- The views expressed in these background papers are the views of the individual concerned, and do not necessarily reflect the views of their employers.
- These papers are intended as a thought starter, asking key questions; they are not a comprehensive review of the issue.

3. Improving Information Flows – in Supply Chains and Beyond

Richard A. Denison, PhD, Senior Scientist
Environmental Defense, Washington, DC

A free flow of chemical information is a critical element of a sustainable chemicals policy, enabling and empowering those affecting – or affected by – chemical production, use and disposal to make informed decisions that minimize risk.

This paper provides a brief look at experience with, opportunities for and barriers to information flow at various steps in the chemical "value chain",[a] extending from chemical producers to users of chemical products and ultimately to the public at large. Roles and responsibilities of actors in generating, communicating, receiving and acting on chemical information are delineated.

Introduction

Few would argue with the proposition that effectively identifying and managing chemical risks requires, first and foremost, access to information. It follows that sufficiently managing the generation of chemical information[b] and its flow – providing ready access to appropriate information at the appropriate time by the actors who need it to make informed decisions about chemicals – is a cornerstone of a sustainable chemicals policy.

A useful way of thinking about information flows is provided by considering the linkages among the actors along a chemical "value chain," extending from chemical producers to users of chemical products and ultimately to the public at large. At each link, the roles and responsibilities of actors at that stage in generating, communicating, receiving and acting on information about the chemicals that are themselves flowing along the same chain can be delineated.

This paper will briefly touch on some of the features of, barriers to and opportunities for a richer and freer flow of information at each of several points in the chemical value chain. At the end of each section is a suggested question for further discussion in the conference workshop.

a The term "value chain" is used herein to encompass the traditional concept of the chemical supply chain, but also to extend to "stakeholders" such as workers, consumers and the general public, in short all those who are involved in production or use of, or exposure to, chemicals and chemical products. It can also be thought of as representing the full lifecycle of a chemical.

b The term "chemical information" is used herein as shorthand for the diverse range of information about a chemical and its uses relevant to providing a full context for and understanding of its health and environmental risks and means for reducing such risks.

1. Information flow between producers and downstream industrial users of chemicals

Traditionally, the flow of chemical information at this step is limited and largely one-way (downstream), with both producers and downstream users having little incentive to share information. Information communicated from producers is largely limited to information relating to performance and appropriate handling, and – to the extent available – basic hazard information conveyed through relatively formulaic means such as Material Safety Data Sheets (MSDSs), as required by law. For their part, downstream users have little incentive to provide other than basic specifications and business needs information to their suppliers.

Disincentives for freer flow of information abound and include:

- Competition among suppliers for customers: Producers are reluctant to seek more information regarding how their chemical is handled and used for fear of losing business.
- Confidential business information: For example, producers regard their process and sales information, and downstream users regard their use and sales information, as highly proprietary.
- Liability: Both producers and users have concerns over being assigned responsibility for problems that arise with their products. This creates disincentives not only with respect to the sharing of information, but to the generation of the information in the first place.
- "Middlemen": Many chemicals are sold and bought through intermediate distributors or brokers who as a rule have even less incentive to share information upstream or downstream.

Yet both producers and downstream users possess considerable information the sharing of which (both with each other and with government and non-government stakeholders) is critical to the broader objective of safer chemical management. For example: Chemical producers have access to information on chemical identity, composition and form, and key properties; production volume, methods and processes; and the needs, practices and associated releases and exposures arising from handling, initial processing, storage and transport. Chemical users know about the intentional or residual presence of the chemical in their products, the uses and functions it serves, performance needs, additives and reaction or breakdown products, and their own needs, practices and associated releases and exposures arising from handling, initial processing, storage and transport.

These and other actors in the value chain have need for such information for a wide range of purposes, including meeting regulatory obligations or supplier/customer requirements, disclosure and labeling, and assessing risk, to name a few.[1]

A number of voluntary and regulatory initiatives have as a stated aim increasing the flow of information along the supply chain, especially between chemical producers and users. A few examples:

- The latest status report of Responsible Care, the voluntary global chemical industry initiative "to improve the industry's health, safety and environmental performance, communications and accountability," points to adoption of its principles by European chemical distributors and efforts to improve the quality of MSDSs in Asian countries as

examples of improved product stewardship through enhanced information flow along the supply chain.[2]

- The Chemical Strategies Partnership began the Chemical Management Services (CMS) Forum, which brings together chemical producers and industrial users to reorient the supplier-customer relationship toward a service model that includes fundamental changes in the exchange of information about chemical use along the supply chain.[3]
- The European Union's REACH proposal would mandate and facilitate two-way information exchange between suppliers and their customers and associated actions. For example, suppliers would be required to communicate safety information to, and identify safety procedures to be followed by, its customers. Downstream users would in general be required to communicate information about their uses of a chemical to their suppliers for inclusion in the risk assessment and chemical safety report required of chemical producers.[4]
- **<u>Question</u>: Given the barriers noted above, how much of this information flow can be achieved through voluntary means, or is regulation such as proposed in REACH needed to "force" it?**

2. Information flow to (and from) workers producing and using chemicals and chemical products

Traditionally, this information flow too has been largely one-way and restricted to companies' provision of information about chemicals to workers through Safety Data Sheets, training and similar means, mostly as dictated by law. For professional-grade products containing toxic chemicals at concentrations exceeding certain thresholds, hazard communication requirements apply in some countries that may require labeling and identification of safe handling requirements.

In an effort to harmonize such requirements across countries, the "Globally Harmonized System of Classification and Labelling of Chemicals (GHS)" has been developed under the auspices of the United Nations.[5] The GHS (which can also apply to consumer products and pesticides) includes: (a) harmonized criteria for classifying substances and mixtures according to their health, environmental and physical hazards; and (b) harmonized hazard communication elements, including requirements for labeling and safety data sheets.

Labor organizations have generally supported legislative efforts to increase the amount and quality of chemical information available to workers, arguing that, left to their own, companies consistently fail to provide enough information. For example, the European Trade Union Confederation (ETUC) recently communicated its strong support for the EU's REACH proposal to members of the European Parliament, arguing that REACH is needed to address the continuing high incidence of chemical-related occupational disease resulting (in part) from "the lack of basic information about chemical substances" and "failings in conveying product safety information to the different users." ETUC's letter continues: "The information generated by the REACH system and the expected improvements in their transmission along the entire length of the production chain will help employers to detect the presence of hazardous chemicals in the workplace, a crucial step without which other obligations simply could not be met."[6]

In addition to being the recipients of chemical information, workers' direct interface with chemicals and chemical products argues that they can and should be far better utilized as a *source*

of chemical information, especially concerning exposure potential, effectiveness of measures intended to communicate hazard and risk and controls used to reduce exposure, health effects, etc.

- **<u>Question</u>: How might workers best be tapped as a source of information about chemical hazards, exposures, and the need for and effectiveness of risk management measures? Consider this in the context of both improving chemicals management within companies and informing governmental policies.**

3. Information flow to end consumers of chemical products

The U.S. Federal Hazardous Substances Act,[7] administered by the Consumer Product Safety Commission, requires labeling of certain hazardous household products (excluding pesticides; see below) to alert consumers to the presence of a hazardous substance, the potential hazards, and measures to protect against those hazards. Labeling is required for any product (or constituent in a product) that is "toxic,[8] corrosive, flammable or combustible, an irritant, a strong sensitizer, or that generates pressure through decomposition, heat, or other means requires labeling, if the product may cause substantial personal injury or substantial illness during or as a proximate result of any customary or reasonable foreseeable handling or use, including reasonable foreseeable ingestion by children." Labeling takes the form of identifying the substance and the hazard, where required the use of certain "signal words" such as "Poison," "Danger," Warning," and "Caution," and handling instructions and precautions.[9] These requirements do not extend to all products, nor do they require the identification of the amount of a hazardous substance in a product.

Pesticide labeling in the U.S. is governed by the Federal Insecticide, Fungicide and Rodenticide Act (FIFRA),[10] administered by USEPA. In general, pesticide active ingredients must be identified by name, and their weight percentage in the product must be stated. So-called "inert ingredients" need not be named but their total weight percentage must be disclosed. As with the hazardous products regulated by CPSC described above, signal words and handling instructions and precautions must appear on the label, along with information pertaining to first aid, storage and applicable empty container disposal requirements.[11]

In some countries, MSDSs[12] are often provided voluntarily by companies for their products,[13] although they are often out-of-date, cite broad weight percent ranges for individual ingredients, and are notoriously incomplete and inaccurate.[14] Some efforts to use product label and MSDS information to develop product ingredient databases (e.g., the Household Products Database of the National Library of Medicine[15]) have been mounted, but are plagued by the limitations of the available information.

Calls for required disclosure of more complete product information, especially with respect to hazardous ingredients, continue to be made in the context of a consumer "right to know," with industry countering that confidential business information (CBI) would be unduly compromised by further disclosure requirements.

- **<u>Question</u>: Do consumers have a right to know which chemicals in what amounts are in the products they buy? If so, how could such information be provided in a manner that was both useful to consumers and respecting of the legitimate CBI concerns of their manufacturers?**

4. Information flow to the public

The concept of the public's "right-to-know" (RTK) in the context of chemical information has become increasingly ensconced in chemicals policy in the U.S. and elsewhere. The spread of Pollutant Release and Transfer Registers (PRTRs), modeled after the U.S.'s Toxics Release Inventory (TRI),[16] is one example, with the legally-binding Kiev Protocol on PRTRs adopted in 2003 under the auspices of the UN Aarhus Convention now signed by 36 countries.[17]

PRTRs focus exclusively on pollutant releases, of course, only one aspect of a broader chemical RTK. The Aarhus Convention itself is described as a "Convention on Access to Information, Public Participation in Decision-making and Access to Justice in Environmental Matters."[18] Various initiatives are aimed at increasing the scope of chemical information that is made publicly available, facilitating full public access to such information, and providing for greater involvement of the public in decisions about chemicals.

Some examples of initiatives seeking to expand the scope of available chemical information include:

- Toxics use reporting: The Massachusetts Toxics Use Reduction Act, a law passed in 1989, mandates companies that manufacture, process or use certain toxic chemicals to identify the uses, report quantities used (including in products), and prepare plans that assess options for reducing use.[19] New Jersey has a similar program.[20]
- Hazard information on high-production-volume (HPV) chemicals: Spurred by public attention drawn to the dearth of publicly available data characterizing the toxicity and environmental fate of even the most widely used industrial chemicals,[21] the voluntary U.S. HPV Challenge Program[22] (part of EPA's Chemical RTK Program) is developing and making publicly available a base set of screening-level hazard data on HPV chemicals; opportunity for public participation in the review of data submissions is a key element. An analogous international program, the OECD's Screening Information Data Set (SIDS) Program,[23] is generating data and hazard assessments for HPV chemicals produced in the 30+ OECD member countries, and while data ultimately are made public, opportunities for public participation are quite limited.
- REACH (see above). REACH has been criticized by environmental NGOs because in several respects it does not provide for sufficient public involvement and access to data.[24] Among the concerns: Information flow about a chemical ceases once it enters an "article," and procedures for requesting information are too cumbersome.

With respect to improving public access to chemical information, a number of key principles have been suggested:[25]

- *Public input into design of databases and portals*: Involve representatives of the public and other stakeholders (e.g., consumers, workers, tribes) early in the development and vetting of database and portal design and functionality. Different user groups will have different needs, expectations and uses for the data, which need to be anticipated in the design and modes of access to the information.
- *Make data directly available, "unfiltered"*: Many in industry argue that government should only provide public access to chemical data that has been "placed in proper context" lest the data be misinterpreted or misused. But an integral part of right-to-know is that the public and its representatives have unfettered access to data, so that those who

use and are exposed to chemicals (not just those who make them) have the ability to independently assess the data and decide on actions they wish to take or advocate for. Supplementing this full disclosure can be the provision of tools and technical assistance to ensure maximum utility of the data to as broad a public audience as possible.

- *Tightly bound any exclusions of confidential business information (CBI)*: While there can be legitimate reasons for certain information to be held as CBI, a strong and public rationale needs to be provided for making any data off-limits to the public, and any data relevant to assessing the hazard, exposure or risk posed by a chemical should not qualify as CBI. Provision can and should be made for protecting companies' right to ownership of data, but that need not require it be regarded as CBI.
- *Find ways to share data across countries*: Data being generated and made public in various national and regional programs need to be shared. Officials point to various potential barriers to such data-sharing; for example, USEPA has indicated that the U.S. might not be able to receive CBI data submitted under REACH due to TSCA restrictions.[26]
- **<u>Question</u>: Does government have an obligation or prerogative to "interpret" chemical information before it is provided to the public? Would such interpretation reduce the likelihood of miscontrual or misuse of such information by the public, or would it deny the public's "right-to-know"?**

ENDNOTES

[1] A useful discussion of information needs, barriers to information flow and approaches to overcoming the barriers is contained in the proceedings of a June 2004 OECD workshop; see "Workshop on Exchanging Information Across a Chemical Product Chain," OECD Document ENV/JM/MONO(2004)29, 14 December 2004, available at www.olis.oecd.org/olis/2004doc.nsf/LinkTo/env-jm-mono(2004)29.
[2] See, for example, *Responsible Care Status Report 2002*, available at www.icca-chem.org/pdf/icca004.pdf.
[3] See www.cmsforum.org/index.html.
[4] See REACH, Articles 29-36, at http://europa.eu.int/eur-lex/en/com/pdf/2003/act0644en03/1.pdf.
[5] See www.unece.org/trans/danger/publi/ghs/ghs_welcome_e.html.
[6] Letter dated 16 February 2005 from the European Trade Union Confederation to members of the European Parliament, signed by John Monks, General Secretary and Joël Decaillon, Confederal Secretary. See also tutb.etuc.org/uk/dossiers/dossier.asp?dos_pk=1.
[7] See www.cpsc.gov/businfo/fhsa.html.
[8] In addition to acute toxicity, "toxicity" includes the following categories of chronic toxicity: known or probable carcinogens and neurological, reproductive or developmental toxicants.
[9] See 16 CFR, Title 16, Chapter II, Part 1500.3, available at a257.g.akamaitech.net/7/257/2422/12feb20041500/edocket.access.gpo.gov/cfr_2004/janqtr/pdf/16cfr1500.3.pdf.
[10] See www4.law.cornell.edu/uscode/7/ch6.html.
[11] See www.epa.gov/oppfod01/labeling/lrm/.
[12] Material Safety Data Sheets, actually required under U.S. Occupational Safety and Health Adminstration regulations; see 29 CFR Part 1910.1200(g), available online at www.osha.gov/pls/oshaweb/owadisp.show_document?p_table=STANDARDS&p_id=10099#1910.1200(g).

[13] See, e.g., Procter & Gamble's "Science in the Box" website, scienceinthebox.com/en_UK/main/index_en.html.
[14] See Ritter, Stephen K., "Material Safety Data Sheets Eyed," *Chemical and Engineering News*, 7 February 2005, p. 24, available online (with account password) at pubs.acs.org/isubscribe/journals/cen/83/i06/html/8306gov1.html. In response to criticism, OSHA recently announced a MSDS quality enforcement initiative; see www.osha.gov/dsg/hazcom/MSDSenforcementInitiative.html.
[15] See hpd.nlm.nih.gov/index.htm.
[16] See www.epa.gov/tri/.
[17] See www.unece.org/env/pp/prtr.htm.
[18] See www.unece.org/env/pp/welcome.html.
[19] See www.turadata.turi.org/.
[20] See www.state.nj.us/dep/opppc/index.html.
[21] See Environmental Defense Fund. *Toxic Ignorance: The Continuing Absence of Basic Health Testing for Top-Selling Chemicals in the United States*. New York, NY: Environmental Defense Fund, 1997. (available online at www.environmentaldefense.org/documents/243_toxicignorance.pdf)
[22] See the EPA program website at www.epa.gov/chemrtk/volchall.htm and Environmental Defense's reports on the program at www.environmentaldefense.org/system/templates/page/subissue.cfm?subissue=14
[23] See www.oecd.org/document/21/0,2340,en_2649_34379_1939669_1_1_1_1,00.html
[24] See the position statement on REACH of the European Environmental Bureau, available at www.eeb.org/activities/chemicals/20031210-EEB-position-on-REACH.pdf, and the Copenhagen Chemicals Charter, www.eeb.org/activities/chemicals/Copenhagen%20Chemicals%20Charter2310.pdf, and.
[25] See, for example, presentations of Richard Denison, Environmental Defense, and Michael Warhurst, WWF-European Policy Office, at the U.S.-EU Transatlantic Conference on Chemicals, held in Charlottesville, VA on 26-28 April, 2004, available from USEPA, Office of Pollution Prevention and Toxics, Washington, DC.
[26] See Pat Phibbs, *International Environment Daily*, Volume: 2004 Number: 81, April 28, 2004, available online at ehscenter.bna.com/pic2/ehs.nsf/id/BNAP-5YGGJS?OpenDocument.