

- identify the specific needs for Chemicals in Products information of the different stakeholders groups of the selected sectors, map out the information flows in the sector and perform a gaps analysis;

- identify obstacles in providing / accessing information and look for possible actions that could help overcome such obstacles.

8. The case studies used *inter alia* relevant information from the above-mentioned Kogg & Thidell report, from *Toxic Substances in Articles: The Need for Information* by Massey et al., and from *Survey of SAICM Focal Points on the Need for Information on Chemicals in Products* by Becker & Associates. Each case study described in detail the focus of the study, the methodology used and the sources contacted to obtain information. The Executive Summaries of the different case studies are annexed to the current report.

9. As a part of this study phase a small Sector-expert Consultation for the Chemicals in Products Project was held on 9-10 December 2010 for discussions between the individual institutes and sector-experts. . The goals of the Consultation were:

- to share the collective research results of the institutes as the case studies neared completion;

- to exchange experts' experiences and knowledge from the different sectors on product chemical information;

- to identify critical issues with regard to exchange of information on chemicals in products, especially on the data provider's side; and

- to discuss possible measures or options that could help overcome obstacles for providing information.

10. The report of the Consultation can be found on the project website (http://www.chem.unep.ch/unepsaicm/cip/default.htm) and the main outcomes are included in the general conclusions at the end of the current report.

Introduction

11. The current report aims to provide a synthesis of the principal findings related to information systems on chemicals in products from the activities referred to above and in particular the four sector case studies and the Sector-expert Consultation, to identify some common concerns as highlighted by those case studies and to suggest a way forward for the project.

12. Providing appropriate and complete information is a very challenging task given the various needs of the stakeholders along both the production chain and the product lifecycle. These range from meeting regulatory requirements, occupational health and safety, environmental and public health considerations, public health protection, end-of-life treatment and waste management. Each of these

aspects might be covered within each stage of the production chain hence the information transmitted must be user-friendly for each of the stages.

Identification of Stakeholders

13. The Kogg & Thidell report notes that stakeholders in all countries and at all points along the supply chain and lifecycle of a product perceive a need for information on chemicals in products. Further, stakeholders outside the actual value chains also need information, which includes policy makers, government agencies and non-governmental organizations. Information needs are generically described in the report and include:

> Producer related information to enable traceability of products and also to ensure an ability to monitor and enforce compliance with customer requirements, regulations and liability.
>
> Chemical related information including the content of chemical in the product and any potential hazards and risks association with that content.
>
> Information needs regarding precautions for safe use, handling and disposal including issues related to storage, accidents, exposure, injury, recycling, remanufacturing, reuse and producer take-back schemes.

Categorization of information systems

14. The Kogg & Thidell report describes four different categories into which different systems of information exchange fall: within the production chain, from producer to consumer, from producer to end-of-life and from external stakeholders to consumers and the general public. Few systems convey information on chemicals in products from actor to actor throughout the supply chain. Consumers and end-of-life actors rarely have automatic access to that information however, such information could be made available to them. Producers might provide limited information to concerned consumers but that information might not cover the entire supply chain. Systems to provide information on product disposal from producers to end-of-life actors are usually simple and easy to use, consisting of symbols or short messages and sometimes indicating special treatments for selected products. These provide instructions on how to handle the product as waste, but usually do not transmit chemicals content information. External stakeholders, primarily non-governmental and private organizations, often have affiliated expert panels that gather and evaluate information, sometime even taking actual measurements on the products and providing that information to consumers and the general public.

Driving forces and stakeholder needs for exchanging information on chemicals in products

15. Meeting the requirements of regulation and product safety have been principal drivers to the development of existing information systems related to chemicals in products. Other driving forces include consumers and public interest groups who are increasingly concerned to have safe products both for human health and the environment and the media who are quick to spotlight any real or potential problems. Larger industry groups are concerned with health and environmental issues – not the least for good public relations - and keen to avoid adverse press and recalls, and are stepping up their product control actions to avoid such situations.

16. Information needs of stakeholders are very diverse and reconciling the need for a harmonized and user-friendly system with the need to adapt that information to different stakeholders is a challenge.

17. Government stakeholders state key needs for information that assist in their mandates for risk reduction from hazards to public and environmental health, scientific data for setting public policy, and compliance with international rules and treaties. In addition, government respondents have complex needs for chemical information for a variety of reporting needs. To meet any legal requirements or indeed to enact law that might protect human health and the environment governments must have the appropriate information on products even if they are not involved in the manufacturing process or not directly responsible for placing goods on the market. Governments are faced with multiple compliance issues such as ensuring proper occupational safety and health measures are in place, that only permitted chemicals are in use and that appropriate pollution control measures are used; ensuring the traceability

of products, proper labelling and product control; safe use for consumers; import of approved products; and exchange of information with other governments or international bodies.

17. Manufacturers are the first actors in the value change that need to collect/transfer information on chemicals in their products be it upstream from their component suppliers or to pass on that information downstream to the next actor along the chain. They can affect change by insisting that chemical information is provided to them at the cost of changing suppliers. Larger companies purchasing high volumes or high values from a supplier will often get fast and clear replies to information requests; their suppliers see the value in investing to understand and respond to those requests to ensure retaining their customer. The larger manufacturers also often have full control over design, production and distribution and can exert pressure along the production chain to ensure provision of information on chemicals in products. Small manufacturers may face challenges in obtaining information and then verifying the claims their suppliers make about the content of materials. Some manufacturers interact mainly with the actor adjacent in the supply chain. Many do not have the necessary resources to verify the quality of data they acquire from suppliers, and, as well, many suppliers may not have the capacity to generate the desired data. Of note are that some manufacturers indicate that they try to stay ahead of global regulations and voluntarily restrict chemicals they expect will be regulated in the future. This proactive rather than reactive attitude makes good business sense and provides benefits at the market place.

18. Chemical manufacturers often provide directly to their customers information on their chemical products, although it is not clear how far down the supply chain this information might travel. The information provided by the chemical manufacturers should follow the criteria of the Globally Harmonized System for Classification and Labelling of Chemicals (GHS) and provide safety data sheets (SDS). Chemical manufacturers cooperating in the International Council of Chemical Associations (ICCA) has developed a database for public access including such information for their chemical products (today it contains information on over 1400 chemicals). Some chemical producers also have websites that customers can access for specific information on the chemical products they purchase.

19. Distributors and brand-name companies involve importers and delivery operators who disseminate manufactured goods to retailers or a point of sale. National chemical legislation can also govern what products are allowed for import in a country hence distributors must be aware of what chemicals are contained in a product they are importing or wishing to place on the market. Legislation typically also lays responsibility with the company that places a product on the market hence retailers and distributors need information on chemicals in products from the value chain. Responsible stakeholders can make active efforts to retrieve the information out of their supply chains. This can be considered part of due diligence and corporate risk management that accompanies sound business practice.

20. The consumer has been a driving force in the provision of information on chemicals in products. Typically, the consumer is not so much interested in specific chemical information but needs assurance that the product is not harmful and/or is handled in ways to avoid risks to human health and the environment – for example how to dispose of a product for proper waste handling. Public interest groups also drive demand for information on chemicals in products. Provision of specific chemical information to such groups can benefit the average consumer as the information can then be made available through public interest groups and the media within a more easily understood context. As consumers become increasingly aware of the dangers associated with certain chemicals, for example allergens, endocrine disruptors and carcinogens, more information is being sought by the discerning consumer to enable informed choices on which products to buy.

21. Stakeholders involved in the end-of-life of a product have a need for information for various reasons. End-of-life products can be reused, dismantled, recycled and finally will be disposed of by some method. The type and content of chemicals in the product can influence the way it is handled, if the recycler is aware of such information. It is clear that in many instances activity at this stage of the lifecycle of a product is being undertaken in developing countries (and frequently in the informal sector) where workers might have limited understanding of the implications of handling products with chemicals in them even if they did have access to such information. The responsibility lies with stakeholders further upstream in the production chain to ensure information is provided in a useful and easy to understand manner. In many situations the informal sector has to contend with a lack of

information on how to best dispose of or handle an end-of-life product. However larger formal waste management facilities also require information on chemicals in products in order to manage the waste in a safe and environmentally sound manner .

22. Certain stakeholders have external influence on whether manufacturers might modify chemical composition in a product. These include third party testing firms or independent laboratories that conduct chemical testing on behalf of another entity. Industry associations can also provide a resource for firms lacking chemical expertise and influence members to comply with information requirements.

23. Each stakeholder has a responsibility to pass on information to the next stage downstream. As mentioned before when a company has several of the players along the value chain within its purview it is easier to ensure that chemical information is passed along that chain, the company itself guiding the required flow of information up or down the chain. Larger companies have the means to test for chemicals within their materials and products and to train personnel in collecting that information.

Special concerns of developing countries

24. The majority, if not all, of the current systems for information on chemicals in products have been developed through initiatives of stakeholders in developed countries and often driven by their need to meet with legislative requirements. These have an impact on developing countries, especially in the production chain, and will increase in parallel with the trend to outsource manufacturing of products to developing countries. Developing country producers will be faced with the challenge of putting in place the financial and human resources necessary to comply with foreign market requirements. At the same time, developing country governments might face similar challenges when developing national legislation for protection of human health and the environment and as they become increasingly aware of the problems associated with chemicals in products. This increasing awareness is attested to by the results of the SAICM survey of stakeholder's priority concerns that showed that information on chemicals in products and associated capacity building is required in developing country regions.

25. Currently interest in obtaining information on chemicals in products is skewed towards developed countries however local public interest groups appear to be stimulating increasing awareness of environmental and human health issues in consumers of developing countries and countries with economies in transition. That in turn will affect to what extent developing countries and countries with economies in transition wish to adhere to or develop their own information systems on chemicals in products, nationally, regionally or internationally. In developing countries lack of capacity to test, monitor and control products results in little knowledge on chemicals in products although efforts were sometimes being made to develop control methods and legislation that might promote such knowledge.

Value chains

26. The product and the process generally follow similar steps throughout the lifecycle or the production/supply chain as follows:

> Product lifecycle: raw material, processing, component manufacturing, packaging, distribution, consumption/use, disposal/recycling/reuse.
>
> Product chain: raw material, chemical manufacturer, component manufacturer, product manufacturer, distribution/retailer, consumer, waste handler/recycler.
>
> Supply chain: series of suppliers, usually upstream, that produce individual components that are combined to produce a final product.

The principle difference lies in the interaction between the different entities in the product/supply chain, which are both horizontal and vertical and that eventually result in the final product, as compared to the product lifecycle itself, which is usually linear. An exception to that would be reuse or recycling of the product on reaching the disposal phase, which can be true for either chain. While these chains are described quite simply from each stage to the next it is clear that within each stage there can be several entities that might need to interact with each other and similarly, depending on the production process or the product being manufactured, there might be a need to move back and forth

between different stages. The complexities of these chains are described in more detail in the Kogg & Thidell report. When considering the requirements for provision of information on chemicals in products for all of these stages and stakeholders one can begin to glimpse the intricacies of developing such information systems.

Legislative guidance

27. In the following paragraphs a short description is given of the principle legislative guidance referred to in the case studies. Where the same legislation is referred to in several sector studies these have been drawn out and included in a general section as they may by considered guidance for provision of information on chemicals in products in any sector. This should be illustrative and is clearly not an exhaustive list.

General controls

28. Legal requirements such as that of the European Union's Registration, Evaluation, Authorisation and Restriction of Chemical substances (REACH) that entered into force on 1 June 2007 promotes meeting the requirements for information. The aim of REACH is to improve the protection of human health and the environment through the better and earlier identification of the intrinsic properties of chemical substances. REACH obliges manufacturers and importers of all chemicals produced or imported in volumes above one metric tonne per year into the European Union market to register these, as well as provide basic information on their intrinsic properties. The information requirements increase with the volumes of the registered chemical. Furthermore, REACH identifies and controls the use of substances of very high concern, through its Authorisation system as well as through Restrictions. REACH has also established provisions on data sharing, through its publicly available database, as well as through mandatory flow of information on the presence of chemicals in the supply-chain as well as the intrinsic properties of these chemicals. Any supplier of a product also has an obligation to provide information concerning the presence of certain substances of very high concern in products to their professional customers and on individual requests also to consumers. The REACH regulation gives greater responsibility to industry to manage the risks from chemicals and to provide safety information on the substances. Chemical manufacturers and importers are required to gather information on the properties of their chemical substances, which would allow their safe handling, and to register the information in a central database. Retailers or importers who place products on the European Union market are obliged to ensure that they meet the requirements of REACH regarding certain restrictions and information requirements regardless of where their suppliers are based. Several product specific regulations exist in the European Union and prohibit or restrict the presence of certain chemicals in products being placed on the European Union market and for which information on the chemicals present is vital. These are identified within the sector case studies.

29. California Proposition 65, among other obligations, requires business to notify the people of California about significant amounts of chemicals in the products they purchase and currently covers a list of approximately 800 chemicals. The United States Consumer Product Safety Improvement Act (CPSIA) sets levels for lead in paint (printing on clothing). Similarly the United States Interstate Mercury Education and Clearing House (IMERC) requires producers of articles containing mercury to report that fact on a dedicated website.

30. The Japan Green Procurement Survey Standardization Initiative (JGPSSI) has co-formulated Guidelines for the Management of Chemical Substances in Products on the initiative of the industries concerned. These guidelines provide methods of sharing information on the chemical substances contained in products throughout the supply chain that would be required to comply with REACH.

31. The Japanese Law for the Control of Household Products Containing Harmful Substances provides for responsibilities of manufacturers and importers to secure safety of household products; those entities must, inter alia, study the chemicals that are contained in household products. The Japanese Act on the Evaluation of Chemical Substances and Regulation of their Manufacture includes a labelling requirement for products that contain certain chemicals.

Textiles

32. The European legislation in REACH (Regulation (EC) No. 1907/2006) contains information

disclosure provisions in relation to specific substances of very high concern (SVHC) many of which are relevant to the textile sector's different materials.

33. Numerous chemicals used in textiles processing are subject to European Union regulations. Examples are those regulations governing flame-retardants (emergency Decision 2009/251/EC and Decisions 2006/122/EC, 2003/11/EC, 2002/61/EC) or Directive 96/74/EC (and amendments) covering the fibre content naming and labelling requirements for textile garments.

34. The European Commission Decision 2002/371/EC established the European eco-label or the EU flower targeted at textiles, primarily clothing, and contains strict restrictions on chemicals that may be present in these articles as well as those that may be used in processing or as residue of impurities.

35. Some developing countries have more recently also developed special controls for chemicals used in textile products, for example China that has a Code limiting the content / banning some chemicals in textiles intended for babies, textiles intended for skin contact and textile not intended for skin contact. Kenya and Cameroon also have measures which restricts the presence of hazardous materials in textile products.

Toys

36. The world's largest toy markets have the more stringent toy safety regulations. For regulation of chemical content specifically, however, the scope has recently started to expand to address a larger number of chemicals. The new Toy Safety Directive of the European Union, that for example now includes fragrances, illustrates this shift. For the majority of other countries standards for chemicals apart from selected phthalates seem to be voluntary in nature. In some developing countries toy standards for domestic manufacturers are voluntary and in others non-existent.

37. Toys must comply with regulations that apply to many products. Determining which regulations apply depends very much on the intended use of the toy and the materials it contains. Within REACH for example, some substances are restricted for use in toys generally, while other substances are restricted for use, for example, in wood; the obligations for a wooden toy would differ from those for a textile toy. Regulations differ among the largest toy markets in terms of chemicals and allowable thresholds, as does scientific opinion on non-regulated substances. Achieving compliance and indeed working to go beyond compliance is complex even for scientific experts.

38. The new European Union Directive on Toys (Directive 2009/48/EC) that enters into force in 2011 (the chemical-content component of the Directive is to come into force in 2013) will govern and control risks of chemicals contained in toys being imported into and marketed in the European Union. The Directive requires technical documentation (including Safety Data Sheets which are to be collected and saved) and also that some allergenic fragrances must be marked on the products. The responsibility lies with the toy manufacturers and importers to ensure that the chemicals in the products they place on the European market meet the requirements of the Directive.

39. The Toy Safety Certification Program (TSCP) applies to toys that are produced for sale in the United States. The Toy Industry Association (TIA) initiated the public-private partnership and has the final responsibility for its administration. Producers are responsible for meeting the basic requirements of the programme which are to perform: 1) hazard analysis and/or risk assessment for toy product design, 2) factory process control audits and 3) production sample testing to validate that the factory is producing toys that meet the requirements of the Consumer Product Safety Improvement Act (CPSIA). The chemical risk is part of the overall assessment, in particular for lead, some other heavy metal, phthalates and other substances. The products or packaging may bear a toy safety mark. TSCP is designed to be an open and global system allowing any qualified organization worldwide to become accredited to be a toy certifying body, a factory process auditor and/or a qualified testing laboratory.

40. National non-governmental entities have also put in place guidance, websites and information sources based on information collected on chemicals in products. Some examples detailed in the case study are GoodGuide (United States), Healthy Stuff (United States) and Arnika (Czech Republic).

Electronics

41. European Union legislation has had an impact on how information on hazardous substances is generated and shared and similar regulations have been developed in other regions.

42. The European Union Directive 2002/96/EC on Waste Electrical and Electronic Equipment (WEEE) imposes extended producer responsibility for a broad range of electronic products. It mandates producers to disclose information needed for end-of-life treatment. Producers must provide reuse and treatment information for each type of new equipment within one year of entry onto market. The information covers components and materials, as well as the location of dangerous substances and preparations in the product. The WEEE symbol must be placed on the relevant equipment informing consumers not to dispose of the product as unsorted municipal waste but to collect it separately. There are no specific guidelines on what information to include; rather it is driven by the needs of different recycling facilities.

43. The European Union Directive 2002/95/EC on the Restriction of Hazardous Substances (RoHS), restricts the use of six hazardous substances (lead, mercury, cadmium, hexavalent chromium, polybrominated biphenyls, and polybrominated diphenyl ether) in the manufacture of various types of electronics.

44. Voluntary certification systems in the United States such as the Responsible Recycle, R2, Practices and the E-steward Certification have been introduced to ensure the responsible recycling of electrical equipment and electronic devices. To comply, recyclers will have to increase their efforts to stay informed of the changes in composition of products and to develop appropriate and safe treatment methods. Goals include environmental worker health and safety, downstream tracking of materials, promoting re-use of materials and ensuring appropriate management at end of life. The standard Electronic Product Environmental Assessment Tool (EPEAT), a labelling scheme that currently covers only computers, includes criteria related to information disclosure for safe end-of-life treatment. These systems though developed nationally are international in their reach.

45. The Japanese industry Joint Article Management Promotion-consortium (JAMP) has developed an information system that facilitates the management of information on chemicals in the upstream part of products' lifecycles. JAMP uses JAMP Material Safety Data Sheets/plus for the purpose of information control in the upstream and midstream processes concerning substances and preparations contained in the products. An Article Information Sheet (AIS) is used for preparations in the downstream processes. The JAMP-Global Portal offers a means to share compiled chemical substance information between upstream, midstream and downstream parts.

46. In response to the Home Appliance Recycling Law, the Association for Home Appliance Recycling and other related organizations in Japan have established a system of assigning recycling marks that, through labelling, indicate the information on chemical substances used in the products and information on their disassembly. Similarly "J-Moss" communicates information provided from the downstream part of the supply chain to the consumption stage and then to the recycling chain. When the content of a specified substance in a product is at a level beyond the set criteria, a "containing" mark shall be indicated on the product, and the manufacturer shall provide information on the parts containing the substance, the level of content, and other factors on its website. Several other initiatives in Japan are described in detail in the case study.

47. South Korea has recently introduced legislation that is similar to the WEEE Directive containing similar information sharing requirements. The government also introduced the Act for Resources Recycling of Electrical and Electronic Equipment and Vehicles aimed at the effective utilization of resources and the sound management of valuable substances, and includes an environmental quality assurance system. The assurance system targets the systematic control of information on valuable substances and hazardous substances. The underlying information control and operational system is called the Eco-Assurance System.

48. In China the government has enacted laws regarding Administration on the Control of Pollution Caused by Electronic Information Products (China RoHS) in response to the RoHS Directive, and the Administration of the Recovery and Disposal of Discarded Electronic and Electrical Products (China WEEE) in response to the WEEE Directive, followed by a related technical ordinance, the Technical

Policy for the Prevention of Pollution from Waste Electrical and Electronic Equipment.

Building materials

49. Regulations affecting this sector include the European Construction Products Directive (Council Directive 89/106/EEC), voluntary agreements such as that of the United States preservative manufacturers voluntary agreement to ban the production of chromated copper arsenate-treated wood for most residential uses, market-driven certification and standards programs such as the Building Research Establishment Environmental Assessment Method (BREEAM), the Leadership in Energy and Environmental Design (LEED) system, and the Comprehensive Assessment System for Building Energy Efficiency (CASBEE). In addition, public databases developed by government and environmental organizations, such as BASTA and Pharos, are helping to helping to improve availability of information about chemicals in products. The International Standards Organization declaration, ISO 21930:2007, for "Sustainability in building construction – Environmental declaration of building products" establishes a methodology to ensure transparency in developing environmental product declarations for building products.

50. While these regulations and agreements enhance the potential for collecting and exchanging information on chemicals in products, there are still information gaps and needs going unfilled.

Information systems relevant to chemicals in products

51. The systems described below are drawn principally from the case studies. Within the case studies themselves they sometime serve solely as examples. The section aims at providing illustrative examples of existing information systems that have relevance to chemicals in products and is not meant to be exhaustive. It describes more general findings and types of systems as well as systems that are more common to all or many sectors and findings specific to individual sectors studied. In some instances information systems may span several countries and continents but for the most part they are still limited to a number of different systems or lists of controlled/restricted substances in different areas with little or no standardization or harmonization.

General findings

52. While currently there is no single global information system for management of information about chemicals in products, the Globally Harmonized System for the Classification and Labelling of Chemicals is an international standardized system for communicating chemical hazards. It addresses classification of chemicals by types of hazard and proposes harmonized hazard communication elements, including labels and safety data sheets. Its limiting factor is that it applies solely to chemicals and chemical compositions and not to products in general.

53. Chemical companies and associations voluntarily provide information about substances that are marketed to the public on the Global Product Strategy (GPS) chemicals portal. The portal was launched by the ICCA in 2010 and contains more than 1400 chemical safety summaries. The data are presented in a user-friendly format and information on use and potential exposure is included. In this regard, information on the chemicals portal is a complement to Material Safety Data Sheets.

54. The European Union RAPEX alert system was noted as a means for alerting governments and consumers to products that were not in regulatory compliance and that had been identified to be of risk due to chemical content or other consumer or environmental concern. RAPEX is a rapid alert system for all dangerous consumer products, with the exception of food, pharmaceutical and medical devices. It allows for the rapid exchange of information between European Union Member States via central contact points and the European Commission regarding measures taken to prevent or restrict the marketing or use of products posing a serious risk to the health and safety of consumers. Both measures ordered by national authorities and measures taken voluntarily by producers and distributors are covered by RAPEX.

55. Material Safety Data Sheets (MSDSs) are a good source of information on, inter alia, chemicals in products, where they exist. However these safety data sheets are not always passed along the entire supply chain as is done, for example, in the automotive industry, as they are not requested or because they are considered too technical. MSDSs also have a set format for presenting data and are perhaps

not suitable for providing to some target audiences the information they contain. The chemical industry is beginning to develop safety summaries intended as an additional source of information on chemicals that is more user-friendly than the voluminous material safety data sheets. Material Safety Data Sheets are not considered to be comprehensive and may vary according to local regulations. Their use is also hampered by information gaps related to proprietary data.

56. The International Material Data System (IMDS) is another sound example of a system for information on chemicals in products that has been developed by the automotive industry initially in response to the European Union Directive 2000/53/EC on End-of-Life vehicles. It is a collective, computer-based material data system used primarily by original automotive manufacturers to manage environmentally relevant aspects of the different parts used in vehicles enabling them to reconstruct the complete material flow throughout the entire lifecycle of the vehicle. Documentation of compliance in answer to legal requirements is used for transferring information and in many cases this is the only information players are transferring along the supply chain.

57. Restricted Substances Lists are aimed at preventing the inclusion of certain substances in a given product or process and do not indicate what chemicals are actually present in the product. A supplier is provided with such a list and must assure his buyer that the substances on the list are not contained or not exceeding a certain threshold limit in the product he is supplying or must confirm that he will substitute the chemical of concern by a given deadline. Such lists are mostly company or individual product specific and a variety of lists therefore exist which can make it very complex for suppliers to implement. The downside of relying on a restricted substance list is that when new substances are regulated such a list does not allow a manufacturer to quickly identify whether that substance is in a given product which a positive information system, providing information on what chemicals are in the product, would. Restricted substances lists were noted for all sectors. A detailed description of how some of these lists function is given in the case study on electronics. Some companies have restricted substances list that they use to ensure legal compliance. In addition restricted substance lists are used to manage non-regulated substances. This may include identifying the presence of substances of emerging concern.

58. Environmental Product Declarations and Eco-labels, in contrast to restricted substances lists, provide information to the consumer or purchaser that the product adheres to the legal / environmental requirements that the label or declaration represent.

59. An Environmental Product Declaration is a Life Cycle Assessment (LCA) based tool to communicate the environmental performance of a product or system. The procedure builds upon existing standards developed by the International Organization for Standardization (ISO) and provides information about the environmental impacts associated with a product or service, such as raw material acquisition, content in terms of materials and certain chemical substances, energy use and efficiency, emissions to air, soil and water, and waste generation. It also includes product and company information. Certified Environmental Product Declarations are open for all products and services. There is no evaluation of the environmental information since no predetermined environmental performance levels are set but it is built on well-structured and quantitative data certified by an independent third party. Environmental declarations are primarily intended for use in business-to-business communication, but can also be used in business-to-consumer communication.

60. A wide variety of eco-labelling systems have been developed, in part to compensate for the lack of internationally standardized information systems. Eco-labels are a voluntary system and typically do not contain specific information on the chemical content of a product but might indicate what the article does not contain. Several types of eco-labels exist: those that indicate overall environmental preferability of one brand of product within a product sector and is based on life-cycle considerations; those that are self-declarations by manufacturers that mostly apply to a single attribute of a product; and those that provide quantified environmental data of a product under pre-set categories of parameters (including absence of or within specified limits for certain chemicals) set and verified by a third party and based on a lifecycle assessment.

61. There are cases where brand owners require full disclosure of all chemical substances in their product(s). One example of a positive list approach is found at Interface Corporation (described in more detail below). An example of a standard format that could be used for full disclosure is the

Institute for Printed Circuits (IPC)-1752 (Materials Declaration Management) allowing companies to receive and provide full materials disclosure data using one common system.

62. Many of the waste-related policies introduced over the last few years are based on the principle of extended producer responsibility. The producer responsibility can also include a requirement for the manufacturer to disclose information needed for safe use, handling, recycling and disposal. This makes producers responsible for providing information on the product or its effects at various stages of its life cycle and could thus include information on chemicals in products such as hazardous material contained or risk management measures.

63. Public databases include published lists of information regarding chemicals in general. These may include any regulatory lists of hazardous chemicals or those of concern often referenced by product-specific databases. These lists are mostly produced by government agencies, industry associations and public interest groups and are made publicly available.

Textiles

64. In the textile sector many forms of labelling exist but few are related to chemical information. Some major import markets require labelling of fibre content and sometimes care instructions of their textiles and garments. The sector is known for company specific restricted substances lists applicable to the company's suppliers. Companies obtain information from their suppliers and manufacturers upstream; when they put in the effort to get the information, they "pull" the information they need.

65. Oeko-Tex® Standard 100 is a label of the International Oeko-Tex® Association that tests and certifies textiles for environmental and safety performance. Verification testing can be reduced when the manufacturer can supply reliable information on the composition of chemicals entering the production processes (e.g. they are using certified process chemicals). Another example of labelling that follows the restricted substances list approach of confirming that products are not containing certain chemicals is the Eco-label or the EU flower, a system of indicating that a product meets legal requirements regarding prohibition from use or restriction to maximum levels of certain substances in the final product or process chemicals. .

66. ChemicALL, although not a system providing information on chemicals in manufactured products, was specifically developed to address the needs of designers of textiles and later expanded to other products. It is an information system on what chemicals are used in textiles, the function they bring, what legislative restriction and known hazards are associated with them and on possible substitutes. It is targeted at designers of textile products to assist in making informed decisions and dialogue on chemicals in those products and is a constructive example of an information system for a specific section of the market chain that grew out of specific identified needs.

67. Interface Corporation manufactures carpets in facilities in North America, Europe and Asia and has an Environmental Performance Declaration that accompanies a product and includes many performance and sustainability information. Interface requires its suppliers to submit lists of chemical ingredients for all materials entering the Interface production processes. Non-disclosure agreements ensure confidential information is protected. A positive impact of collecting chemical information allowed for the substitution of problematic chemicals by those of less concern, however information on chemicals in the products were not used to market the products. Interface was examining ways of making their Environmental Performance Declarations more suitable in format and length than the current 20-30 pages but noted the difficulty of capturing all relevant data in condensed form. It was noted that buyers were not usually individual consumers and as such better able to digest the information provided.

68. The Ecological and Toxicological Association of Dyes and Organic Pigments Manufacturers (ETAD) are fully aware of the need for their members to control chemicals in their products. Members are required to test their products and transmit the results to ETAD, which maintains those results as confidential business information. The Association works on the basis of a restricted substances list by ensuring members products comply with relevant legislation, restrictions required for eco-labels and the chemical industry's Responsible Care initiatives.

69. TrueTextiles, a United States manufacturer producing furnishings, has instituted an internal

company policy of environmental performance for their products including a requirement that all suppliers of raw materials disclose the composition of their materials. The system includes a method to compare the material composition list against a company "acceptable" (ed.) list and for them to accept or reject the raw material accordingly or, on occasion, to substitute to a chemical of less concern. Suppliers adhering to the system do so with the knowledge that their composition list or proprietary information is securely protected by TrueTextiles.

70. One company (Patagonia) has developed a website that allows users to scan through the product line and review the characteristics of some of their products including chemicals content. Another company (Switcher) has a product information disclosure scheme called Respect Code in which manufactured products are labelled with a code unique to each production batch. The code is linked to a website that allows the user to access information on the given product along the entire lifecycle, although currently there is only limited chemicals related data.

71. As mentioned before, information on chemicals that are not contained in products is most often governed by restricted substances lists. An example described in detail in the case study is from the American Apparel and Footwear Association working with the Apparel and Footwear International Restricted Substances List Management Group. It was noted that significant and sustained efforts were necessary to ensure a company implements a restricted substances list throughout the supply chain.

Toys

72. While there is no one system used in the industry, information on chemicals in toys is exchanged in a number of ways, each of which could be considered an information exchange system. The most prevalent is information flowing between direct trading partners on the basis of restricted substance lists or according to requests for product composition or "recipes". The next most prevalent is information flowing from external stakeholders to consumers, via product guides or compliance alert systems. Lastly, manufacturers provide consumers with information via product labels. The use of labels is highly prevalent if it indicates regulatory compliance (for example the CE mark in the European Union or the Etiquetado de Juguete in Mexico) but is nearly non-existent for voluntary eco-labels.

73. The Chinese toy-manufacturing sector is of special relevance for the entire toy industry with an estimated 2700 companies in 2008. Communication between China and their business partners in the rest of the world influences how information is exchanged in the toy sector. The case study noted that following toy recalls in 2007 the Chinese authorities invested in product safety measures and currently operates a system of toy export control, RAPEX-China, intended to assist Chinese manufacturers who currently do not have up to date, detailed knowledge of toy safety regulations. The Chinese authorities (AQSIQ) are supplied with information on consumer products originating from China, which have been identified as dangerous and consequently banned or withdrawn from the European market by the authorities of the Member States, and notified by these to the European Commission via the European RAPEX System.

74. While information may not flow uninterrupted from player to player in the supply chain, it is commonly generated by toy testing conducted by suppliers or manufacturers either through in-house laboratories or those of third parties. Some information systems were identified that covered parts of the supply chain. In addition to the restricted substances lists described in the general part above, some toy companies request information on product (or material) composition, recipe requests, used to design product testing or in their own risk assessments.

75. Consumer associations, non-governmental organizations and some companies operate various product guides, including Good Guide, Healthy Stuff and Stiftung Warentest although these are not only limited to toys. Information is targeted at interested consumers and disseminated through web sites or magazines. Products are assessed against standards developed by the programme operators. These databases or catalogues are usually initiatives with national outreach. There are also websites giving consumers guidance on chemicals in toys such as Toys Advice in the United Kingdom and an Australian government programme on product safety.

76. Toy manufacturers can use declarations to prepare their regulatory compliance documentation and in some cases may use such declarations to ascertain the use of other, non-regulated substances in

their toys. There are also other management measures to control chemical compliance information, such as databases on material stock-holding to trace any contamination of materials and consequently of toys. There are currently two pilot projects on using traceability systems for toys and the industry is also looking into systems to support new technical documentation requirements in the new European Union Toys Safety Directive.

77. Both Manufacturers and importers need to obtain compliance documentation and test results from manufacturers and sometimes also from pre-manufacturers, as they are responsible for demonstrating compliance to the authorities. Manufacturers also use information on chemicals potentially contained in toys to assess risks. Some manufacturers use information on chemicals to establish a database of approved materials.

78. Labelling schemes exist in the toy sector principally aimed at indicating product safety. Criteria can include product safety beyond toy regulation (GS label, Lion Mark), environmental concerns (eco-labels like Nordic Svan, Blauer Engel, not only limited to toys) or general toy quality including pedagogics, aesthetics, environment and safety (Spiel Gut). There are also voluntary eco-labels but of limited scope such as the Nordic Svan toys standard that lists a total of 4 products certified from 1 company. Two different approaches may be distinguished in labelling schemes. Firstly a mass market approach with information that confirms the toys comply with legal requirements and secondly an elite solution with information that confirms products comply with additional rules, either in terms of safety or in more general environmental criteria. Labelling schemes are often country specific initiatives.

Electronics

79. There are overarching, industry-wide systems developed to facilitate exchange of information in this sector that are international in scope. In addition, regional and national rules and policies regulate the flow of information on chemicals in electronics. However, as many companies feel that these systems are not sufficient to meet their particular information needs, they often develop their own approach, complementing the joint industry systems and regulatory frameworks with internal systems that include substance restrictions, information exchange and supply-chain management

80. The Joint Industry Guide (JIG) is a material declaration standard developed by and for the global electronics industry. It is a business-to-business communications tool that applies to products and subparts relevant for manufacturers in the electronics industry with the aim of facilitating reporting on material content information across the global electronics supply-chain. JIG lists materials and substances that may be present in the supplied electronic products, insofar as those chemicals constitute part of the finished product or subpart. The chemicals included are those that are subject to regulatory or market requirements. The guide lists substances for disclosure, threshold levels, regulatory requirements that establish those levels and a set of data fields for information exchange.

81. The Institute for Printed Circuits (IPC) is a global trade association servicing printed circuit board and electronics assembly industries. IPC-1752 (Materials Declaration Management) establishes standardized material declaration forms and electronic data exchange formats for the industry allowing companies to receive and provide full materials disclosure data using one common system. The system was originally developed in response to the European Union regulation on RoHS.

82. The International Electrotechnical Commission (IEC) is the world's leading organization for the preparation and publication of International Standards for all electrical, electronic and related technologies. Adoption is voluntary, although the standards are often referenced in national laws or regulations around the world. IEC is developing a material declaration standard that is based on the JIG and the IPC data exchange format.

83. The case study noted that consumers were often made aware of health or environmental concerns associated with electronic products through the media, more specifically electronics magazines. In addition, environmental excellence schemes such as the European Union Eco-label may provide a useful "shortcut" for consumers to make informed product choices. The appropriate eco-label on a given product will signal to consumers that they do not need to look for information about possibly hazardous chemicals in the product. However, there are concerns related to the current widespread problem of green washing, which can make a dependence on eco-labels less than reliable for identifying products without chemicals-related environmental or health concerns.

Building materials

84. There are many existing channels for information provision and use related to chemicals in building products, which provide a great deal of data. Including materials safety data sheets, public databases that often include restricted materials listings, information clearinghouses, standards and certifications, reporting initiatives, and trade association information. The proliferation of green building standards and certifications is providing a strong market incentive for manufacturers to offer more transparent information about their products, and the growing numbers of green building councils in countries around the world have the potential to provide a platform for the dissemination of better information on chemicals in products. A majority of stakeholders depend upon Material Safety Data Sheets as a primary information source.

85. In this sector, one set of standards certifies buildings through an assessment of various aspects of a building's sustainability. These standards generally address information on chemicals in products through a prescriptive approach in which certain chemical contents in materials are restricted or discouraged. Another type of standard or certification looks at individual building products to determine properties based on a predetermined set of parameters. Companies may then use the certification status as a way to validate claims about a product, and certifying organizations often provide a publicly available listing of all certified products. These types of certifications do not generally publish specific information about a product's contents, but limit reported information to a pass/fail approach.

86. Reporting initiatives include guidelines that are published to standardize the way in which information is conveyed or steps taken voluntarily by product manufacturers to disclose information on chemicals in products. Voluntary steps can take the form of an internally generated product data sheet or sustainability report. This information is most often made publicly available through a specific manufacture's website, and is limited to the level of information a company chooses to disclose. This system may not be specific to building materials.

87. Pharos is a web-based tool that seeks to provide transparent information and access to health and environmental data about the manufacture, use, and end of life of building materials and is targeted at building professionals involved in the specification and procurement of building materials but can be used by anyone who registers as a member of the system. It considers product impacts to human health and the environment as well as social and economic impacts.

88. BASTA is a non-profit database jointly owned by IVL Swedish Environmental Research Institute and the Swedish Construction Federation. It is free and publicly available with the goal of speeding up the phasing out of hazardous substances in construction materials and is focused on environmental and human health impacts. A product or material is included in the BASTA database once the product supplier performs a self-assessment of the material proving it meets BASTA criteria. The material supplier is responsible for declaring the chemical composition of the product. Suppliers must provide supporting documentation for the self-assessment.

89. The United States Green Building Council is a non-profit organization that addresses building products and alternative green building products and practices, primarily through LEED (Leadership in Energy and Environmental Design), an internationally recognized green building certification program. LEED assesses materials and resources from an ecological point of view. It is primarily geared toward building professionals, including architects, real estate professionals, facility managers, engineers, interior designers, landscape architects, construction managers and lenders. LEED 2009 offers several credit paths that address chemicals in materials in indoor air quality, flooring and wood and agrifibre products. Methods for addressing these chemicals include prescriptive guidelines for material selection as well as indoor air quality testing. Additionally "Pilot Credit 11: Chemical Avoidance in Building Materials" has been launched addressing chemicals of concern in building materials and includes a comprehensive evaluation of all interior finishing materials.

90. The European Plastic Pipes and Fittings Association (TEPPFA) is the European partnership of manufacturers of plastic pipe systems used in building, infrastructure and civil projects. TEPPFA plays a coordinating role in preparing its industry members for REACH legislation, supporting and providing guidance on new regulations of chemicals and their use in building products. Perhaps most importantly

for information on chemicals in products, TEPPFA has commissioned independent lifecycle assessments of several applications of plastic piping commonly used in building projects.

91. The Council of European Producers of Materials for Construction (CEPMC) is a European confederation of national umbrella organizations having a large number of national associations, which cover various types of construction materials and building products. CEPMC monitors European legislative, administrative and economic measures affecting the construction materials and building products industry and represents its membership's interest in the legislative process and has developed position papers such as "A harmonized approach relating to dangerous substances under the Construction Products Directive" and "Development of horizontal standardized assessment methods for harmonized approaches relating to dangerous substances under the construction products directive".

General obstacles to developing information systems

92. The complex and sometimes vast mix of ingredients within a given product exacerbates the difficulty of providing information. Such ingredients may be introduced at the beginning of the product manufacture from raw material providers or chemical suppliers and could be eliminated through the process of manufacturing at different stages or might incrementally accumulate in the product to remain with it throughout its lifecycle. Contamination of products might also occur. Complex mixtures of end-of-life materials can hinder safe waste management and disposal. The voluminous amount of information on chemicals in products that can be required for complex products is daunting both for the provider and the recipient. There are, however, private and government supported initiatives to support the private sector with services and information in complying with regulatory as well as environmental standards.

93. The weaknesses or deficiencies of an information flow, even where such an information flow might be initiated or requested, must be recognized. Some stakeholders might be unwilling or unable to collect the necessary information or transmit information they have received. Some might also be confused and overwhelmed by the different information requirements they might have to meet from different producers or manufacturers of the same product. Overcoming such obstacles requires education, awareness-raising and capacity building and the consequent necessary resources.

94. One of the main obstacles facing sound development of information systems for chemicals in products identified in the case studies was a lack of resources. Collecting information requires considerable investment both financial and human to be able to test and identify chemicals used along the value chain and in the final product. The textile case study stated that large companies with substantial restricted substances lists reported staff levels of around twelve persons to maintain those activities. In addition, to ensure the usefulness of the information provided, the system has to be constantly kept up-to-date as, for example, products change in composition, chemicals are restricted or banned and new chemicals introduced, or suppliers are changed. Depending on the size of the companies manufacturing a product, costs associated with developing and maintaining an information system can be considered of lesser priority. To be useful at the end-of-life stage, once information on chemicals in the product is collected there is the added burden of presenting that information in terms that are understood by laypersons in developed countries, developing countries and countries with economies in transition.

95. Another barrier to provision of information on a given product was that of proprietary and confidential business information. While there are several instances where business agreements exist between different entities of the value chain to ensure confidentiality of information exchanged, this seems to be undertaken on a case-by-case basis. Companies might be loath to release specific chemical information, especially at the component level, for fear they may lose their competitive advantage. There has also been some concern regarding the definition of proprietary information as that could, in some instances, preclude the provision of information that has no impact on the market for the product concerned. It can be used as a means to avoid provision of information.

96. A lack awareness of the need to exchange information is an obstacle. This is especially true among stakeholders who have no clear legislative responsibility regarding the chemical content of the finished product. In many instances both up and down the supply chain, stakeholders were unclear on what information was needed and for what purpose, particularly smaller companies who did not always know in what format to provide information and in some instances did not actually have the necessary

information. There is sometimes confusion attached to the type of information required or requested along different levels of the value chain. Language and competency barriers might exacerbate that confusion. The ability to interpret and use information on chemicals is an important obstacle to the flow of, or access to, information on chemicals. This lack of expertise impedes the demand for information and it impedes the supply of information. The case study on toys, for example, indicated that authorities did not have chemicals expertise necessary to know whether compliance documentation was complete and accurate and how to prioritize inspections.

97. The flow of information did not always move through several levels of the supply or production chain. Suppliers several levels upstream can be unaware of what product or application their chemicals are used for downstream. This is particularly true in large and complex sectors such as the electronics sector where many components already made of several different sub-components and substances are combined into one final product. Information flow along the supply chain must also be guided by downstream demand, coming from the brand owners, rather than suppliers. Facilitation of communication between brand owners and recyclers/waste handlers on information needs is crucial in the electronics sector. Communication of information must be an easy to understand format to address the largely informal sector with workers with limited education or organization. The reliability of the data provided sometimes comes into question requiring a need for data verification through testing or other means. That, in turn, puts smaller companies at a disadvantage given they often lack the resources to undertake that verification process.

98. During the consultation held in December 2010, the difference between "pull" and "push" systems of information access and provision, respectively, along the value chain was identified and a flow chart developed to illustrate that effect (see Figure below). It was noted that chemical manufacturers could only push information on chemicals being produced for a given chemical or chemical product/preparation along a limited number of steps down the value chain. Once chemicals were incorporated into more complex materials or components, manufacturers had to compile the relevant information and make it available to the next step along the chain for the information to continue to be available further down the chain. Manufacturers or importers of final products were forced to pull information on the presence of chemicals in their products from up the value chain. Often it seemed, data was simply not passed on or was not requested in between these "pushing" and "pulling" efforts, resulting in a break in the information chain, a form of "silent" area. This might happen at the level of the materials, intermediate or component manufacturer, where information is no longer being submitted or requested and where there is not a legal or market stimulus to exchange the data. It was suggested that in certain instances, where composition did not change in the middle level, information might be transmitted by-passing that level.

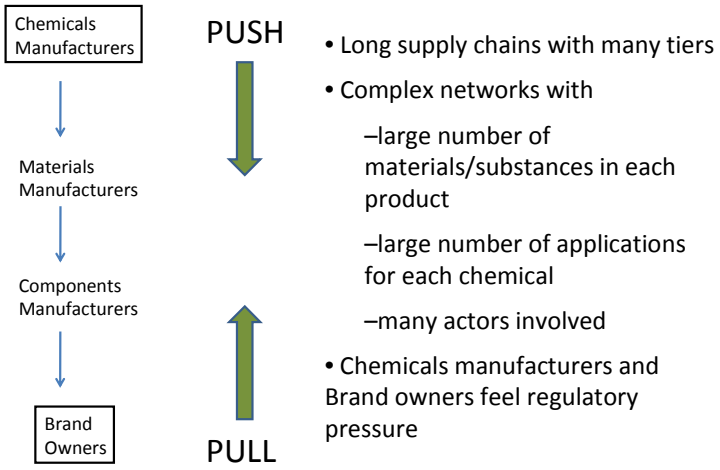


Figure 1: Illustrating efforts to "push" or "pull" chemicals information within the supply chain

99. Government personnel often had little or no information on chemicals in products. It would appear that while in general governments were aware that chemicals in products might pose a risk,

there was a lack of capacity to fully understand the issues and to take informed decisions. Gaps in information can affect government ability to ensure compliance, retailers' ability to ensure product safety and public interest groups' ability to ably inform consumers. It may be considered that lack of a world wide approach to information systems is an important gap. In some instances products containing materials categorized as toxic in one market are shipped to other markets with less stringent regulation. To avoid these cases a global view is important however the development of a single information system is unlikely to suit the different needs of all sectors. Whether information needs were imposed at the regional or the national level the importance of effective enforcement was stressed. To recall here is the GHS system that is expected to be adopted globally, and on which it therefore would be useful to build any future efforts related to information on chemicals in products.

Addressing the gaps and obstacles

100. It might be easier in some instances to take a step-wise approach to developing or improving systems for information on chemicals in products. It can be expected that in the future there will be an increase in the number of chemicals that are considered of concern and that should not be contained in given products. Knowledge of what is contained in a product would ease the otherwise heavy task of ensuring along the entire value chain that each new chemical of concern is not contained in a product. Suggestions to move forward are often built on systems currently in place in developed countries and larger manufacturers, however institutional infrastructures and capacities to exchange and process information on chemicals in products are often lacking in developing countries and countries with economies in transition even when there is an awareness of the issues at stake.

101. The development of harmonized standards and formats is a means to enable faster communication and efficient collection of information. Partnerships between companies and pooling of resources can promote collection of such information. Industry associations are best placed to assist in this domain. For example there could be a shared list of restricted substances that encompasses the strictest regulations worldwide or extends it to include substances not currently regulated. Although sector specific systems might be the most valid path there is merit in enabling cross-referencing for suppliers who are not limited to single sector manufacturers. Permissible or not permissible chemicals are often country specific and difficult to deal with for the global manufacturer. A common standard for chemicals information and information transfer would simplify the process but given the different needs of all stakeholders would probably require large efforts to reach a common understanding. A data pool or global system where companies can easily obtain all the needed and relevant chemicals-related information would be useful in addition to one listing those of concern, in particular for companies with little chemical expertise or other resources. Labels that identify materials meeting certain requirements could be used within but perhaps more importantly outside / after the production chain. It is important to bear in mind that small and medium-sized enterprises are less able to take on board the costs associated with setting up chemicals in products systems. Therefore the GHS and its safety data sheets information should be considered as a basis when developing any system for information on chemicals in products.

102. Suggestions for a harmonized restricted substances list focused around companies declaring that their products did not contain certain chemicals or contained them below acceptable threshold levels. Such a system could be simple and could allow companies to protect their proprietary information. It could also be developed on a global basis or by sector. A single system could avoid confusion over what information to provide and which lists to follow. Finally it could facilitate import/export, transport and, more importantly, compliance and enforcement. A common frustration amongst stakeholders was lack of knowledge about differing reporting requirements across various regulatory platforms that could be addressed by standardized reporting of environmental data.

103. Non-disclosure agreements are a means to overcome concerns on confidential information sharing. Additionally, third-party expert organizations could act as intermediaries to indicate safety of a product without providing the actual chemical information. Some manufacturers will not reveal the complete details of their formulations, but do share all risk information with customers. Standardization could allow actors throughout the supply chain to collect similar data and have better transparency and compliance as well permitting rapid transfer of information. Full materials disclosure, however, could be a very onerous task and serve little purpose if information on the hazards or risks of those chemicals in the given applications is not available. A suggestion for an alternative model, called a screening hub, is provided in the case study on electronics.

104. An important means of transmitting information on chemicals in products is optimal communication between different stakeholders along the entire lifecycle and manufacturing process of a given product. Such dialogue will ensure the correct information is requested and provided, the information is understood and the end needs are met both from human health and environmental protection perspectives. Improved communication between manufacturers at each level of the production chain could also improve information transfer. A specific need voiced by manufacturers in the construction sector was for timely information on chemicals that might trigger potential trade restrictions or barriers, so that they can appropriately communicate with importers.

105. A possible approach for increasing stakeholder's access to information on chemicals would be the introduction of a traceability system linking available information and making it accessible to all stakeholder groups in a way appropriate for their information needs, however this is quite a costly operation less likely to suit developing countries and countries with economies in transition at the current time. Details on how such an approach might work are outlined in the case study on toys. Another approach is that of escort information that is attached to a product, and then follows the product all the way down the lifecycle. With appropriate technology, information is added and updated as the product travels along different stakeholders in a product-chain. The aim is to gather and organize the information in such a way that all the necessary information is available during the whole product lifecycle. The escort information can be provided on an easily readable sticker, a Radio Frequency Identification Device or a bar code. The advantage is that anyone having access to the appropriate reader, even up to customs and government officials, can obtain information from the escort tag.

106. Standards could be developed for comparing products in a given sector, those with least harmful substances being given a mark of merit and include health and environmental safety factors, potential for recycling and good business practice.

107. In the textiles sector, the use of restricted substances lists is a common means to increase safety in products. Although generally not providing specific information on what is contained in a product, such systems can be promoted for use to those not currently participating in any scheme. The existing systems might also be further developed and expanded to include information on what is in the product. The complexity and cost of setting up a restricted substances list system has resulted in its mainly being adopted by larger manufacturers in the textile sector. In one instance discussions are underway to examine the possibility of a standardized system at the national level. Currently there are no international efforts underway. A sector wide approach could facilitate communication on chemicals in products to all stakeholders across the lifecycle of the product.

108. Eco-labels are currently mainly used to state what chemicals are not contained in a given product or to provide information on compliance with one or several parameters of environmental safety. Use of eco-labels to transmit information on actual content of chemicals in products would require a shift in what information was gathered, how it was exchanged along the value chain and what level of information should be provided to the consumer.

109. Environmental product declarations have the potential to carry information on chemicals in products. Currently the type of information carried is specific to a particular type of product group and is determined in product safety requirements drawn up by industry in full consultation with stakeholders and presented in a format that allows evaluation and comparison by the purchaser. In the long-term these could be considered for adaptation to include information on chemicals in products.

110. There is a need for more information on chemicals in products at the level of recycling, especially for small and medium sized enterprises and particularly with reference to the electronics and building sectors. To ensure that information is of use, recyclers need assistance and knowledge on how to interpret such information for it to be constructive. Recyclers' motivation to acquire relevant information and to take appropriate action for improving recycling practices needs to be stimulated. Motivation and incentives are needed (such as legal requirements and consumer pressure) to seek and use information on chemicals in products, and to use this information for improving recycling practices. Where such systems are impractical, particularly in developing countries, workers in the sector need education on how to handle the waste products safely and training in safer methods of dismantling and recycling. There is also need for improved communication between producers and the end-of-life sector.

111. Several manufacturers expressed the hope that full initiation and acceptance of the REACH legislation would make information on chemicals in products easier to track.

Sector Conclusions

The major conclusions regarding the information systems for the different sectors are summarized below.

Textiles

112. The textile sector has a long history of declaring the chemicals composition of fibres together with washing and handling instructions. With regard to other chemical components, there has been significant progress in recent years with many large brand name companies having established systems, primarily restricted substances lists, for controlling chemicals contained in their products. Some labelling systems are used which, like the restricted substances lists, are based on ensuring absence or "within-limit content" of a chemical in a product. These initiatives have involved several stakeholder levels in the production chain although mainly initiated by the brand-owners. The main driving force for these efforts has been meeting legislative requirements although some initiatives nowadays go beyond these and in at least one case the brand-owner require full disclosure. Supporting information systems and services provided through private and government supported initiatives to assist companies in implementing regulatory and environmental standards as well as for finding alternatives are available. Some companies are starting to provide data on chemical content of a given product, their motivation behind these efforts being stimulated, among others, by consumer demand for safe products and precautionary action related to future legislation.

Toys

113. Currently a primary approach of getting information on chemical content in the toy sector is lab testing. Testing information is generated at different stages in the life cycle rather than transferred or shared along the supply chain. In most cases testing is conducted once products (or prototypes) are finished and ready to be shipped. Information retrieved from these tests usually inform downstream actors in the supply chain and tend to be used for compliance purpose. It has been suggested that stricter control over existing rules, rather than a tightening of rules, was most important in the short term. It was suggested that export control would be facilitated if there were a restricted substances list for every product or a database of information on potentially harmful substances contained in commonly used material.

Electronics

114. Companies often created their own restricted substance list to keep undesirable chemicals and materials out of their products. A few companies required full materials disclosure from their suppliers. In this sector, too, most companies interacted with adjacent entities on the product chain although larger manufacturers were able to draw information along several levels. This sector highlighted the lack of an agreed definition of proprietary information. Development of a common list of chemicals to be avoided in supply chains and products, a common data collection format, software and systems for electronic data transmission, and platforms for open exchange of information were encouraged. Some manufacturers were designing the content of their products for the reality of waste handling operations in developing countries, for instance, by omitting chemicals that could create hazardous pollutants when burned inappropriately.

Building materials

115. There are many existing channels for information provision and use related to chemicals in building products, which provide a great deal of data, including materials safety data sheets, public databases that often include restricted materials listings, information clearinghouses, standards and certifications, reporting initiatives, and trade association information. Many considered that existing information systems did not currently provide balanced data across the lifecycle of most building and construction products. It was suggested that in the future additional information on chemicals in products should be related to the use, product and material manufacturing, and end-of-life phases. A

few information systems for specific building products exist that provide information relevant to environmental and human health impacts of chemicals and in certain cases also information regarding the chemical composition. Non-governmental organizations are performing a growing role in the provision of information on chemicals in products for building materials. Availability of relevant information is lagging behind the demand created by the green building marketplace. A sector such as building materials is almost too large to identify a "one size fits all" solution to information provision. It would be useful to conduct a study of a focused subset of building materials with specific chemical information needs.

General Conclusions

116. The Consultation held in December 2010 drew up a set of outcomes from discussions on the toy, textile and electronics sectors that are annexed to that report (http://www.chem.unep.ch/unepsaicm/cip/default.htm). General conclusions were also reached during the consultation as set out in the same report and from which some principle issues can be agreed. It is clear that commonalities exist among the sectors providing potential for cross sector exchange of experiences and learning. Information was often available from chemicals producers but did not flow easily through the value chains. Often information was lost mid-chain, between chemical production and final product manufacture. The engagement of mid-chain actors is a challenge but crucial to ensure a smooth and uninterrupted information flow. Companies placing the final products/articles on the market ("brand owners") carried the responsibility for their products and needed to ensure that they had the information necessary for taking that responsibility.

117. Collection of information on chemicals in products in the supply chains is potentially the basis for other efforts to meet the objectives of SAICM. Evaluating the information available and tailoring that information to actors/stakeholders along the product lifecycle is a separate task. Access to product safety information has been improved for some actors and some products however current efforts are heterogeneous and existing information systems on chemicals in products are often not linked.

118. The Consultation suggested that a harmonized industry-wide effort (for example identification of data needs, awareness raising, development of formats and standards) by sector was likely to be more efficient and effective than individual company actions. Given that many sectors had common suppliers up-stream, efforts in one sector could have positive impacts also in other sectors. Regulation and voluntary initiatives were complementary and both played an important role. However it was noted that many of the existing information systems on chemicals in products had been developed in response to regulatory requirements.

119. It was clear that awareness in society on the dangers of chemicals in products was evolving and brand owners increasingly saw the positive business impact that improved knowledge, oversight and actions on chemicals in products would bring to them. Producers of products as well as retailers need information on chemicals in products, both to be able to comply with legislation, but also to fulfil the expectations from customers. Business risks include the need to protect the brand name and market shares. The markets of products are today global with products produced in one part of the world being transported, used and turned into waste in other continents; ultimately this also means a global transport of potentially hazardous chemicals.

120. Developing systems that indicate what chemicals are not contained in a given product has been a positive step to ensuring product safety as well as environmental and human health protection. It is also worth noting that the harmfulness of the chemical must first be established before controls are put in place to avoid its use in a product, which can be a very lengthy and onerous process. In many cases the provision of information on chemicals in products is a voluntary action sometimes stimulated by adherence to social responsibility or responsible care schemes. A unique set of objectives and operational parameters might help to shape a harmonized information system for chemicals in products.

Recommendation

121. The Consultation suggested that based on the work done to date in the project on chemicals in products, and information gained during development of the case studies, undertaking a pilot project would be the most useful and positive next step forward. Such a project would require commitment

from a few leading companies in the selected sector. If it is agreed, a pilot study could, for example, address the following issues. The scope and format of an information system on chemicals in products; the methods to promote widespread use of such a system; identification of systems that could be used as a basis on which build a new information system or further develop an existing one; methods to raise awareness and understanding among stakeholders to ensure an effective system is developed; special needs and capacity building for developing countries and countries with economies in transition; resource implications for different stakeholders.

122. The Kogg & Thidell report suggests a two-tier approach to information flow on chemicals in products. The two tiers aim to address a) the challenges of knowing what substances are present in the product and possibly also which ones can migrate from it and b) the challenge to interpret and evaluate the information to serve stakeholders needs. The December 2010 Consultation confirmed that the two-tier approach was an appropriate way forward with the information on chemicals in products being the first tier, and the interpretation and tailoring of information to final products' users and end-of-life treatment actors being the second tier. The case study on textiles takes into account the two-tier approach and provides some details on the first steps towards undertaking a pilot project in that sector. It suggests examining the possibility to develop such a pilot project with a view to preparing for the third session of the International Conference on Chemicals Management.

ANNEX

Executive Summary of the Textiles Case Study

The manufacturers of the textiles sector produce clothing and other textiles which enter into the lives of almost all persons on the planet. The sector is an important one for the global economy: in 2003 more than 140 economies produced clothing and textiles for export, and many are highly dependent on these exports for employment. The sector is also one of the most globalized: the series of steps in producing and selling a garment – fabric production, fabric treatment, cutting and final product assembly and transport to market - frequently involve international or intercontinental movements of products.

With the global movement of clothing and textiles comes the global movement of whatever they contain. In recent years increased attention has been given to the chemicals which are contained in textiles products. This could is part be explained by the existing knowledge of the intense use of chemicals by the sector – chemicals are used both for fiber production and during the manufacturing process.

This growing awareness and concern of real or potential safety issues related to chemicals in products, including those in textiles, has been driven by numerous factors; an increased knowledge of the hazards associated with chemicals used in the sector; legislation (such as REACH in the European Union and California Proposition 65 in the USA) which established requirements for disclosure on those placing items containing chemicals onto markets; and consumers' desire for greater product safety.

Through the global dialogue under the Strategic Approach to International Chemicals Management (SAICM), a Chemicals in Products (CiP) Project was initiated in 2009 to examine the information requirements for proper management of chemicals contained in products. SAICM has as its goal "that by 2020 chemicals are used and produced in ways that minimize significant adverse effects on human health and the environment". In Paragraph 15(b) of the SAICM text it is recognized that information on chemicals, including chemicals contained in products, is essential if proper management of those chemicals is to be possible. In this context, the CiP Project is reviewing existing information systems pertaining to chemicals in products, assessing that information in relation to the needs of all relevant stakeholders and identifying gaps, and developing specific recommendations for actions to promote implementation of the SAICM goal. This report presents the results of the study carried out by UNEP on the textiles sector. The study focused predominately on clothing.

Information on chemicals as they relate to textile products

With respect to current methods of exchanging information on chemicals in textile products, this study found that except for fiber content essentially no information system exists for transmitting data on what chemicals are contained in individual products. There are efforts within the sector where companies require full disclosure of materials which are entering into production lines and which give full disclosure of the chemicals in the final products. This study found one or two companies where such activities are underway – which is encouraging in that full disclosure can be part of a viable manufacturing operation. However the sector as a whole does not practice full disclosure of its products' chemical composition.

What does exist within the sector is a rather well-developed set of activities aimed at ensuring that unwanted chemicals are *not* present in products. These activities generally grew out of companies' efforts to meet legislative requirements for ensuring product safety for their target markets. The activities often take place within the framework of individual companies' restricted substance list (RSL) programs. Ecolabels were also found which specifically address chemicals in textile products and one of these (the Oeko-Tex® Standard 100) has been adopted for use by some 90,000 textile products.

A RSL is a list of chemical substances which a company wishes to eliminate or to keep below a required concentration in their products. Generally it is the company who puts the products on a market, frequently a brand name, which specifies the RSL program parameters and mode of functioning. Suppliers to the company must put in place measures to ensure their manufactured products comply with the RSL's requirements. These initiatives often entail training of suppliers,

routine and random product testing, certification of compliance that suppliers further upstream are supplying appropriate chemicals and other measures designed to ensure the program's integrity are common features of an RSL program. It is notable that under an RSL program the information on what chemicals are not in the product – that is the product's "negative content" information – does not accompany the product itself, but is often made available through other channels (e.g. the company's web site).

Ecolabels can have many of the same features as a RSL program. Indeed, a chemicals-oriented textile ecolabel must derive the validity of its claim for 'safer products' from a rigorous set of requirements, including oversight and reliable testing. As ecolabels are generally attached to the finished article, the negative-content information does accompany the product.

Needs, uses and gaps for information on chemicals in textiles

The study investigated the wide range of needs of the numerous stakeholders involved in the life cycle of textiles and who would undertake management of the chemicals contained in textile products: it found the main driver for the great majority of these needs is product safety. Companies want to know the products they manufacture and sell are safe, consumers wish to be sure they are purchasing a safe article, governments require that only products achieving a prescribed level of safety are placed on the markets, etc. There are also needs related to technical requirements; e.g. a waste handler or recycler needs to know if his raw materials contain problematic substances. All these desires and requirements depend on information, yet the types of information needed vary widely: is it what is in the products or is not in the products; the level of expertise or knowledge of the person receiving the information affects how the information should be presented; in short, what chemicals content or negative-content information would best meet these varying needs, and what information exchange mechanism(s) would be effective?

Using the information on chemicals in (or not in) textile products for evaluating or assuring product safety was the common theme found amongst stakeholders. Their methods of achieving this and their priorities have led to some of the earlier mentioned systems (e.g. RSLs, ecolabels). These systems can be said to have achieved a number of significant gains: a global network of informed manufacturers and suppliers exists that is capable and practiced in ensuring that identified hazardous chemicals are not present in textile (primarily clothing) articles; the need for oversight on the identified hazardous substances has raised awareness of the hazards in the design phase and in some parts of the supply chain; and to a large extent these systems have achieved their goal of preventing hazardous substances from being present in the products.

The CiP project has as a part of its mandate to investigate chemicals in products information systems - that is systems which communicate information about what chemicals are present in products.

Conclusions

While systems communicating what chemicals are not in products (i.e. negative-content information systems) are not CiP information systems, negative-content type systems would be able to offer sector stakeholders (mainly within the production chain) the opportunity to improve their general awareness and specific knowledge of textile related chemicals issues. A widespread adoption of these types of efforts by stakeholders in the business and industry group could bring significant benefits by building up capacity to make informed decisions in the design and production part of the life cycle.

Without detracting from the significant gains brought about by negative-content methods of product chemicals controls, it must be recognized that one of the limitations of such an approach is rooted in its reactive nature. If manufacturers do not know what is in their products, they will need to investigate if a new substance of concern is identified. Looking at the example of a newly emerging chemical of concern (e.g. perfluorinated compounds used in textiles) the approach which a negative-content information system follows is to first investigate if the chemical is present in a product prior to considering suitable actions. It can take years until these controls are effective.

A CiP information system would help companies be prepared to take early action. Chemicals composition data would be available and could be used by e.g. manufacturers to practice substitution of less-desirable process or product chemistry on a planned basis, or by governments to assess the distribution paths and amounts of specific chemicals contained in products, or by researchers as a basic

data source, or by consumers in purchasing decisions, or by waste handlers to identify products requiring special handling, etc.

Recommendations

There are several initiatives in the textile sector such as RSLs, ecolabels and Environmental Product Declarations (EPDs) that to a certain extent address issues around CiP information but which do not fully meet the needs for CiP information. Taken together they are also very diverse in terms of scope, criteria, design and method.

Based on this and other findings of the case study, for future actions it seems wise to take a step wise approach and, as far as possible, to build on existing systems and initiatives. In any cooperative effort aimed at building up CiP information exchange, it is important to gain experience along the way, allowing for more informed decisions regarding particular steps and actions to be taken. Such experience may be best harvested through activities with a limited initial scope and it is suggested that a pilot project be undertaken. This is in line with the discussions at the Sector-Expert Consultation held in December 2010 and involving other case study institutions and sector experts. It is also recommended that the pilot should address the CiP issues in a tiered approach, similar to the descriptions outlined in the 2010 CiP project report (Kogg & Thidell), whereby:

- Tier 1 would address the CiP information flow to the end-producer / brand owner or other actor responsible for the products' safety, i.e. primarily occurring within the production chain and,
- Tier 2 would address needs for CiP information by actors further down the products life cycle and usually outside the actual production chain.

The objective of Tier 1 would at first be to find solutions for meeting CiP information needs of the end-producers/ brand owners/ importers and other stakeholders associated with the production chain. It should explore ways of overcoming the "interruption of data transfer" that occurs between the information that chemical manufacturers provide and attempt to "push" down the production chain and the information that the end-producer / brand owner tries to "pull" from the up-stream actors. Solutions should as much as possible build on existing information systems and communication structures, in particular the globally harmonized system of classification and labelling of chemicals (GHS) and safety data sheets provided by chemical manufacturers.

The objective of Tier 2 would be to explore ways of tailoring the information to the needs of the stakeholders involved in the products' life cycle, i.e. who are using or otherwise handling the product, including distributors, consumers, authorities, recyclers and waste handlers. The possibilities for making use of existing systems such as RSLs, Ecolabels and EPDs should be investigated as well as potential contributions from eventual partners, IGOs or other international institutions on which a future system(s) could be built, e.g. through international standards or codes or labeling requirements.

Questions that the pilot also needs to address would include but not be limited to:

1. What scope would the CiP information system have – which chemicals or type of chemicals would be part of it for the sector(s) investigated and what information should be provided? In what format should the information be provided?
2. How to promote a broad uptake of a future CiP information system? What are the processes and drivers that can be built on?
3. How to raise the awareness and understanding among different stakeholders that would be required for creating an effective system?
4. What are the special needs in developing countries and countries with economies in transition that need to be considered in the design of CiP information system?
5. What are the resource requirements – both initial and long-term – among different types of stakeholders if a proposed system is to be adopted

Executive Summary of the Building Products Case Study

This research is in reference to the current phase of CiP work for the undertaking of case studies on selected product sectors to provide a clear picture of the status of chemicals information exchange within each sector. In order for stakeholders to best manage risks from chemicals in products, there must first be clear knowledge of information availability and flows: who maintains what type of data? Which stakeholder communities need information based on that data? How is information shared? Does information get shared in a timely matter? This case study relates to answering such questions for a sector highly prioritized by SAICM stakeholders--building materials.

The 2009 survey of SAICM stakeholders to gauge interest for CiP product sector priorities identified construction and building materials as a highly ranked priority sector, with 37% of survey respondents ranking the category as a "top 4" priority.[i] Construction and building materials are an important priority sector for a number of reasons, including the fact that building materials are estimated to account for as much as 40% of global energy and materials use and 33% of carbon dioxide emissions.[ii] This volume of materials use, combined with the rapid expansion of the green building industry, argues for a critical need for availability of information about the potential life-cycle impacts of building materials.

Many regulatory and voluntary initiatives are driving greater information provision and exchange and are cited and discussed as part of this study. These include regulations such as the European Construction Products Directive (Council Directive 89/106/EEC) and the "REACH" Regulation on the Registration, Evaluation, Authorisation and Restriction of Chemicals (EC No. 1907/2006), voluntary, market-driven certification and standards programs such as the Building Research Establishment Environmental Assessment Method (BREEAM), the Leadership in Energy and Environmental Design (LEED) system, and the Comprehensive Assessment System for Building Energy Efficiency (CASBEE). In addition, public databases developed by government and environmental organizations, such as BASTA and Pharos, are helping to make information about chemicals in products more available. However, there are still information gaps and needs going unfilled.

This case study focuses on an assessment of how information on chemicals within the construction and building materials sector are presently provided, transferred, tracked and accessed by different stakeholders within the life-cycle supply chain. In addition, insights are provided about additional information requirements and gaps to be addressed to better meet the needs of stakeholders in both developed and developing countries.

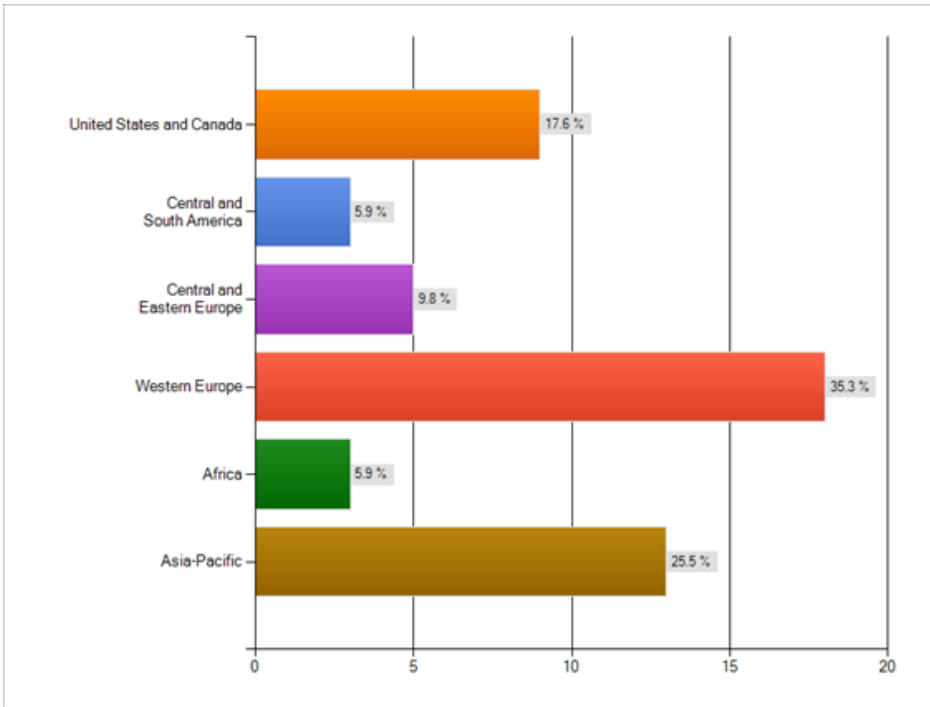
Survey Findings

As a key research component, an electronic survey was developed and distributed in mid-November, 2010. The survey was distributed to SAICM stakeholders, building and construction industry representatives, architects, deconstruction and demolition industry representatives, and applicable non-governmental organizations. In addition to the electronic survey, corresponding phone interviews were conducted with numerous stakeholders. The intended purpose of this process was to:

1) identify additional information systems being developed in regions and/or individual countries that may not have been identified through the literature search;
2) gain data and expert opinion on existing strengths, problems and gaps related to the flow of information related to building materials; and
3) identify obstacles encountered by different stakeholders throughout the production chain and product life-cycle in providing and accessing required information.

Fifty-two survey responses were received, with responses from all geographic regions (see Figure 1). Of those, thirty-five surveys were from developed countries and sixteen were from developing countries; there was one non-response.[iii]

Figure 1: Geographic Distribution of Survey Responses



Summary of responses:

- There was excellent distribution of responses across stakeholder sectors, representing manufacturing and production, architecture and design, building and construction, demolition and recycling, trade associations, government and regulatory, non-governmental and non-profit, and academia and education.
- Approximately 68% of respondents report seeking/using information about chemicals in building materials to identify materials meeting regulatory standards set for their region or industry sector.
- Products ranked highest in terms of priority for chemicals information include interior finishing (including paints), flooring, structural materials (including wood, metal and concrete), insulation, and material feedstocks/raw ingredients for material production.
- In rating the trustworthiness of information sources, 43% of respondents ranked government/regulatory data sources as most trustworthy and unbiased, and 49% ranked industry/trade sources as biased, but accurate.
- Respondents rank a “high” or “very high” priority for additional information about chemicals in building products, specifically related to “scientific data on the health impacts of materials and chemicals” and “chemical and material content of products.”
- 38% of respondents report being able to find information about chemicals in specific building products when they need it. However, more than half of those respondents (54.5%) say that the information found is inadequate, and generally not specific enough.
- When asked for research priorities for chemical information across different life-stages of a building, the highest priorities are for use (occupation, performance), product/material manufacturing, and end-of-life (demolition, reuse, recycling).
- 77% of respondents do not feel that existing information systems provide balanced chemical information across the life-cycle stages of the product, largely because they feel that pertinent data does not exist.

Stakeholder Use of CiP Information: Needs and Constraints

In survey results, 72% of survey respondents reported regularly seeking information about chemicals in building and construction materials, with another 24% of respondents saying that, while they do not currently seek such information, they plan to do so in the future. Key reasons for seeking such information across the survey group included risk reduction for the protection of workers, policy

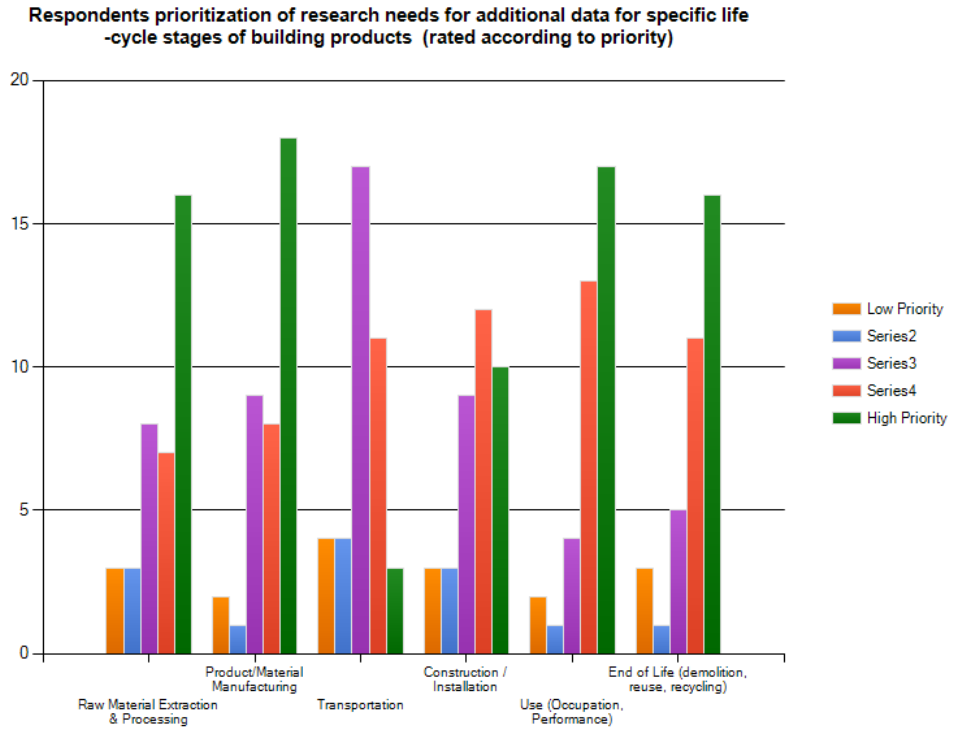
development, risk reduction for the protection of occupants, and public or consumer advocacy and protection.

In terms of the formats in which respondents commonly seek information, there were a few notable findings. While the most routinely sought sources of information were predictably from web-based systems (78.6%), this was closely followed by use of MSDSs (71.4%). The widespread use of MSDSs as a source of information, given their limitations, points to a need for better communication about what should be expected from such a report. In addition, information from manufacturers and trade associations (reports, product statements, marketing material, etc.) is often used as a key source of information (69%).

In responses related to seeking CiP information for specific products, 62% of survey respondents stated that they do not find information when they need it. Further, for those that do find pertinent information, more than half report that the information found is inadequate, largely because it is not specific enough.

Respondents were also queried about their needs for chemical information across the product life-cycle. When asked whether respondents felt existing information systems provided balanced data across the life-cycle of most building and construction products, 77% of respondents said they do not currently provide balanced data. However, 50% of those respondents felt it was because the data for such information does not yet exist. When asked which life-cycle stages should be prioritized for future research to yield chemical-related information about building products, the highest rated lifecycle stages were the use phase (occupation and performance), product and material manufacturing, and end-of-life (demolition, reuse and recycling) (see Figure 2).

Figure 2:



In addition, there were several common concerns that were echoed across respondents in multiple stakeholder categories. The most common concerns included:

- Limited global regulation of CiP or chemicals of concern: several survey respondents referenced hopes that the requirements of REACH will make chemical information more available, and that the resulting information will trickle down for those seeking product information anywhere in the world.
- MSDSs, which are broadly relied upon as a source of information, often include proprietary or trademarked names for substances. As MSDSs are one of the most routinely found and used sources of information, these potential gaps in information make reliance upon them problematic.
- For those who seek and need information about chemicals in building products, an oft-cited issue was that substantive information takes too long to gather. Information must often be gathered from multiple sources and lists, requiring an assessment of varying data quality. Respondents report that trying to identify solid data is time consuming and difficult.
- Several comments reflected a concern that existing data, often designed for markets in the North America and Europe, do not adequately reflect chemical and material issues for extremely humid or hot climates such as higher formaldehyde and VOC emissions that occur in hot climates.
- Data for the long-term reuse, recycling, and disposal implications for materials are often absent.

Potential ways to address the gaps and obstacles

Research results for this case study have identified significant background information on the types of existing CiP material available, as well as the use and perceived limitations of such information by those stakeholders seeking it. There are a variety of sources, of varying quality, that are commonly used, including eco-labels, reference lists of materials for green building certifications and standards, industry reporting initiatives, and so on. Existing resources such as BASTA in Sweden, NaturPlus, and the Pharos initiative were commonly cited as useful resources. However, in most cases, stakeholders find existing resources either inadequate for their needs or too time-consuming to use efficiently for their needs.

Many stakeholders stated a hope that pending regulatory systems or enhanced public databases would address some of these gaps. For example, many stakeholders referenced the intended information from REACH as a potential source which will reduce the time commitments for identifying pertinent chemical information about chemicals in building products. The recent ISO declaration, ISO 21930:2007, for "Sustainability in building construction – Environmental declaration of building products" establishes a methodology to ensure a transparent methodology for developing environmental product declarations for building products which will provide better consistency in EPDs. Similarly, stakeholders referenced the potential of information exchange from the European Construction Products Directive, as more harmonized product standards are developed.

In addition, numerous obstacles were cited in the exchange of chemical information in building products. Examples of reported obstacles, as discussed previously, include:

- Perceived lack of data and lack of data that is specific enough;
- Available information is more germane to European and North American countries;
- Time-consuming nature of finding CiP information, particularly amidst shifting regulatory requirements at local and regional levels;
- Time-consuming nature of cross-referencing performance data with CiP data;
- Potential gaps in data from existing chemical reporting mechanisms, such as MSDSs; and
- Poor CiP information for end-of-life disposition of materials.

As with many product categories, there was a perception that manufacturers of products are reticent to share chemical information. While this may sometimes be the case, especially with factors such as trademarked or proprietary substances, it was also noted by several manufacturers that sometimes they struggle to get adequate information on substances from their suppliers (this was especially a concern noted with recycled feedstocks). This admission indicates a potential willingness of manufacturers to provide more information to the market.

Stakeholders across all categories stated a belief that part of the problem with provision of chemicals information for building materials is that the information simply has not been collected or is not available.

Ultimately, the question of how to best facilitate the exchange of chemicals information in building products is quite germane. Stakeholders across all stakeholder categories reported limitations and perceptions of inadequate or non-existent information exchange. While existing systems are a laudable starting point, a number of opportunities and suggested collaborations have been identified for potential improvements.

Leverage the Role of Green Building Standards & Certification Programs

Given the growth in green building certifications and standards, as well as the growing network of regionally- and country-specific green building councils, an opportunity exists to leverage these as information exchange resources. Green building standards are continuously in the process of developing future versions with updated requirements, and can serve in a powerful supply-and-demand position. Many prominent green building standards have fairly open and transparent standard development processes; the managing organizations of such programs would likely be receptive to partnering to discuss enhanced CiP needs for the building product sector.

There are many types of needed CiP information identified through this case study that could be prioritized for inclusion in future versions of standards. An example includes requirements to maintain long-term CiP information for specific products within the reporting and maintenance requirements for building certification; this would mitigate EOL information needs when buildings are refurbished or materials are reused.

Another opportunity exists with the expansion of green building councils in various geographic regions; regionally-specific criteria can be defined that address unique materials and climate needs. Currently there are more than 70 national member councils under the World Green Building Council (WGBC); these councils are in various stages of membership. However, these organizations are an active and growing driver for green building information, including CiP information. In a recent survey conducted by the green building industry publication *Green Business Insider*, 47 WGBC councils were surveyed about the status and expectations for the green building industry in their countries; the survey shows expectations of 100 percent growth in council membership and at least a doubling of certified green buildings in the next five years.[iv]

Promote Standardized Reporting of Environmental Data

A common frustration amongst stakeholders was lack of knowledge about differing reporting requirements across various regulatory platforms. One option for future discussion is identifying opportunities to better standardize reporting of environmental data. An example of one such "success story" would be the expanding use of the Globally Harmonized System of Classification and Labeling of Chemicals, or GHS; the GHS is now being cited in developing standards for products such as paints and cleaning chemicals.

Further, there may be opportunities for better outreach to stakeholders about what type of information they should and should not expect from certain reports. It may be useful to develop a common resource, akin to a "frequently asked questions" reference for the broad community of stakeholders to access as they determine whether a resource such as an MSDS, product declaration, or life-cycle study serves their information needs.

Support development of additional life-cycle research

While much life-cycle research has been done, an obstacle noted in this case study is the real and perceived lack of balanced life-cycle data for many building products. This was cited by many survey respondents as a need behind their belief that much of the scientific data for CiP information for this sector "does not exist." An option for potential discussion might include identification of priority materials and building materials for which no life-cycle data has been developed. An important issue to consider for this recommendation would be the time and resource requirements of rigorous collection of life cycle data; this constraint would suggest a need to select key subsets of the building products sector for prioritization of data collection. Yet another opportunity may exist to commission a study of emerging or newer technologies, such as nanomaterials or antimicrobials, which are increasingly being used in multiple product sectors.

Another item for discussion would be to potentially provide a central funding mechanism to support broad reporting of information collected for other studies. In many circumstances, academics doing LCAs for specific projects have collected large quantities of data from the industry or market sector of interest for a particular project. Much of this data is not passed into publicly-available databases. This is often not due to confidentiality requirements, but rather is due to a lack of resources to organize the data into a publicly-useful format once the original project has been completed. A central funding mechanism could efficiently use relatively modest resources to provide grants to "mine" and refine these sources of valuable data.

Provide ways for architects, designers, and specifiers to cross-reference performance and application data with CiP information

When selecting a building material appropriate for specific applications, architects, designers, and specifiers must take into account myriad aspects of a material's physical, chemical, and aesthetic properties. Materials must be selected to serve specific functional and aesthetic requirements while meeting health and environmental standards. This selection process requires constant cross-referencing of different types of data. Existing information sources do not adequately address the needs of this design process in a central manner. For example, a designer might be searching for formaldehyde free insulation. While existing sources may provide a list of formaldehyde-free insulation materials, a designer will typically still need to explore each product to determine its specific performance qualities including r-value per unit thickness, type of facing used, whether it acts as a vapor barrier, air barrier, or moisture barrier. These specific performance qualities are not addressed through broad categories of organization (i.e. "insulation") often seen with CiP data sources.

Conclusions

This case study has established that useful information systems are on the increase for CiP information in building materials, yet there is a significant unfulfilled need for information. The need is global and spans stakeholder groups. But there are unique challenges faced by economies in transition and southern hemisphere countries, which are presently forced to rely on predominantly European and North American information resources, which often have limited applicability to both available products and regional climate pressures.

In addition to follow-up discussions about some of the recommended opportunities for bridging gaps in information sources and flows, there are also future research opportunities that may have value. While the analysis of broad product sectors is quite illuminating, a sector such as building materials is almost too large to identify a "one size fits all" solution to information provision. It would be useful to conduct a study of a focused subset of building materials with specific chemical information needs and outcomes, for example chemical information related to interior finishes, which can have significant indoor air quality implications. By conducting a study with a more constrained product scope, it might be possible to develop working relationships with key stakeholders in the product chain, and identify and test different methods for sharing information. Such a study would inform the creation of mechanisms for information sharing between stakeholders that could be modeled and replicated across products and product sectors.

Finally, the confluence of traditional drivers such as mandated regulatory reporting requirements and more recent voluntary certification and standards programs creates a timely opportunity for greater discussion and partnerships for provision of CiP information for building materials. In the past, the provision of CiP information in the building materials industry has been more of a struggle on the demand side, with government, NGOs and consumers desiring information and feeling the need to create it themselves. However, increasingly, manufacturers of building products want to provide more information to the market, in order to be a player in the growing green building industry. This suggests a brighter future for chemical disclosure if the market pressure of certifications and public policy can be efficiently harnessed.

Notes

[i] Becker, M. (2009). *Survey of SAICM Focal Points on the Need for Information on Chemicals in Products*, prepared for the UNEP Chemicals Branch. December.

[ii] U.S. Green Building Council. *Green Building Facts.* Retrieved from www.usgbc.org/ShowFile.aspx?DocumentID=5961.

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Executive Summary of the Electronics Case Study

Background

Many chemicals used in the electronics sector have negative consequences for human and environmental health. Typical electronic waste handling practices in developing countries are detrimental to the health of workers, their environment, and their communities. There are well-documented problems associated also with formal recycling in modern facilities, and the production phase is often problematic as well. In addition, it is becoming apparent that recycling of valuable materials must be made more efficient as the prices of virgin materials, metals, and minerals increase and their availability decreases, All of these problems are exacerbated by the fact that there has been a rapid increase in sales of electronics products in the past several years, making e-waste one of the fastest growing waste stream today.

To address the problems associated with exposure to chemical substances, the Strategic Approach to International Chemicals Management, SAICM, was adopted at the first International Conference on Chemicals Management, ICCM1, in February 2006. The overall objective of this international framework is to achieve the sound management of chemicals throughout their life cycles 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.

In 2009, the second session of the International Conference on Chemicals Management, ICCM2, agreed to initiate a project on the emerging policy issue of Chemicals in Products to promote the implementation of Objective 15 (b) of the Strategic Approach to International Chemicals Management, SAICM. The Objective states that "*information on chemicals throughout their life cycle, including, where appropriate, chemicals in products, is available, user friendly, adequate and appropriate to the needs of all stakeholders…*" UNEP was invited to lead and facilitate the project.

The present report on electronics is one of four case studies performed within the project on Chemicals in Products. The other case studies concern toys, textiles and building products.

The aim of this report is to describe to what extent existing information

systems meet the needs of different stakeholder groups for minimizing potential risks of chemicals in electronic products, to highlights the information gaps, and to identify obstacles and potential solutions to optimize flow of information. 38 interviews have been conducted with stakeholders surrounding the electronics sector. With regards to electronics manufacturers, a focus was put on mobile phones and Personal Computers, PCs, as these are product segments at the forefront of technological development and innovation .Due to consumer demand for new products with the latest technology there is a quick turnover of these products on the market. In addition, mobile phones and PCs are widely used in industrialized countries and prevalent in developing countries, and they are highly significant from a waste and recycling perspective.

Chemicals in electronics

Computers and mobile phones can contain over one thousand different substances. The main hazardous substances that could be found in electronic products are: lead, mercury, cadmium, zinc, yttrium, chromium, beryllium, nickel, brominated flame retardants, antimony trioxide, halogenated flame retardants, tin, polyvinyl chloride, PVC, and phthalates. In addition, electronic products contain valuable metals such as gold and copper that are valuable for recyclers to extract. In addition, plastics recycling is steadily increasing.

Volumes and e-waste flows

UNEP has estimated that consumers globally bought almost 900 million mobile phones in 2006 and over a billion in 2007. A considerable share of these products end up in household waste-streams, or are waste-handled through environmentally unsound practices. Up to 75 percent of the e-waste generated in Europe and around 80 percent of the e-waste generated in the United States goes unaccounted for. A vast amount of this e-waste is being exported to developing countries.

Typical electronic waste handling practices in developing countries are detrimental to the health of workers, their environment, and their communities. The lower costs for waste-management, or non-management of the waste in developing countries is a powerful incentive for this export. It is estimated that the waste-handling/recycling costs for PCs and mobile phones are ten times higher in the US or the EU than in e.g. India or Nigeria.

Release of Chemicals

Data is continuously emerging on negative consequences for human health and the environment of hazardous chemicals throughout the life-cycle of electronics products. Studies have demonstrated high exposure to carcinogens and reproductive toxicants during production, including solvents, heavy metals and epoxy resins among electronics workers. Other studies have demonstrated potential release of e.g. polybrominated dibenzofurans PBDF in the use-phase of electronics. PBDFs are breakdown products of PBDE which is commonly used as a flame retardant in e.g. electronics. Furthermore, studies on release pathways and exposure to workers in recycling facilities in developed countries have documented the release of hazardous chemicals present in recycled e-waste. Furthermore, the rudimentary informal sector recycling techniques common in developing countries coupled with the amounts of e-waste processed have already resulted in adverse environmental and human health impacts in developing countries receiving e-waste, such as China, India, Nigeria, the Philippines

and Ghana.

Overview CiP information systems

Information on where and how hazardous chemicals are used in electronics is key in order to tackle problems related to these products. Over the last few years a number of policy initiatives on chemicals in products and end-of-life treatment of electronics have been developed. Most notable is the policy development in the European Union where the RoHS and WEEE directives and the REACH regulation have had a strong impact on the way electronic products are designed, how they are collected and treated at the end-of-life, and how information on hazardous substances is generated and shared. Other regions and countries have since followed suit, and developed similar regulations. For example, systems in the EU, USA, South Korea, China and Japan are described in this section.

Industry-wide initiatives have been set up which are international in their scope. These include the Joint Industry Guide, JIG, the IEC material declaration standards and the GPS chemicals portal.

CiP information needs

The companies participating in this study try to stay ahead of global regulations and voluntarily restrict chemicals they think may be regulated in the future. One of the most common and important uses of CiP information systems cited by interviewees was to keep up to date on the latest information on chemical hazards and risks. The interviewees each described a different set of CiP information systems that they find valuable in trying to advance product safety. Based on the CiP information systems they find valuable, each company created its own restricted substance list to keep undesirable chemicals and materials out of its products. A few companies required full materials disclosure from their suppliers, in addition to using restricted substance lists.

Many of the interviewed companies tend to interact primarily with the adjacent actor in the supply chain, while others, in particular the brand owners, may be involved in numerous stages of product development and disposal. Upstream actors described how they provided their customers with relevant information about their products, but actors farther downstream felt that needed data was unavailable, indicating that information is lost in the supply chain.

In order for stakeholders in different stages of the life cycle of products to adapt their handling of a product in an appropriate manner, and thereby minimize any potential risks to human or environmental health there is a need for information on chemicals present in electronics. This includes information on what chemicals are present, their properties, use and potential risks.

Companies expressed a need for increased flow and transparency to help reduce their costs when planning, designing and carrying out production. There is a need to be able foresee any potential future business risks as well as opportunities which is dependent on the availability of sufficient CiP information. This can include upcoming regulation on chemicals used in production, future preferences, demands and expectations of customers and consumers, future challenges in performance of their products, in the manufacture of their products, the availability of materials and components for their products and any present or future liability for the fate of these products. Protection of the workforce is also largely dependent on an

understanding of the chemicals present in production.

Agreement on what chemicals should be reported, and what information should be made available would in many cases help companies obtain the needed and relevant chemicals-related information.

Authorities such as customs officials need access to relevant information in their efforts to control the flow of discarded electronics. In addition, in order to develop appropriate policies and measures authorities need information in what chemicals products on the market contain.

Recyclers extracting valuable material from e-waste need to know where hazardous chemicals can be found in the products they receive, as well as information on the content of valuable material. At end of life, improved information can contribute to increased as well as more environmentally sound recycling and more efficient extraction of valuable metals. It should be noted that often the awareness of environmental risks is low among recyclers, which has resulted in a lower demand for information. Recyclers seem to think that there is no particular risk to the environment or human health in the recycling process as long as they adhere to general regulations. Accordingly, there is a need for awareness-raising on the chemicals present in products, associated hazards and risks, and the role recyclers might have in contributing to or addressing problems related to chemicals in products.

The low awareness of risks especially applies to e-waste handlers in developing countries and information on associated hazards and risks are seen as important. In addition, intervention and economic support is required to provide feasible alternatives to the inappropriate waste handling practices in the informal sector.

Consumers in general assume that the products they purchase and use are safe for them as well as for the environment. Therefore, consumers in general might not feel an urgent need for CiP information. However, as their assumption that all products on the market are perfectly safe throughout the life cycle is often a fallacy, information increasing the awareness of hazards and risks from chemicals in products provides consumers with the opportunity to make informed choice on the products they buy.

Additionally, such awareness about the presence of e.g. hazardous chemicals gives different stakeholders, such as designers, companies in the supply chain and public purchasers the ability to make informed choices on the products they purchase, which can potentially be advantageous to products with better environmental profile, such as less hazardous content. In addition, a strong need has been expressed by upstream actors on information on where their products end up and how they are handled.

Accordingly, improved information flow *upstream* the product life cycles on how products are used and handled at all stages must be promoted in order to help designers and formulators make informed decisions when designing, developing and improving products. With better information on exposure, the development of products with improved environmental performance is promoted, which contributes to less toxic material to handle in recycling and decreased release of toxics into the environment.

Gaps and obstacles to CiP information

There are overarching, industry-wide systems developed to facilitate exchange of information. The companies interviewed in this study take part in such joint collaborations. There are also regional and national rules and

policies that regulate the flow of information on chemicals in electronics.

However, as many companies feel that these systems are not sufficient to meet their particular information needs, they often develop their own approach, complementing the joint industry systems and regulatory frameworks with internal systems for substance restrictions, information exchange, supply-chain management etc.

A number of gaps and obstacles in the flow of information on chemicals have been described in this report.

1. The gap between upstream manufacturers of chemicals and the information needs further downstream. Upstream manufacturers of chemicals and material pass on the info they consider relevant, but they seem to have limited knowledge on applications and downstream exposure pathways. Thus downstream manufacturers often feel that there is a gap at the beginning of the product-chain, where the information made available and fed into the system is not the relevant or sufficient information.

2. The gap along the supply chain to the final brand owners. Upstream actors described how they provided their customers with relevant information about their products, but actors farther downstream felt that needed data was unavailable, indicating that communication of data or information needs may be obstructed through the supply chain. To a large extent, information is lost in the supply-chain, i.e. the numerous steps in the product-chain between the chemicals industry and OEMs/brand-owners.

3. The gap between the production-phase and the recycling phase: From the perspective of manufacturers, the general perception is that feedback is not communicated from recyclers on the needs they might have, and information requests from the recyclers are very rare. Recyclers on the other hand express that producers often seem to have limited knowledge on recycling and that end of life considerations are not incorporated in the product design and material composition of electronics.

4. The gap between the formal product-chain and informal waste-handlers in developing countries. Information systems are in general not designed to take into account the particular circumstances in developing countries. Information to e.g. workers engaged in informal recycling in developing countries must take into account factors such as low level of literacy, formal education or organization.

5. The gap between information provided for intended use and the information needs arising from unintended use. In general, information is provided considering the intended use of products. However, considering the large volumes of e-waste being handled in substandard conditions, what type of CiP information that is fed in to the system upstream should also take into account information needs that arise from unintended, but highly probable handling.

6. The gap between what information is needed (relevant) and available. Stakeholders have been emphasizing that the information provided should only be the *relevant* information. However due to for example the gaps in information flow, information that is *relevant* to a particular actor in the life cycle might not be *available* at that point in the life cycle. A challenge is how to ensure that *relevant* information is *available* where needed at every step of the life cycle.

7. One of the obstacles to CiP information discussed by interviewees were that there is no agreed upon definition of what constitutes proprietary information. Many stakeholders said that claims of proprietary information often blocked their ability to understand product contents or chemical uses, and they suspected frequent misuse of the claims. Claiming proprietary information also constitutes an obstacle to important information that needs to be communicated upstream, e.g. on uses and exposure. While understanding the necessity for businesses to protect sensitive information, interviewees have discussed examples of how to nonetheless deal with sensitive information in a manner that assures the needs of providers as well as recipients of information. A sincere and open discussion is needed among stakeholders about what really is and is not proprietary. Recipients need to be able to show suppliers that data can be protected. Ways must also must be found to provide the information needed by different actors to conduct proper risk management in their particular stage of the life cycle.

Key requirements for information systems

A set of key characteristics of well-functioning information systems for chemicals in products were pointed out by interviewees contributing to this study: 1) Information must flow *down* the product-chain, but also travel *up* the product-chain; 2) *Relevant* information must be *available* when the particular need for that particular type of information arises; 3) The information generated and provided must take into account not only the *intended* use or handling of a product, but also the *likely* or *probable* fate of that product; 4) The information provided must be *comprehensible, accessible and appropriate* for the particular stakeholder who needs the information for safe handling of the product in the particular stage of the life cycle of that stakeholder.

Recommendations

Interviewees discussed the usefulness of a harmonized global standard as well as platforms for sharing CiP information. The common theme among interviewees was that there are too many information systems and too many lists available, making it difficult to keep up with all of the information and make decisions about which chemicals are actually of real concern in products.

Companies throughout the product chains have described a need for a common list of chemicals of concern to be agreed upon which could simplify design and operation and reduce costs throughout the industry. Such a list should include what chemicals to provide information on as well the content of such information. In order to provide any added value, the list should go beyond merely listing already banned or otherwise regulated chemicals, but also take into account broader needs for CiP information among companies and other stakeholders such as authorities.

Introducing an obligation to provide information on the product and its effects at all stages of its life cycle, including relevant information on chemicals is another solution discussed. One example is legislation on Extended Producer Responsibility including such Informative responsibility.

Furthermore, certification systems for recycling are proposed as constructive tools for tracking materials, increasing transparency in the waste phase and increasing awareness about chemicals in e-waste management.

Other solutions proposed are improving the tools required for facilitating the transfer of information on chemicals in products. These include the further development of standard formats for collecting and communicating chemicals-related data, software packages to support such standards, escort information systems to allow product content to be tracked through the product chain.

In addition, other solutions are discussed concerning joint avoidance lists for the sector, standards and labels for eco-design, information campaigns aimed at consumers as well as information campaigns for stakeholders in developing countries and measures to promote safe and profitable e-waste handling in developing countries. Although some of these solutions seemingly go beyond CiP information systems and information flow, the *availability of CiP information* is a precondition for developing such solutions that reduce risks from electronics throughout the entire life cycle.

Executive Summary of the Toys Case Study

The toy sector case study was conducted via desk research and expert consultations, from July to January 2011.

Toys were selected as a product group for study in an earlier phase of the Chemicals in Products Project where 77% of participants chose toys as a sector to study and learn from. An extremely wide variety of materials are used in toys, from textiles to wood to plastic and like many products they have the potential to contain regulated chemicals and other substances of concern such as possible hormone-disrupters. In the EU toys are the product with the most notifications for regulatory non-compliance and while the most frequent notifications are related to small parts (a choking hazard) the second most frequent are related to chemicals in toys in excess of regulated thresholds.

Information on chemicals needed for regulatory compliance is available to the firms that participated in this study. While there is not an uninterrupted flow of information on chemicals along the supply chain – a flow that begins with material producers and continues through each supplier to the toy manufacturer, retailer and consumers – firms did state the information they need for compliance documentation is either generated by their suppliers or obtained with laboratory testing. The obstacles they identified were related to efficiency – access to information could become more efficient among supply chain actors if queries and formats were better understood. Authorities reported a need for information to control imports and exports. Producers reported a need for information on specific end-uses of the substances they supply, in order to inform their risk assessments.

Less information is exchanged on non-regulated chemicals and on regulated chemicals beyond minimum thresholds. NGOs stated consumers do not have access to the information they need to make decisions on toy purchases. Small toy manufacturers stated they do not have information, nor expertise, to know what chemicals to manage beyond what is required by law (and across the board toy safety regulations in Japan, the EU and the US were referred to as the most stringent, with a scope that is expanding to include chemicals). And large companies stated they use product testing to respond to requests for non-regulatory information. Retailers – especially specialised retailers serving an informed consumer group – report such requests do occur, though still infrequently. The study found no common system for chemicals information exchange in the sector.

The potential to enhance the access to information in the sector can be understood in terms of two sector characteristics: the nature of relationships and the market structure. While some supply chain relationships are long term and collaborative (e.g. manufacturer and supplier developing a new material) there are also very many short term relationships. Participants with successful information exchange stated it took time to establish the flow of regulatory information. Their suppliers needed a lot of support to understand the information requests and what to provide in response (format, level of detail). In short term relationships there is less time for this learning. Second, the market is structured

around very many small firms each with a low buying power. They have less pull with larger suppliers and lower possibility to have their requests for information fulfilled (beyond regulation).

Two types of approaches can be considered to further the access to information on chemicals in toys. The first is a technical approach focused on the type of information and the means of accessing it. The second is a broader approach to build on the “enablers” for overcoming current obstacles to access to information, such as lack of chemicals expertise within many small or medium sized firms.