HARVARD UNIVERSITY

JOHN F. KENNEDY SCHOOL OF GOVERNMENT

Information in International Environmental Governance: The Prior Informed Consent Procedure for Trade in Hazardous Chemicals and Pesticides

Jonathan Krueger

Global Environmental Assessment Project

Environment and Natural Resources Program

Belfer Center for Science
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The Global Environmental Assessment project is a collaborative team study of global environmental assessment as a link between science and policy. The Team is based at Harvard University. The project has two principal objectives. The first is to develop a more realistic and synoptic model of the actual relationships among science, assessment, and management in social responses to global change, and to use that model to understand, critique, and improve current practice of assessment as a bridge between science and policy making. The second is to elucidate a strategy of adaptive assessment and policy for global environmental problems, along with the methods and institutions to implement such a strategy in the real world.

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Publication abstracts of the GEA Project can be found on the GEA Web Page at http://environment.harvard.edu/gea. Further information on the Global Environmental Assessment project can be obtained from the Project Associate Director, Nancy Dickson, Belfer Center for Science

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FOREWORD

This paper was written as part of the Global Environmental Assessment Project, a collaborative, interdisciplinary effort to explore how assessment activities can better link scientific understanding with effective action on issues arising in the context of global environmental change. The Project seeks to understand the special problems, challenges and opportunities that arise in efforts to develop common scientific assessments that are relevant and credible across multiple national circumstances and political cultures. It takes a long-term perspective focused on the interactions of science, assessment and management over periods of a decade or more, rather than concentrating on specific studies or negotiating sessions. Global environmental change is viewed broadly to include not only climate and other atmospheric issues, but also transboundary movements of organisms and chemical toxins. (To learn more about the GEA Project visit the web page at http://environment.harvard.edu/gea/.)

The Project seeks to achieve progress towards three goals: deepening the critical understanding of the relationships among research, assessment and management in the global environmental arena; enhancing the communication among scholars and practitioners of global environmental assessments; and illuminating the contemporary choices facing the designers of global environmental assessments. It pursues these goals through a three-pronged strategy of competitively awarded fellowships that bring advanced doctoral and post-doctoral students to Harvard; an interdisciplinary training and research program involving faculty and fellows; and annual meetings bringing together scholars and practitioners of assessment.

The core of the Project is its Research Fellows. Fellows spend the year working with one another and project faculty as a Research Group exploring histories, processes and effects of global environmental assessment. These papers look across a range of particular assessments to examine variation and changes in what has been assessed, explore assessment as a part of a broader pattern of communication, and focus on the dynamics of assessment. The contributions these papers provide has been fundamental to the development of the GEA venture. I look forward to seeing revised versions published in appropriate journals.

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ABSTRACT

Information can be critical to the influence and effectiveness of international institutions. Yet the exact role of such information and how it influences both state and non-state actors is not yet well understood. What factors determine the credibility of the information? What factors affect whether the information is deemed sufficiently legitimate and relevant to lead to changes in the behavior of significant actors – such as industry and states? Does the institutionalization of information provision improve the capacity of recipient states to process and make use of that information as intended? This paper addresses these questions by examining the functioning of the prior informed consent (PIC) procedure for chemicals and pesticides, as represented by the 1989 voluntary UNEP/FAO PIC procedure and the 1998 legally binding Rotterdam Convention on the Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade. A prior informed consent system generates and distributes information about chemical properties, their environmental and health effects, and national regulations that have been taken; after this information is distributed internationally, importing countries must inform exporters of their decision to consent or refuse imports of a given chemical or pesticide. In other words, export of a chemical can only take place with the prior informed consent of the importing country.

The PIC procedure should be seen as an information and decision support system. That is, it manages assessments of chemicals by providing specific, authorized and regularized information and provides a framework for decision-making in the use of the 'informed consent' mechanism. This study measures the effectiveness of the PIC procedure in terms of the credibility, legitimacy, salience and relevance of the information that it provides, as well as the process by which it is provided. This is done by examining changes in information flows, such as data on notification and response rates. Given the nature of this procedure – intended to improve decision-making rather than decrease or eliminate an environmental hazard directly – it isn't easy to measure 'effectiveness' by whether there are fewer pesticide poisonings, for example. The paper finds that the legally binding procedure has improved the clarity, transparency, and process by which information about PIC chemicals is exchanged. Standardization of information is important for its credibility, as is transparency important for political legitimacy. And perhaps most clearly illustrated by this case is that the salience and relevance of the information provided by this institution is very high for those countries that lack domestic capacity to otherwise obtain that same information. The paper concludes with some general observations about the role of information provision in international relations and draws some more specific lessons for the future development of international environmental policy from the PIC case.

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ACRONYM LIST

CAS	Chemical Abstract Service
CEFIC	European Chemical Industry Council
CSD	Commission on Sustainable Development (UN)
DGD	Decision Guidance Document
DNA	Designated National Authority
EPA	US Environmental Protection Agency
EC	European Community (before 1993)
EU	European Union
FAO	Food and Agriculture Organization
GC	Governing Council (UNEP)
G-77	Group of 77 developing countries (now numbering around 150)
GCPF	Global Crop Protection Federation
GEA	Global Environmental Assessment
ICCA	International Council of Chemical Associations
IFCS	Intergovernmental Forum on Chemical Safety
ILO	International Labour Organization
INC	Intergovernmental Negotiating Committee
IOMC	Inter-Organization Programme for the Sound Management of Chemicals
IPCS	Intergovernmental Programme on Chemical Safety
IUF	International Union of Food, Agricultural, Hotel, Restaurant, Catering, Tobacco and Allied Workers' Associations
JMPIC	FAO/UNEP Joint Meeting on Prior Informed Consent
MEA	Multilateral Environmental Agreement
MTS	Multilateral Trading System
OECD	Organization for Economic Cooperation and Development
PIC	Prior Informed Consent
POPs	Persistent Organic Pollutants
UNEP	United Nations Environment Programme
UNIDO	United Nations Industrial Development Organization
WHO	World Health Organization
WTO	World Trade Organization
WWF	World Wide Fund for Nature

1. INTRODUCTION

Information gathering has increasingly become a central feature in many multilateral environmental agreements (MEAs), particularly when dealing with trade issues. The Convention on International Trade in Endangered Species (CITES), the Basel Convention on transboundary movements of hazardous wastes, and most recently the Cartagena Biosafety Protocol all use information exchange as central means of addressing an environmental problem.

With respect to chemicals management, concerted international action – such as the creation of an information exchange system – is a way of diffusing knowledge about problems, available preventive measures, and alternative techniques and substitutes. Currently, many countries lack necessary information on the use and negative effects of hazardous chemicals in their environment and on their population (see section 2.1 below). International actions can increase awareness and encourage the gathering of relevant data. One effort to address this situation has been the creation of prior informed consent (PIC) procedures for the trade in hazardous chemicals and pesticides. A prior informed consent system generates and distributes information about chemical properties, their environmental and health effects, and national regulations that have been taken; after this information is distributed internationally, importing countries must inform exporters of their decision to consent or refuse imports of a given chemical or pesticide. In other words, export of a chemical can only take place with the prior informed consent of the importing country.

However, unlike some of the other major international environmental issues – such as climate change or ozone depletion – the effects of chemicals on human health and the environment are not subject to an international assessment process. As will be discussed in section 3, most assessments of chemical hazards have been conducted on national (e.g. US) or regional (e.g. EU or OECD) levels. Nevertheless, previous and current work in the Global Environmental Assessment (GEA) project have illuminated numerous aspects regarding both the characteristics of the content of GEAs (that is, the information they are providing) and the process of assessment (such as what questions are asked and who participates) that are highly relevant to this current paper (Clark, 1999; Biermann, 1999; Eckley, 1999; Connolly et al, 1998; VanDeveer, 1998; GEA, 1997). It is therefore argued here that PIC can be viewed as a system for managing assessments of chemicals – it provides specific, authorized and regularized information – as well as for providing a framework for decision-making – the 'consent' aspect.

This paper explores the institutionalized production, distribution and credibility of information in the prior informed consent procedures for the trade in hazardous chemicals and pesticides, as found in the United Nations Environment Programme (UNEP)/Food and Agriculture Organization (FAO) voluntary prior informed consent procedure (1989-1998) and the more recent legally binding Rotterdam Convention on PIC (1998). The transfer of information plays a central role in the PIC procedure and the underlying premise of the legally binding Convention is that more and 'better' information will help protect human health and the environment from the dangers of chemicals and pesticides that are traded internationally.

The Rotterdam Convention was signed by 54 countries and the European Community in September 1998 under UNEP and FAO auspices. It does not directly regulate the production and use of hazardous chemicals but rather regulates their export and import. The Convention makes legally binding a

procedure that since 1989 had been operating on a voluntary basis among 154 countries. The PIC procedure currently covers 29 chemicals (19 pesticides, 5 severely hazardous pesticide formulations and five industrial chemicals – see Table 1), but it is expected that dozens more will be added as the Convention's provisions enter into force and are implemented.

1.1 Central Questions

The PIC procedure for chemicals and pesticides provides a case where the provision of information and 'informed consent' – rather than the prohibition of chemical production and use, for example – was chosen as the governance structure for the regime. We can therefore ask, and likely answer, the question: "does PIC – and the information it provides – make a difference?" Moreover, while this is a lesser-known regime than those for climate change or ozone depletion, the international trade in chemicals and pesticides is a multi-billion dollar industry. In terms of direct and identifiable costs to human health – such as through pesticide poisonings – and to the environment – such as groundwater contamination – the problem of chemicals management is one of the most important on the international agenda.

This paper examines the conditions under which the PIC procedure works and whether it has any impact on state behavior (see below). Related interesting empirical questions to be addressed include: how the procedures for collection and dissemination of information function; how the information is determined to be accurate; and if different levels of development affects the ability of countries to comply with informational requirements (developing country capacity issues were central during the negotiations, for example). The Convention is institutionally co-located between UNEP (chemicals) and the FAO (pesticides). This arrangement, unusual among MEAs, allows for some interesting questions regarding institutional context and credibility to be asked. Additionally, research inside and outside of the GEA project suggests that participation plays an important role with respect to the credibility of international institutions.[1] Examining participation in the PIC procedure would allow for an exploration of this issue, as well as how patterns of participation affects implementation and, ultimately, effectiveness of the procedure itself.

The central question in this research is does the PIC procedure influence state behavior? Does this 'information institution' matter? This will be measured by changes in information flows, such as data on notification and response rates (e.g. what countries are notifying and responding? Are they doing so within specified time frames? Are import response procedures being complied with?). Given the nature of this procedure – intended to improve decision making rather than decrease or eliminate an environmental hazard directly – it isn't easy to measure 'effectiveness' by whether there are fewer pesticide poisonings, for example. Thus, changes in information flows are used to determine whether the PIC procedure has any impact on behavior.

Building on previous GEA research, the following characteristics of information are examined in this paper:

- Credibility. Is the information technically authoritative/believable? To whom? Why?
- Legitimacy. Is the process by which the information is produced and distributed politically legitimate to actors?
- Saliency. Are actors aware that the information is available? and
- Relevance. Is the information useful for the purposes that it is designed to be used for?

Also building further on previous GEA research on the effectiveness of assessments and information, I will investigate the degree to which the following factors affect the characteristics of credibility, legitimacy, saliency and relevance:

- historical context;
- user characteristics, such as capacity;
- scope (what information is included or excluded?);
- institutional setting/informational dominance;
- patterns of participation; and
- legally binding procedures vs. voluntary ones.

The research undertaken in this project will allow us to get a first cut answer to the question: does prior informed consent actually work as a mechanism to improve decision-making? Moreover, it may also begin to illuminate which of the determinants and pathways of influence already identified by GEA research are most important.

1.2 Information and International Environmental Politics

The generation and exchange of information can be critical to the influence and effectiveness of international institutions. As Mitchell (1998: 109) argues, "...fostering the acquisition, analysis, and dissemination of regular, prompt, and accurate regime-relevant information is often one of the most important functions regimes perform. In many regimes, such information underpins efforts to alter state behavior...". Other scholars have noted that incomplete information can often inhibit cooperation between states (Milner, 1997: 20). Thus, 'transparency' – the availability of relevant information – facilitates other core regime elements such as compliance and effectiveness, as will be discussed in this paper.

With respect to environmental issues, information plays a similarly important role. Jacobson and Kay point out that:

> Since states remain the primary sources of effective action, often all that international organizations need do or can do to protect the environment is to make information available to national governments so that they can take it into account in framing national policies... Information exchanges must be properly focused and targeted to be effective, and they must involve relevant subjects and reach individuals who have the capacity for action (Jacobson and Kay, 1983: 15).

In international environmental negotiations it is most often developing countries lacking in domestic capacity that push, often through the medium of international institutions, for more and better information provision and the right to 'informed consent' when dealing with potentially dangerous materials such as hazardous wastes, toxic chemicals or genetically modified organisms (GMOs).

As noted above, the case examined here – the PIC scheme for chemicals and pesticides – is neither the first nor the only example of information provision being the central mechanism employed to influence decision making in environmental politics. The 1989 Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal also employs a prior notification and consent

system, though its provisions for information exchange have developed less slowly, in large part because of focus on banning exports of hazardous wastes from industrialized to developing countries. Moreover, the notification and consent mechanism in the Basel Convention is less transparent than in the case of chemicals and has been subject to criticism on that basis (Krueger, 1998). The more recent 2000 Cartagena Protocol on Biosafety will also rely heavily on information provision and exchange – its 'advance informed agreement' (AIA) mechanism – modeled on PIC.[2]

1.3 Structure of the Paper

The structure of the paper is as follows: the next section outlines the background to PIC, including the dangers of chemicals and pesticides in international trade and the need for international action. Section 3 describes early international efforts with regards to chemicals management, the development of the voluntary PIC procedure and the negotiations of the legally binding Rotterdam Convention. In section 4, the PIC procedure is explained in detail, its functions and process. The fifth section of the paper considers the influence and success of the PIC procedure, particularly in light of the themes of credibility, legitimacy, salience and relevance. Finally, section 6 suggests some general conclusions about the role of information provision in international relations and draws some more specific lessons for the future development of international environmental policy from the PIC case.

2. BACKGROUND TO PIC

Concerns regarding the unregulated export and import of chemicals and pesticides relate to the increase in scientific data beginning in the 1960s that began to identify the potential hazards of these substances that were – and still are – often perceived as extremely helpful both in the industrial and agricultural sectors. Moreover, the increased domestic regulation of the uses of these chemicals in many industrialized countries brought attention to the fact that their export to developing countries often continued unchecked, thus emphasizing their potentially negative transboundary health and environmental effects.

2.1 Chemicals and Pesticides: helpful and hazardous

The commercial manufacturing of synthesized substances commenced in the late 1920s, but large-scale production did not begin until the post-World War II period. In the 1950s and 1960s there was a sharply accelerated use of chemicals world-wide with an intent to produce more and better food and cash crops, protect public health and increase industrial production (Nagai, 1995: 248). The products of the chemical industry are today worth approximately US $1600 billion annually and account for around 13% of world trade (OECD, 2000: 3). OECD countries account for about 75% of world chemical production, but developing countries are becoming increasingly active in chemical manufacturing.

The current number of chemical substances that are registered in the Chemical Abstracts Service (CAS) with individual CAS-numbers exceed 15 million compounds, and another 300,000 are added each year. However, it is estimated that only somewhere between 50,000 to 100,000 of all registered chemicals currently are in commercial use (Naturvårdsverket, 1996: 10). UNEP estimates that with around 70,000 different chemicals on the market, and 1,500 new ones being introduced every year, governments – particularly in developing countries – are unable to monitor and manage the many potentially dangerous substances crossing their borders every day (Mungai, 2000).

The first scientific warnings of the potential dangers of chemicals– and then primarily in connection with adverse local environmental effects – came in the late 1950s, and were soon after publicly voiced effectively in Rachel Carson's *Silent Spring* (1962). The international community was alerted to the problems associated with some important industrial chemicals – such as cadmium, mercury and PCBs – after serious incidents in Japan in the 1960s (Schweitzer, 1983: 23). In the 1970s, many industrialized countries tightened domestic regulations regarding the production and use of chemicals – but less so their trade – in response to public concerns. However, the use of chemicals, and particularly pesticides, increased at this time in developing countries that often lack the infrastructure for safe chemical management. Many chemicals and pesticides are harmful to humans, animals and ecosystems. They may cause cancer or birth defects, or enter the food chain and accumulate in the tissues of people or animals. The UN Food and Agriculture Organization warns that many pesticides – such as DDT, chlordane and heptachlor – that have been banned or whose use has been severely restricted in Europe and North America, are still marketed and used in African countries.[3] In 1995 and 1996, for example, the US exported 14 tons of pesticides *per day* that were not approved for domestic use (Ross, 1999: 506). And the FAO estimates that there are more than 100,000 tonnes of obsolete pesticides being stored in often unsafe conditions in developing countries (Wodageneh, 1997: 12).

The World Health Organization (WHO) estimates that one million people worldwide are affected by pesticide poisoning yearly and that about 20,000 people die every year from using pesticides (Mungai, 2000). Inadequate control of imported pesticides often results in improperly labeled pesticide containers, pesticides of inferior quality, misuse and overuse of pesticides and poisoning of humans and animals.[4] Also, many old, often highly toxic, organophosphorus pesticide formulations continue to be used in Africa because of their low price. Many countries in Africa have reported acute poisoning because highly toxic pesticide formulations cannot be handled safely. Protective clothing is often too expensive and, in many cases, there is reluctance to use it because of the hot and humid climate in these countries (see also Dinham, 1996). Failure to take precautions while applying pesticides is common and it is often the case that workers do not understand the risks or cannot afford to purchase protective equipment. Chemicals are also frequently stored improperly in residential areas and manufacturers and exporters aggressively advertise, or intentionally mislabel, such chemicals as being safe (Ross, 1999: 505). However, industrialized countries began to have a greater interest in international regulation when it was found that the pesticides exported to developing countries were returning back to the place of origin as residues on imported food and agricultural products – the so-called 'circle of poison'.

2.2 The Need for International Action

The need for international cooperation on hazardous chemicals arises from several circumstances (Karlsson and Selin, 1999). First, transboundary transport of emissions through air, water, ice and migratory species creates an international 'common-sink' situation for hazardous chemicals, resulting in widespread transnational dispersal. Virtually all the world's areas and ecosystems are, at least to some degree, vulnerable and there is high environmental accumulation in regions remote from any emission source (Arctic Monitoring and Assessment Programme, 1997: 71-91).

Second, many of the national or regional activities that cause chemical problems are governed or influenced by multiple international institutions and organizations. A more coherent approach to chemical management could help coordinate and harmonize their work to avoid overlapping or even counterproductive activities (see also Krueger and Selin, 1999). Additionally, effective non-discriminatory trade restrictions on chemicals can only be implemented if supported by a majority of countries.

Third, concerted international action is a way of diffusing knowledge about the problem, available preventive measures, and alternative techniques and substitutes. Currently, many countries lack necessary information on the use and negative effects of hazardous chemicals in their environment and on their population. International actions can increase awareness and encourage the gathering of relevant data. A fourth reason for international concerted action is that in some cases countries recognize the problem with hazardous chemicals and wish to initiate risk reduction measures, but encounter difficulties in mustering adequate technical, scientific, financial and/or human capital. Here, international joint actions can function as a catalyst for the diffusion of such resources and lead to domestic actions that otherwise would not have been taken – a situation that has been particular true in the case of the PIC procedure, as will be shown below. An additional economic reason for taking international action on chemical risk has also been identified. Chemical testing is an expensive process, and thus costs can be minimized by standardizing procedures and quality assurance processes in laboratory testing. Thus, according to Kellow (1999: 50), appropriate international chemicals management should involve harmonization of technical issues such as procedures, tests, the types of data needed and the manner of

their collection, while still allowing nations to determine their level of acceptable risk.

3. Early International Efforts and Voluntary PIC

At the national and regional level, much of the initial work on chemicals management was done by the OECD in the 1980s, having been spurred on by the development of regulations in the US and EC in the 1970s (Kellow, 1999: 58; Victor, 1998: 225). The results of OECD efforts largely related to harmonization of information requirements – e.g. on the minimum data OECD members could use to assess chemical hazards, mutual acceptance of toxicological data, and principles concerning the exchange of confidential data.

Early international efforts to tackle the problems related to the production, use and trade of hazardous chemicals were generally devoted to improving the availability of information about such substances. In 1976, UNEP established the International Register for Potentially Toxic Chemicals (IRPTC) in order to compile and circulate information on chemical hazards. Subsequent discussions within UNEP and the FAO (see below) led to the development of the 1985 International Code of Conduct for the Distribution and Use of Pesticides (FAO) and the 1987 London Guidelines for the Exchange of Information on Chemicals in International Trade (UNEP).[5] Both the Code of Conduct and the London Guidelines included procedures aimed at making information about hazardous chemicals more freely available, thereby permitting countries to assess the risks associated with chemical use.

By the early 1980s, the US had adopted a 'notification only' scheme for chemical exports. That is, an importing country had to be notified of an impending export but the shipment proceeded with or without some response from the importer. But the US, and other OECD countries like the UK, opposed a more comprehensive notification *and consent* system. It was thought that adding the consent component could be too trade restrictive, as importing countries took ill-informed import decisions or shipments were delayed waiting for response. Thus, a PIC scheme was considered, and rejected, by the OECD in 1982-83 (Victor, 1998: 230).[6] Supported by other chemical-exporting industrialized countries, they used the forum of the OECD to create an 'international' consensus around notification and pre-empt FAO and UNEP from pursuing PIC (Kellow, 1999: 59). The OECD, of course, excludes the developing countries and tightly controls NGO participation – the two most vocal advocates of PIC. In 1984, the OECD Council recommended that members adopt a notification system – called the provisional notification scheme – to inform potential importing countries of domestic restrictions and allow them to request more information. Then, in 1988, the EC adopted a minimal notification system modeled on the OECD scheme, having rejected an 'informed choice' – essentially PIC – scheme proposed in 1986 because it did not want to risk trade disadvantages that this might place on European chemical exporters (Pallemaerts, 1998).

Meanwhile, the development of the FAO Code of Conduct had witnessed one attempt to include a full PIC procedure, but this was removed at the insistence of the pesticide industry and FAO itself (Paarlberg, 1993: 321). In UNEP, demands for PIC from developing countries were thwarted by industrialized countries that offered instead a weak notification system modeled on the 1984 OECD provisional notification scheme.[7] However, by 1987, several developments made it difficult for industrialized country exporters to keep PIC off the international agenda any longer. In 1985, the OECD itself had employed the PIC concept in the related area of hazardous waste exports and the Dutch government unilaterally authorized a PIC system for its chemical exports. So by June 1987, the solidarity of the developing countries – dominating the UNEP Governing Council (GC) – was enough to secure a pledge

that PIC would be added to the UNEP London Guidelines by 1989. This made it almost impossible for FAO not to make a similar addition to their Code, subsequently agreed to in November at the FAO Council meeting. Thus, in 1989, both the FAO Code of Conduct and the UNEP London Guidelines were amended to include the Prior Informed Consent (PIC) procedure to help countries make informed decisions on the import of chemicals that have been banned or severely restricted.

The creation of the voluntary PIC system was clearly a victory for environmental and consumer NGOs who had been advocating it for nearly a decade. Moreover, developing countries too felt that a potentially new effective mechanism had been established that would allow them to better regulate imports of hazardous chemicals and pesticides. The PIC system was indeed the result of "continuous pressure by entrepreneurial public interest groups and developing countries" (Victor, 1998: 234; see also Hough, 1998: 115). For FAO and UNEP, a new regulatory scheme – even if not mandatory – likely meant an increased role for them in the evolving international policies on chemicals. And, according to Victor (1998: 223), the chemical industry embraced the voluntary PIC system – once its creation seemed inevitable – because it believed that more onerous (i.e. legally binding) and less coordinated regulation would result in the absence of a unified, global PIC system.[8] Nevertheless, despite the number of years required to reach international agreement even on a voluntary PIC scheme, the G-77 and some NGOs immediately advocated that it be made legally binding.

3.1 Development of the legally binding Convention

The question of whether or not to make PIC legally binding was discussed as early as December 1989 – the same year as the adoption of a voluntary PIC procedure by UNEP and the FAO. The 25th FAO Conference, held only the month before, had suggested exploring the possibility of converting its Pesticide Code of Conduct, now including PIC, into a legally binding agreement. At its first meeting in December 1989, the FAO/UNEP Joint Meeting on PIC (JMPIC) discussed this issue only briefly and asked to be kept informed (UNEP/FAO, 1990: 10).[9] The issue was raised again at JMPIC's second meeting in October 1990. This time, the question of making PIC legally binding was discussed at length, with the experts deciding that the "development of legally binding instruments should not be initiated at this time. Scarce resources should be devoted to promotion and implementation of the current instruments, including development of national regulatory capacity and training" (UNEP/FAO, 1991a: 22). Industry was particularly against such a development:

> The discussions on a legally binding instrument proceed from the erroneous assumption that information exchange is the overriding objective of chemical regulation. This debate diverts time and resources from more valuable international activities in expanding and accelerating international assessment of chemical risks, harmonization of classification systems and strengthening national capabilities for managing chemicals (the Chemical Manufacturers Association, quoted in Tilton, 1995).

Nevertheless, the door to initiating a convention was left open by the JMPIC: "the effectiveness of these instruments should be periodically evaluated and the need for and content of a legally binding instrument assessed" (UNEP/FAO, 1991a: 22).

In 1991, the UNEP GC requested that a working group examine strengthening the legal basis of the amended London Guidelines. By 1994, this working group had developed an outline of elements that

should be included in a potential legally binding instrument. And at its seventh meeting in March 1994, the JMPIC was less categorically opposed to the idea: "The Group acknowledged that, if there were difficulties in obtaining the participation of certain exporting countries in the procedure, it might be necessary to consider establishing a mandatory system [but nevertheless] the time might not be ripe for development of a mandatory instrument" (UNEP/FAO, 1994: 8).

The period around the UN Conference on Environment and Development (UNCED, or Rio Earth Summit) in 1992 witnessed further momentum for the initiation of negotiations of a legal agreement, as well more elaborate international undertakings on chemicals issues generally. Chapter 19 of Agenda 21, "Environmentally Sound Management of Toxic Chemicals Including Prevention of Illegal International Traffic in Toxic and Dangerous Products", addresses chemicals management.[10] It called on states to achieve by the year 2000 the full participation in and implementation of the PIC procedure, including possible *mandatory* applications of the voluntary procedures contained in the amended London Guidelines and the International Code of Conduct (Chapter 19.38). Also based on a recommendation in Chapter 19, the Intergovernmental Forum on Chemical Safety (IFCS) was established in 1994. The IFCS has the task to promote international cooperation in implementing the goals on chemicals as set out in Agenda 21. Regarding PIC, the IFCS took the following resolution at its first meeting: "Work should continue to evaluate and address problems with implementation of the voluntary PIC procedure and to develop effective international *legally binding* instruments concerning the PIC procedure" (IFCS, 1994, emphasis added). And by 1995, the European chemical industry stated that it would "not opposed a UNEP Legal Convention on PIC, *providing that the present scope is not increased*" (CEFIC, 1995: 2, emphasis in original).

3.2 The Negotiations: questions of scope

In November 1994, the FAO Council agreed that the FAO Secretariat should proceed with the preparation of a draft PIC Convention, preferably to be ready for adoption in 1997. An informal consultative meeting of governments, international organizations and NGOs was then convened by UNEP and FAO in December 1994 to consider the major issues facing the development of a legally binding agreement. The meeting recommended that UNEP also seek a mandate to begin negotiations (UNEP/FAO, 1995a: 5-6). Then, in May 1995, the 18th session of the UNEP Governing Council adopted decision 18/12, which authorized the Executive Director to convene, together with the FAO, an intergovernmental negotiating committee (INC) with a mandate to prepare an international legally binding instrument for the application of the PIC procedure. Table 2 sets out the stages of the PIC negotiating process.

Questions surrounding the scope of the proposed convention were present from the outset, but not always marked by continuity. The apparent consensus that emerged from the UNEP/FAO meetings was to limit the scope to making the voluntary procedure mandatory (Pallemaerts, 1998: 74). But at the 1994 session of the UN Commission on Sustainable Development (CSD), a summary of the high-level segment of the meeting noted that not only should PIC be made legally binding, but also "subsequently ban the export of domestically prohibited chemicals from countries that are members of the OECD to other countries" (UN, 1994: chapter II, para. 11).[11] But no such ban had been envisaged by UNEP or the FAO. The same demand was reiterated by Malaysia, then speaking for the G-77, at the 1995 UNEP GC meeting that had given the mandate for the INC (Pallemaerts, 1998: 75). The compromise achieved to allow negotiations

to begin on turning voluntary PIC into a legally binding convention, while at the same time acknowledge the demands of developing countries that consideration should be given to banning the export of domestically prohibited chemicals, was the convening of a parallel UNEP meeting of experts to consider what "further measures are needed...either within or beyond the scope of the existing prior informed consent procedure". This group was to report to the next meeting of the UNEP GC in 1997.

Negotiations on the PIC convention finally got underway in Brussels in March 1996 (INC-1). This time, however, the question of its scope was not raised by developing countries, but by European ones. In his opening speech, the host Belgian environment minister suggested that the outcome of the negotiations would be a "dynamic legal framework" that could accommodate "further measures such as production phase-out provisions", an element not part of the voluntary PIC procedure (UNEP/FAO, 1996a: 2). In general, the EU position at the start of negotiations was that a PIC convention should contain a framework provision that would allow for the negotiation and addition of protocols on chemicals at later stages. This idea was also supported by environmental NGOs (Consumers International, 1997: 1; WWF, 1997: 7). However, strong opposition came from the US, Canada, Australia and some other non-European OECD countries, arguing against what in their view would be an expanding and increasingly costly bureaucratic process.[12]

These positions were reiterated at INC-2 in September 1996 in Nairobi. This time, however, developing countries – having not taken any clear position on the issue at INC-1 – argued that while the PIC procedure on its own was insufficient, their desire was not so much for a framework chemicals convention as much as the need to include new provisions for technical assistance, financial aid, and capacity building in the new agreement.

The question of the scope of the PIC convention was then discussed in October 1996 back at the FAO Council. Some members expressed support for a broader framework convention on the management of chemicals and some suggested that the relevant provisions of the instrument be formulated in a way that could accommodate possible future developments. Other countries, however, preferred to limit the negotiations to the PIC procedure only and establish separate negotiations on persistent organic pollutants (POPs). Lacking consensus – a key decision-making tool in international organizations – the Council concluded that the agreed mandate of the INC would continue (that is, to transform the existing voluntary procedure into a legally binding agreement). Then, in February 1997, the 19th session of the UNEP GC adopted decision 19/13, which confirmed the original mandate of the INC and asked that negotiations be concluded by 1997.[13]

Thus, the broader question of creating a legally binding PIC or a framework international instrument for chemicals management was largely settled for the remainder of the negotiations. While the EU still complained that the mandate of the PIC INC was not to simply "photocopy the London Guidelines", expected support for this position did not emerge from developing countries, with many of them noting that the administrative and technical obligations in a convention of narrower scope would be challenging enough (Carpenter, Cosbey and Krueger, 1997: 11). The Convention was negotiated in a total of 5 sessions, beginning in December 1995 and ending in March 1998. The Rotterdam Convention on the Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade was signed by 54 countries and the EU in September 1998 and will enter info force after 50 ratifications. As of August 2000, there are 73 signatories to the Convention and 9 ratifications.[14] The

details of the functioning of the PIC procedure are outlined in section 4. Figure 1 diagrams the institutional structure of the Rotterdam Convention.[15]

3.3 Trade Concerns: Compatibility with the WTO?

Given the emphasis of the Rotterdam Convention on the *trade* in hazardous chemicals, avoiding a clash with the multilateral trading system (MTS) – in the form of GATT regulations and the WTO – was another key feature in the negotiations. It was agreed that actions taken by the importing party must be trade neutral. That is, if the party decides not to consent to imports of a specific chemical, it must also stop domestic production of the chemical for domestic use and refuse imports from any non-party.[16] However, the Convention's relationship to the WTO was still a major point of debate.

A note by the Secretariat of the negotiating committee presented to the first session of the INC in March 1996 framed the problem in plain language: "as the PIC procedure itself is a measure addressing international trade in chemicals, various measures for ensuring effectiveness of the PIC instrument may have trade implications" (UNEP/FAO, 1995b: 4). The Secretariat document, in reference to the possible control of trade with non-parties in the draft Convention, then noted that "...the relevant provisions of Agenda 21 and the GATT/WTO rules may be taken into consideration" (UNEP/FAO, 1995b: 4).[17] Also at the first session, the then Executive Director of UNEP, Elizabeth Dowdeswell, stated in her opening address to the INC that "a legally binding instrument on PIC should be compatible with the 1994 GATT and related WTO agreements" (UNEP/FAO, 1996a: 3) – not a view that was universally held.

Up until the third INC in May 1997, the draft Convention had an article entitled "control of trade with non-parties"; but this article was not a prohibition against trading in PIC chemicals but rather a statement regarding treatment of non-parties that were in compliance with Convention provisions.[18] But since it was agreed that the scope of the Convention did not include phase-outs and bans on the production or consumption of chemicals, there were no trade restrictions placed on non-parties to encourage them to join the agreement. The article was deleted at the third meeting (Carpenter, Cosbey and Krueger, 1997). These developments, however, prompted environmental NGOs to express concern "at the continuous assertion of the priority of trade rules. The need to reduce and eliminate unwanted trade in hazardous chemicals should take precedence over the principles of free trade as a matter of public policy" (Consumers International, 1997: 3).

But with trade restrictions against non-parties no longer an issue, the negotiations turned to the question of the compatibility of the Convention's PIC procedure with WTO rules. At the fourth session in October 1997, an unusual proposal was presented:

> The Parties shall ensure that measures taken to regulate the chemicals under this Convention do not create unnecessary obstacles that would constitute a means of arbitrary or unjustifiable discrimination or disguised restriction on international trade *in accordance with WTO rules.*[19]

The desire to include such language was based on the fear that the Convention might be used as an excuse to take WTO-inconsistent measures or that the perception of a hierarchy between different agreements might be created (Ivers et al, 1998). While Mexico, New Zealand and Canada supported this language, the EU immediately opposed the direct reference to measures in the Convention needing to be "in accordance with WTO rules", and noted that this language was stronger than that found in the UN

Framework Convention on Climate Change (Burgiel et al, 1997). Eventually, the specific reference to being "in accordance with WTO rules" was rejected on the grounds that it would set an undesirable precedent by granting primacy to trade rules over environmental regulations.

The eventual compromise was to place language in the pre-amble of the Convention. A sub-group on trade had spent the whole week at the final negotiating session discussing the issue and presented their text to the negotiators on the final day:

> *Recognizing* that trade and environmental policies should be mutually supportive with a view to achieving sustainable development; *Emphasizing* that nothing in this Convention shall be interpreted as implying in any way a change in the rights and obligations of a Party under any existing international agreement applying to chemicals in international trade or to environmental protection; *Understanding* that the above recital is not intended to create a hierarchy between this Convention and other international agreements...

The Chair of the sub-group on trade referred to this language, and its location in the pre-amble rather than the operative paragraphs of the Convention, as reflecting "significant compromise on the part of all parties" (Ivers et al, 1998).[20] Trade and environment issues, especially the compatibility of the Convention with the WTO, was the subject of considerable debate during the entire negotiations.[21]

4. How PIC Works

The preceding sections outlined the background to and development of the voluntary PIC procedure and the legally binding version in the Rotterdam Convention. This section explains in greater detail how PIC actually works. It considers the process of information exchange, export notification, informed consent, criteria and selection of PIC chemicals, the preparation of Decision Guidance Documents, and the role of Designated National Authorities and importing country responses.

Essentially, the PIC procedure can be divided into two phases: the information exchange process and the PIC procedure itself. In the information exchange process, parties – that have created Designated National Authorities (DNAs) for PIC – notify the Secretariat about final regulatory actions to ban or severely restrict a chemical (or a severely hazardous pesticide formulation causing problems under conditions of use in its territory). At the same time, the DNA must begin to notify importing countries about any exports of that chemical that are going to take place. Then, in the next step, the PIC procedure begins. After the required number of notifications of final regulatory actions has been received, a decision is made to include the chemical in the PIC list. Then a decision guidance document (DGD) is created and sent out to all parties. Importing countries subsequently provide their responses regarding their level of consent to importation of the chemical: consent, no consent, or consent under certain conditions. These import responses – their 'informed consent' – are distributed to all other parties (in the so-called 'PIC Circular' documents) so that exporters are aware of which countries consent or not to the importation of a given chemical. This process is elaborated in more detail below.

Figure 2 presents a simplified diagram of the information exchange and PIC procedures. Recall that 29 chemicals and currently subject to PIC (found in Table 1), though the Convention does not apply to: narcotic drugs and psychotropic substances; radioactive materials; wastes; chemical weapons; pharmaceuticals; chemicals used as food additives; chemicals in quantities not likely to affect human health or the environment provided they are imported either for the purpose of research or analysis or by an individual for his or her own personal use in small quantities.

4.1 Information Exchange and Export Notification

As noted above, the information exchange process and the export notification process run along parallel tracks. Figure 3 is a detailed flowchart of the information exchange process in the Rotterdam Convention. As noted by the 1991 Guidance for Governments document used in the voluntary procedure, information exchange "provides participating countries with a one-way flow of information on how certain chemicals are regulated in other countries...each participating country makes use of the information as decided nationally" (UNEP/FAO, 1991c: 3).

First the whole process is triggered by final regulatory actions taken by individual countries. That is, when a country bans or severely restricts – according to the definitions in the Convention – a chemical, its DNA must notify the Secretariat. This notification must take place within 90 days of the final regulatory action and must contain specific information (see Table 3) about both the chemical and the regulatory action itself.

Then, the Secretariat must verify within six months that the notification of a final regulatory action

contains the specified information. If the information is not complete, the Secretariat informs the notifying country about the problem. If the information is correct, a summary of this information is forwarded to all Parties. Additionally, the Secretariat sends out every six months a synopsis of the information it has received regarding final regulatory actions, including those that did not have the required information (in the "PIC Circulars"). Once a specified number of final regulatory actions on a given chemical or severely hazardous pesticide formulation have been received, then the PIC process is initiated (see below).

The provisions for the stringency and reliability of the information provided on final regulatory actions have increased from the voluntary procedure to the Convention. In the voluntary procedure, the Secretariat simply had to verify that the definitions of "ban" or "severe restriction" used by a country in its notification complied with FAO and UNEP definitions. In the Convention, a notification of final regulatory action must contain the information as set out in Annex I of the Convention (Table 3 above), which is more extensive than simply needing to ensure conformity of definitions. And while a particular form "should" have been used for the purpose of notification in the voluntary procedure – and this form had fields for much of the same information as now contained in Annex I of the Convention – the use of this form was not required (UNEP/FAO, 1991c: 11). Provision of the information in Annex I is now mandatory for the legally binding procedure. It was discovered by the Secretariat that *none* of the notifications of final regulatory action submitted prior to the signing of the Convention met the new informational requirements set out in Annex I (FAO/UNEP, 1999b: 147). This situation is clearly and reasonably expected to change with the entry into force of the Convention, thereby improving the level of compliance with its provisions as well as the quality of the submitted information.

However, before a banned or severely restricted chemical becomes a PIC chemical, exporters have responsibilities with regards to notifying importers of shipments of chemicals. A flowchart outlining this process is found in Figure 5.

For export notification, only chemicals banned or severely restricted *by the exporting party* (as opposed to those listed specifically as PIC chemicals) are subject to this requirement. Export notifications shall be provided "prior to the first export following adoption of the corresponding final regulatory action" and thereafter on an annual basis before the first export in each calendar year. One repeat notification must be made if the importing country fails to acknowledge receipt of the first notification.

The information required in export notifications is found in Annex V of the Convention. For the voluntary procedure, the main document setting out informational requirements was the "Guidance for Governments" document. The difference between the two is not significant; they both call for: names and addresses of the DNAs in exporting and importing countries and of the importer; expected date of export; name of chemical and a summary of information required for notifications of final regulatory actions (such as toxicological information about the chemical and information regarding the reasons for the final regulatory action). Unfortunately, while data regarding compliance with other informational requirements – such as notification of final regulatory actions or import responses – is available (see, for example, section 4.3 below), data regarding compliance with export notification is generally unavailable. But, as with other aspects of the Convention, the *a priori* expectation is that compliance with export notification provisions will improve under the legally binding agreement.[22] The export notification requirements cease to apply once the chemical in question has been included in Annex III and the

importing country in question has made a formal import decision (after having received the DGD on the chemical).

As with the larger debate about the scope of the Convention outlined in section 3.2 above, there was also division regarding the scope of the information that should accompany export notifications. While some developing countries argued that packaging and labeling measures should be included for export notifications, some industrialized countries responded that harmonizing such information would go beyond the scope of the procedure. As one industry representative asserted, the goal of PIC was to ensure that governments made informed import decisions, not to "be a process to communicate hazards to end-users of chemicals...[PIC] is not a replacement for a national chemical management program" (quoted in Ross, 1999: 522). The Convention thus does not require a harmonized set of international regulations on packaging and labeling for export notifications.[23]

4.2 Prior Informed Consent Procedure

The core of this process, and of the Rotterdam Convention itself, is the procedure by which a chemical is placed on the PIC list and countries provide their 'informed responses' to consent (or not) to the import of that chemical. After this point, export of a PIC chemical cannot take place unless a country has explicitly authorized its import (see also section 4.3 below). Figure 4 provides a detailed flowchart outlining the PIC procedure in the Rotterdam Convention.

As noted above, countries regularly provide information on control actions to ban or severely restrict chemicals. In the voluntary procedure, the validated control actions were then entered in a database maintained by the Secretariat. Any chemical banned or severely restricted in at least one country after 1 January 1992 was eligible for inclusion in the PIC procedure. In the case of chemicals banned or severely restricted prior to this date, those for which control actions had been taken in 5 or more countries were eligible. The Rotterdam Convention now specifies that at least two notifications from two different 'PIC regions' (loosely based on the seven FAO regions) are required to initiate the PIC procedure.

Once a chemical is identified for inclusion in the PIC procedure, a Decision Guidance Document (DGD) is prepared and sent to each participating country (through the DNA) together with an Importing Country Response (ICR) form and instructions for completion. The DGDs are intended to help governments analyze, taking into account their public health, economic, environmental and administrative conditions, the potential hazards connected with the handling and use of the chemical, and to assist countries in taking a decision whether to allow or prohibit future import of the chemical. The import decisions are notified to the Secretariat through the completion of an ICR form, which are requested to be returned to the Secretariat within 90 days after the DNA has received the DGD. These import decisions are then summarized by the FAO/UNEP Secretariat and a compilation of importing country responses – the PIC Circular – is distributed to DNAs every six months.

Selecting Criteria for PIC Chemicals

One of the key issues in the PIC procedure is the criteria by which pesticides or industrial chemicals are selected to be included in the PIC list. The balance to be struck is between ensuring that chemicals in international trade that threaten human health and the environment are eligible, while at the same time ensuring that chemicals proposed for inclusion meet the requirements as set out by the process –

requirements which changed over time – and have 'scientific credibility'. Additionally, it was agreed – particularly at the outset – that the PIC list should be short and therefore administratively feasible, especially for those countries with low administrative and bureaucratic capacity.[24]

The initial criteria for putting a chemical in the PIC list in the voluntary procedure was the definition of a "banned" or "severely restricted" chemical as found in the FAO Code of Conduct and UNEP London Guidelines:

- *Banned* means a chemical which has, for health or environmental reasons, been prohibited for all uses by final government regulatory action.
- *Severely restricted* - a limited ban - means a chemical for which virtually all registered uses have been prohibited, for health or environmental reasons, by final government regulatory action but certain specific registered use or uses remain authorized.

Yet these definitions gave little information about the actual types chemicals – e.g. their chemical composition and the reasons that they are hazardous – that might be included in PIC. So, as early as the first meeting of the FAO/UNEP Joint Meeting on Prior Informed Consent (JMPIC) in 1989, the representative of UNEP "emphasized the need for the Group to clarify the criteria for selecting chemicals to be included in the PIC procedure" (UNEP/FAO, 1990: 1). Moreover, at the outset (1989-92), there were no chemicals that had verified control actions from five countries so there was no way to start compiling the PIC list. Thus at its second meeting in 1990, JMPIC agreed to using the European Community's list of banned and severely restricted chemicals as the initial PIC list (14 pesticides and 7 industrial chemicals), as the EU list represented control actions in 12 countries for those chemicals (UNEP/FAO, 1991a: 10, 18, 33). By 1995, the list of potential PIC *candidate* chemicals was 127 (UNEP/FAO, 1995a: 10).

More detailed criteria for deciding whether or not to make a notified chemical a PIC chemical was still missing, however. Thus, at the 3rd JMPIC meeting in 1991, the Group agreed on "general principles" that would apply to control actions that could be used to nominate a chemical for inclusion in PIC. The principles were as follows:

1. The control action must be in accordance with the definitions of the PIC procedure.
2. The control action should be scientifically based.
3. The control action should be based upon data, information or analyses which indicate that the expected conditions of use in the country may give rise to an unacceptable risk to human health or the environment.
4. The control action should be based upon control of existing uses, withdrawal of previously approved uses or refusal of a registration which has been requested. Decisions not to register/approve a chemical are not considered to be refusals to register unless based on an evaluation of the chemical as it would be used in the country (UNEP/FAO, 1991b: 8).[25]

Clearly, and as the Group recognized, these principles were exactly that: broad standards that would require interpretation. Principle 2, for example, leaves plenty of scope for questions regarding what "scientifically based" means in reference to judging a country's submitted control action. Part of the improvement in the informational requirements of the Convention are related to a much clearer outline of the criteria by which a chemical can be included in PIC (see below).

Indeed, there was a case in which the information in national regulatory actions for a chemical was

considered flawed in subsequent review after the chemical had been included in the procedure. Cyhexatin was originally included in the PIC procedure in 1991 because it was banned or severely restricted in 5 countries because of teratology concerns (causing developmental malformations). Two manufacturers producing cyhexatin developed additional data on its teratogenic potential. This new information was considered by the FAO/WHO Joint Meeting on Pesticide Residues (JMPR) who stated that: "After taking into consideration the results of all the studies on teratogenicity in rabbits, the Meeting concluded that cyhexatin is not teratogenic to this species" (UNEP/FAO Factsheet on Cyhexatin). The FAO/UNEP Joint Group of Experts at it's eighth meeting agreed that the developments relating to cyhexatin seemed to represent a situation where the information on which the regulatory actions were based was flawed.[26] Thus, a revised DGD was circulated to all DNAs in September 1995, together with a covering letter highlighting the conclusions of the 1994 JMPR and drawing their attention to the present regulatory status in countries on which its entry into PIC was based. DNAs in importing countries were invited to reconsider their decision in the light of the new evidence and the removal of the chemical from the PIC procedure. The PIC Circulars of July and December 1995, and July 1996, referenced the altered status of cyhexatin and the timeframe for its removal from the procedure. As of 1 September 1996, import responses for cyhexatin were no longer circulated and it was no longer considered subject to the PIC procedure.

With respect to the Convention, the criteria for listing chemicals in the PIC list (Annex III of the Convention) has become more transparent and rigorous. Chemicals already subject to the voluntary PIC procedure and for which DGDs had been circulated were listed in Annex III immediately. And, as noted, two more chemicals have been added since then bringing the number of chemicals in Annex III to 29.[27] As noted above, the legally binding agreement has set out much more clearly the criteria both for the information required in notifications of national regulatory actions (bans or severe restrictions) *and* the criteria that a chemical must meet in order to be listed in Annex III of the Convention – the PIC list. In the legally binding procedure, the Chemical Review Committee (CRC) is responsible for reviewing national regulatory actions and proposals for listing chemicals or severely hazardous pesticide formulations notified by Parties.[28] The criteria for judging whether or nor the actions meet the Convention's requirements are laid out in Annexes II (for banned or severely restricted chemicals, Table 4 below) and IV (for severely hazardous pesticide formulations).

As can be seen in Table 4, the CRC must establish that the final regulatory action for a banned or severely restricted chemical was taken "as a consequence of a risk evaluation" and that documentation submitted regarding this must have been generated "according to scientifically recognized methods" and "generally recognized scientific principles and procedures". While there still remains some discretionary power in the CRC to interpret, for example, what "generally recognized scientific principles" are, these criteria – especially reference to requiring a risk evaluation – represent some improvement in clarification and standardization in comparison to the more vague criteria set out under the voluntary procedure (outlined above). It should be noted, however, that the criteria for listing hazardous pesticide formulations are *less* stringent in recognition of the fact that this category of substances is of concern to developing countries that may not always be able to perform a risk evaluation.[29]

Another important change from the voluntary procedure that raises the threshold for listing PIC chemicals is that a notification of regulatory action from one country will no longer be sufficient to trigger consideration of that chemical for inclusion in the PIC list. This element was the subject of

extensive debate during the Rotterdam negotiations, and was only resolved at the final INC. At the third INC in May 1997, some industrialized countries such as Canada and New Zealand proposed that five notifications would be necessary, recalling the original figure required in the voluntary procedure pre-1992. Developing countries and the EU, on the other hand, argued for a continuation of the single notification policy (Carpenter, Cosbey and Krueger, 1997: 4). Switzerland proposed a compromise solution of "more than one country notification". By the time of the final negotiating session in March 1998, there was general support for requiring two notifications. And while some developing countries stated that one or more notifications warranted a triggering of the PIC procedure, industrialized countries proposed that more than one notification from *more than one region* be required, as this would "ensure that chemicals put on the PIC list had support in a global context" (Ivers et al, 1998: 4). However, it was noted by the Chair of the meeting that "too many notifications could paralyze the process and too few notifications could drown the CRC and the Secretariat with work"(Ivers et al, 1998: 4). A chemical will only be put on the CRC's agenda for consideration in PIC when the Secretariat has received at least two notifications from two different PIC regions.

Preparing and Reviewing Decision Guidance Documents

Another important aspect of information generation and distribution in the PIC process is the creation of the Decision Guidance Document (DGD). For each chemical agreed for inclusion in the PIC procedure, a DGD is developed and circulated to DNAs. The DGD is intended to help governments assess the risks connected with the handling and use of the chemical and to make more informed decisions about future import and use, taking into account local conditions. The information contained in the DGD is by no means exhaustive and the intent is that DNAs use the DGDs as a basis for informed decision making, seeking further advice if necessary and consulting other national interests, rather than simply prohibiting import of PIC chemicals without considering the consequences under their particular conditions of use. The availability of DGDs is pivotal to the operation of PIC, because the "informed consent" cannot take place until DNAs have received these documents (Victor, 1998: 248).

Under the voluntary procedure, the preparation of DGDs was commissioned to authors "familiar with and with access to relevant documentation" – often consultants hired by the Secretariat – and draft DGDs were sent to industry and NGOs for comment (UNEP/FAO, 1991b: 11). The JMPIC then reviewed the draft DGDs and approved them. The DGD was prepared often on the basis of the information provided by countries in their notification of final regulatory actions, though the 'Guidance for Governments' document contains an outline of the information that "generally will be included in a DGD" (UNEP/FAO, 1991c: 49). It should provide a summary of toxicological and environmental characteristics, known usage, possible exposure routes, measures to reduce exposure, and regulatory actions taken by some countries to ban or severely restrict the chemical, with corresponding reasons for their actions. The DGD was then sent out to all DNAs to await their import response. However, experience under the voluntary procedure suggests that it was sometimes difficult to ensure the credibility of the information in the DGDs – even though they were reviewed by JMPIC – as it was sometimes "cut and pasted" from other reports or the DGD contained "irrelevant" information (interviews). And drafting a DGD is a time consuming process. Victor (1998: 248-49) has pointed out the notable difference between the preparation of DGDs for pesticides and for industrial chemicals under the voluntary procedure. Part of the reason that there are many more pesticides than industrial chemicals in the PIC list is that "pesticides have a much longer and more extensive history of regulation for their particular health and environmental effects" and because of the greater institutional history of chemical

assessments for pesticides by the FAO, than for industrial chemicals (usually done by UNEP).

In the legally binding procedure, draft DGDs will be prepared by the Chemical Review Committee (CRC). The document, along with the Committee's recommendation about inclusion of the particular chemical, is then forwarded to the COP for a final decision. If the COP approves the DGD, the chemical is included in Annex III (the list of PIC chemicals) and becomes subject to the PIC procedure. The Convention text itself is not particularly detailed regarding what information should be in a DGD. Article 7 simply states that the DGD should, "at a minimum", be based on the information submitted by DNAs on final regulatory actions as set out in Annexes I and IV of the Convention. Moreover, the exact *process* by which the DGDs will be drawn up under the Convention has yet to be decided. Following the first meeting of the interim CRC, it was proposed that a 'task group' of the CRC prepares a first draft of the DGD (UNEP/FAO, 2000: 63). This draft is then distributed to the CRC for discussion, finalization and approval. Once agreement is reached, the CRC forwards the DGD and its recommendation regarding inclusion of the chemical to the COP for final decision. However, the first meeting of the interim CRC also noted that this process, as well as standardizing the format of the DGDs, still needs to be worked out: the CRC must "...develop standard formats for the DGDs reflecting the needs of countries with respect to import decisions based on the information provided in the notification of final regulatory action (Annex I and Annex IV)" (UNEP/FAO, 2000: 10).

Many developing countries have emphasized the usefulness of the information about various chemicals that they gain through the DGDs (interviews; UNEP/FAO, 1998: 112). Certain information, such as detailed data on the effects of long-term exposure to a chemical, may only be obtained in some countries because it was provided in these documents. However, DGDs developed under the voluntary PIC procedure have also been subject to criticism, particularly from industry. The Global Crop Protection Federation (GCPF), for example, criticized the DGD for maleic hydrazide – discussed at the first interim CRC meeting – for its use of "outdated" and "inaccurate" information (Uniroyal Chemical, 1999).[30]

It can be expected, however, that the quality of the DGDs themselves, as well as the perceived legitimacy of the process of drafting the documents, will improve in the legally binding version of PIC. The establishment of the CRC – with the mandate both to draft and review the information in the DGDs – will increase the transparency of decision-making regarding the possible inclusion of chemicals in the procedure based on the information in the DGD. This contrasts with the JMPIC that only reviewed the draft DGDs and had a less transparent process for taking decisions on the chemicals at issue. The issue of increased transparency and legitimacy in the legally binding PIC is revisited in section 5.2.

4.3 DNAs and Import Responses

A key final stage in PIC is the provision of import response to received DGDs on particular chemicals. This is done by the Designated National Authorities (DNAs). As Victor has noted, "PIC aims at changing the behavior of exporters and importers...by strengthening the hand of the government agencies serving as intermediaries – the DNAs" (Victor, 1998: 250). The establishment and performance of DNAs is therefore central to the effective functioning of the entire PIC process.

The role of the DNA has not changed much from the voluntary to the legally binding procedure. As set out in the 1991 Guidance to Governments document, "the DNA should have responsibility to receive,

send and manage information associated with... information exchange and ...with the PIC procedure..." (UNEP/FAO, 1991c: 5). To emphasize the shared role for implementing PIC between importers and exporters, the Guidance document goes on to say:

> It is important to note that all Governments, not only those of importing countries participating in the PIC procedure, need to designate a national authority for the purpose of receiving as well as disseminating information. Information on control actions, the reasons for such actions, DGDs and decisions on future imports will be sent to all DNAs. As all exporting countries are expected to respect decisions taken by participating importing countries under the PIC procedure, DNAs in exporting countries are essential to the successful implementation of PIC (UNEP/FAO, 1991c: 6).

Countries can name separate DNAs for pesticides and chemicals, or a joint DNA for both. Most often, DNAs for pesticides are in agriculture or health ministries, while DNAs for chemicals are environment agencies. The existence of several DNAs for pesticides only (see Table 5 below) is explained by the greater importance of the agriculture sector, and hence concerns about pesticide use, in developing countries.

Unlike the situation with export notifications, there is fortunately some data regarding the establishment of DNAs and import response rates that allows for at least a basic image of the state of implementation in this area. As Table 5 shows, 162 countries have named DNAs; however, 6 more countries have also named "Focal Points" responsible for PIC, so the total number of countries participating in PIC is 168. There has also been an increase in the number of named DNAs since the signing of the Convention. Whereas in 1997 there were 153 DNAs, by 1999 there were 162. Importantly, over 100 developing countries have DNAs for PIC.

DNAs in the voluntary procedure were expected to make an import response within 90 days of having received the DGD. However, it was repeatedly noted at JMPIC meetings and during the Convention negotiations that this time frame was too short to make a fully informed response, particularly for developing countries (UNEP/FAO, 1992a: 12; Carpenter, Cosbey, and Krueger, 1997: 5). There were subsequently proposals to extend this time frame to six months and the Convention now specifies that import responses are to be made "as soon as possible, and in any event no later than nine months after the date of dispatch of the DGD" (Article 10.2). A response may be (1) to consent to import, (2) not to consent, or (3) to consent subject to specified conditions.[31] In order to try and maintain the 'trade neutrality' of the process, a country that bans the import of a chemical must apply that decision to all sources of that chemical as well as ceasing any domestic production. As already noted, the Secretariat then informs all the Parties of the responses it has received every six months in the PIC Circulars. Since the voluntary procedure, there have also been forms for importing countries intended to help DNAs with their responses.

In an echo of the problems with including industrial chemicals in the PIC procedure, it has been noted that the response rate with respect to pesticides has been much better than the response rate for PIC industrial chemicals (see also Victor, 1998: 215). As Table 6 shows, the response rates for the first two sets of pesticides (included in 1991 and 1992) have been much better than the response rates for the first set of industrial chemicals (included in 1993). [32]

Additionally, Table 7 shows that there has also been some improvement in response rates over time for particular chemicals. For the pesticide heptachlor, for example, the response rate from DNAs has risen

from 52% in 1996 to 65% in 1999.

Two other issues related to import decisions warrant attention here. First, the problem of some countries simply banning import of a chemical because it is in PIC and second, the case where an importing country does not respond.

The underlying idea behind PIC is that the information provided by the procedure (particularly the DGD) should allow for an informed choice regarding whether or not to consent to the import of a chemical. However, while the information contained in the DGD is a summary guide for decision-making, industry has consistently been concerned that some countries take a decision of "no consent" for a given chemical simply because it has been put on the PIC list. That is, a developing country that may not have the technical capacity to assess the information in the DGD may simply decide that since a chemical is being proposed for inclusion in PIC, then it is easiest to simply deny import because that chemical must be hazardous. At JMPIC's fifth meeting in October 1992, for example, "concern was again expressed that inclusion of a chemical in the PIC procedure is perceived in many countries as a recommendation by FAO and UNEP to ban the chemical. This, however, is NOT the case. A suggestion was made that a short explanatory section should be included in all covering letters accompanying DGDs" (UNEP/FAO, 1992b: 8). This was subsequently agreed to at the sixth JMPIC meeting (UNEP/FAO, 1993: 18), but concern about this issue continues such that there are continual statements that PIC is not a 'blacklist' of chemicals, and that inclusion of a chemical on the PIC list is not a recommendation to ban that product (Tilton, 1995; GCPF, 2000: 4; EPA Office of Pesticide Programs, 1998).

Secondly, the situation of 'no response' to a DGD by a DNA. That is, what are the trade implications if a country does not indicate its import decision and how can this be avoided? At the beginning of the voluntary procedure, it was simply noted that the Secretariat would send out "reminder letters...to non-responders following the lapse of the 90-day [response] period" (UNEP/FAO, 1991c: 14). Moreover, the 1989 London Guidelines (and FAO Code of Conduct) stated that in the case of no response, the "status quo with respect to importation of the chemical should continue" (UNEP, 1989: 8). The status quo means that export could continue to a country that has not responded only if it is a pesticide that is registered in the importing country or is a chemical that has been previously used or imported in the country. This policy was reaffirmed at the seventh JMPIC meeting (UNEP/FAO, 1994: 9). The final text of the Convention (Article 11.2) also maintains the status quo situation, though with addition that in the case of no response to a DGD, an export can go ahead if "explicit consent to the import had been sought and received by the exporter". Additionally, the obligations on the exporter (to follow the status quo) only apply for one year (after that, unrestricted export could presumably take place to a country that has not responded). However, the Convention improves upon the voluntary procedure by mandating the Secretariat – in Article 10.3 – to not only send out a reminder letter, but to help the importing country provide a response over the next 12 months (see also Tuxen, 1998: 127).

5. Assessing the Influence and Success of the PIC Procedure

This section of the paper analyzes the foregoing examination of the PIC procedure in light of the key themes mentioned in section 1.1 of the paper. That is:

- Credibility. Is the information provided by the PIC procedure technically authoritative/believable? To whom? Why?
- Legitimacy. Is the process by which the information is produced and distributed politically legitimate to participants in the PIC process?
- Saliency. Are participants aware that the information is available?
- Relevance. Is the information useful for the purposes that it is designed to be used for?

Also building further on previous GEA research on the effectiveness of assessments and information, this analysis considers the degree to which the following factors affect the characteristics of credibility, legitimacy, saliency and relevance: historical context; user characteristics (capacity, concern); scope (what information is included or excluded?); institutional setting/informational dominance; patterns of participation; and legally binding procedures versus voluntary ones.

As a useful thought experiment regarding the influence of PIC, in can be instructive to imagine what the international trade in hazardous chemicals and pesticides would be like in the absence of PIC. Without an international PIC scheme, developing countries would have no standardized and regularized access to information about the chemicals that may be exported to them. While national or regional (e.g. EU) notification and consent procedures might have resulted anyway, the effect would be at best haphazard access to information, and at worst, a patchwork of import bans in some countries and a complete lack of information and controls in others. Moreover, it is unlikely that PIC has negatively impacted on international trade patterns for the chemicals currently in the procedure.

In actual practice, however, it is difficult to point to one single factor that could be equated with proof that PIC is effective. Interviews with various participants in the process reveal several different conceptions of how to measure a 'successful PIC procedure'. Some participants – mainly from OECD countries or industry groups – equate an effective PIC with one where importing countries "make good chemical management decisions" based on the information produced and distributed by the procedure (e.g. in the DGDs). This clearly difficult-to-measure indicator is perhaps closest to the explicit purpose of the PIC procedure: to improve national decision-making procedures.[33] Fewer – often developing countries or environmental NGOs – identified "decreasing trade volumes" of the chemicals that are in the PIC procedure or "fewer poisonings" from PIC pesticides. However, as already noted, this type of data is simply not available in any aggregated way so as to allow for even a broad assessment of 'success' in these terms. By far the most common answer to the question of 'how has PIC been successful' was that by creating a system for a greater exchange of information, and creating entities to be responsible for this system (DNAs), awareness of the potential problems of these chemicals was raised sufficiently so that countries began to take the problem more seriously and initiate national processes to improve chemical management practices (see below, section 5.3). Information provided by the PIC procedure has been central to this result.

Several external observers have nevertheless argued that, in general, the PIC procedure can be deemed a success because it influenced the behavior of those actors it was targeted at. Hough, for example, states

that "the PIC procedure is a rule that has had observable behavioral impact" (Hough, 1998: 123). And Victor argues that "the success of the voluntary PIC system is evident in the fact that PIC did not merely codify what firms and governments were already doing – its scope has widened and its influence on behavior grown" (Victor, 1998: 222).[34] The analysis in section 4 above would on the whole suggest agreement with these findings. Governments and industry have generally brought their activities into line with the requirements of PIC. However, because this paper is also concerned with the particular *attributes* of the information that the PIC procedure provides, it is useful to explore them in detail.

5.1 Credibility

Section 4 demonstrated that the credibility of the information in the PIC procedure has improved over time. Pre-PIC notification systems merely required exporters to send information about chemical hazards to importers; typically, that information "was not scientifically reviewed or presented in a format that was comparable with information on other chemical hazards or useful for regulatory decisions" (Victor, 1998: 247). The initiation of the voluntary PIC procedure, however, began a process of standardizing information that exporters provide to importers (in export notifications), what information is circulated internationally (in the DGDs), and the information provided by importers about their willingness to accept certain chemicals (in the import responses). Many participants in the PIC process identify the importance of the involvement of competent institutions like UNEP and FAO – as well as the technical competence of the experts in groups like the JMPIC and CRC – as lending additional credibility to the information provided by PIC (interviews).

The creation of a legally binding agreement, moreover, has led to the increased credibility of PIC information as informational requirements had to be more clearly set out. The US EPA, for example, has noted that "additional clarity and precision have been built into the [chemical] evaluation process" (EPA, 1998). As shown in sections 4.1 and 4.2, there are now much clearer criteria in annexes of the Rotterdam Convention regarding information required in export notifications and set out for what chemicals can be included in the PIC list. Additionally, the interim CRC has begun the process of standardizing the format and content of the DGDs, as well as the process by which they are produced. These factors together suggest that the credibility of the information of the legally binding PIC system will be greater than that of its voluntary predecessor.

5.2 Legitimacy

The international political process of PIC – such as meetings of the INC/COP and the CRC – relates largely to the negotiations over what chemicals are or are not included in the procedure. As such, it is this process that determines the level of political legitimacy of PIC. States retain decision-making power, but the input of other stakeholders – such as industry associations and environmental groups – is also sought, thus creating broad political acceptance of the PIC process. Another key area of improvement over time has been an increase in *transparency* regarding decisions over what chemicals become PIC chemicals. Whereas in the voluntary procedure a small group of experts in the JMPIC took such decisions – sometimes behind closed doors – the Chemical Review Committee of the Convention will open this process up to greater participation and greater transparency (through the rules of procedure of the Rotterdam Convention which are predicated on having as great a degree of transparency as possible, e.g. no closed door sessions).[35] While one observer has correctly identified that the CRC has "significant

power" to interpret the Convention and make recommendations on the inclusion of new chemicals (Ross, 1999: 520), the process arguably also has increased political legitimacy due to this increased transparency. The often most wary of participants in international regulatory processes – the industry to be regulated – has in this case expressed that they are "particularly pleased with the clear definitions, the maintenance of the existing scope, the risk-based approach and the transparent procedure that have been agreed upon. Since the Convention corresponds to a large degree with the scope and obligations of the voluntary PIC procedure, ICCA hopes that this will ensure a broad-based participation in the scheme" (ICCA, 1998).

5.3 Salience and Relevance

Perhaps the most significant characteristic of the PIC procedure has been the salience and usefulness of the information that it provides. As one observer has put it: "PIC has increased concern about chemical hazards and a recognition that if pesticides are to be exported and used in developing countries, there needs to be more training in [chemicals] management" (Dinham, 1996: 34). Interviewed participants also almost unanimously noted that the information made available by the process has had the effect of greatly increasing awareness about chemical management issues, particularly in these developing countries that the procedure is designed to help most. As shown in section 4.3, over 100 developing countries have named DNAs for the PIC procedure. The information and the procedure have acted as a "trigger" or "catalyst" for developing countries to initiate the creation and implementation of national chemicals management strategies. The creation of DNAs and 'networks' of communication (whether resulting from the flow of PIC information – export notifications, DGDs, PIC Circulars – or from attendance at JMPIC or INC/CRC meetings) has also helped mobilize and strengthen national activities. The creation of DNAs, for example, is a "great advantage" of the PIC scheme because official responses can now be scrutinized by the press or NGOs in countries were no such transparency regarding chemical imports existed previously (Paarlberg, 1993: 345). For many developing countries, there are few or no other ways of acquiring information about particular hazardous chemicals and pesticides and thus the information obtained in the PIC system is highly relevant for those countries.[36]

5.4 Factors Influencing Informational Characteristics

If PIC information can generally be characterized as having credibility, legitimacy, salience and relevance – albeit in varying degrees – what factors can be said to be responsible for this? Some of the factors previously identified (see section 1.1 and Clark, 1999: 6) have also proven relevant in the case of PIC. First, the *capacity* concerns of developing countries have had an ongoing influence regarding what information is provided in the procedure. As noted in section 4.2, the problems of pesticides under certain 'conditions of use' in developing countries has led to less stringent criteria for including severely hazardous pesticide formulations in PIC. The Convention in particular provides the opportunity for "improved capacity building" through technical assistance that was "not otherwise evident under the voluntary PIC scheme" (interviews). After all, information exchange mechanisms are effective if countries have the resources to utilize them; but without the ability to make proper use of the PIC information, countries cannot process PIC notifications. In the first instance, however, "the developing countries were not particularly successful in their demands for strong provisions on financial and technical assistance to be included in the PIC Convention" (Pallemaerts, 1999: 238). And it remains to be seen whether and to what degree the Convention will address the future concerns of developing countries

regarding capacity issues.[37]

Second, it is also arguable that not greatly increasing the *scope* of PIC in the creation of the legal agreement – i.e. not creating a framework chemicals convention – also assisted the political legitimacy of the negotiations of the Convention. Thus, perhaps 'more' is not always 'better' when it comes to designing effective international environmental regimes (see also Krueger and Selin, 1999). While the model of LRTAP – creating a framework convention to which subsequent specific protocols may be added – may have been in the minds of some negotiators, LRTAP was also created in a different international political context (VanDeveer, 1998). Pursuing a wholly new and much broader agreement, of which PIC would only have been one part, may have well created difficulties both for the implementation of the voluntary procedure and the negotiation of such an instrument (as more skeptical actors such as industry or the US continued to oppose or slow the process).

There is also the influence of *institutional context*, a third factor. As described in section 3 above, the FAO and UNEP had taken parallel, but relatively separate, paths to including PIC in their own guidelines in the late 1980s. By the time of international agreement on instituting a PIC procedure it seemed sensible that the two organizations would cooperate in the operation and implementation of PIC (see Victor, 1998: 236). Many participants have also emphasized the added international credibility and legitimacy that is gained by having UN bodies host the PIC procedure (interviews). Involving the two organizations for their respective expertise – UNEP for industrial chemicals, FAO for pesticides – has not only helped the credibility of the information provided by the procedure, as noted above, but may perhaps be a useful model for other issue areas where institutions otherwise tend to 'defend their turf' and are less willing to collaborate. Moreover, as Paarlberg notes (1993: 343), cooperation between UNEP and FAO not only helped to build consensus with opposing industry and green NGOs, but "helped prevent various other organizations – including WHO, ILO, and GATT – from [undertaking] redundant or uncoordinated actions in the same area".

Lastly, there is the influence of moving from a *voluntary to a legally binding procedure*. Some observers argue that voluntary agreements have strong attributes of their own that do not always necessitate creating legally binding arrangements (Raustiala and Victor, 1998: 684-89, Abbott and Snidal, 2000) and that the creation of the legally binding PIC agreement has been "costly and unnecessary" (Victor, 1998: 223). The analysis here regarding the information attributes and compliance with the provision of information suggests, however, that there are also likely to be benefits from such a development. It is true that the two-year period of negotiation of the Convention resulted in a temporary pause in the implementation of PIC and illustrated that transforming an already existing voluntary procedure into a legally binding agreement is not nearly as simple as it might seem at first. Nevertheless, the benefits of increased credibility and legitimacy outlined above would not have been gained without the move to a legal agreement. Moreover, compliance with PIC provisions is likely to improve as well. As highlighted in note 36, the US did not make import responses to any of the currently listed chemicals under the voluntary procedure – this should change under legally binding procedure. And are countries more reluctant to participate in legally binding agreements than in voluntary procedures? Not in this case: participation in the legally binding Convention is likely to be as high as for the voluntary procedure that had 162 participating DNAs. Participation at INC-6 – held *after* the signing of the Convention – was "the largest to date" with approximately 121 countries in attendance (UNEP/FAO 1999c: 2).[38] The findings here are therefore more in line with previous studies that suggest that moving towards legally binding

rules in a dynamic negotiating process – and at the same time improving national capacity to comply with those rules and participate in that process – can increase participation in, and the effectiveness of, a regime (see, for example, Haas, Keohane and Levy, 1993: 412-15).

6. Conclusions about PIC: First Steps on a Long and Winding Road

This paper has argued that the PIC procedure should be seen as an *information and decision support system*. That is, it manages assessments of chemicals by providing specific, authorized and regularized information and provides a framework for decision-making in the use of DGDs and the requirement of import responses. Moreover, this study tends to confirm the relative importance of the three 'pathways' to informational influence – credibility, legitimacy and salience/relevance – already identified in previous GEA research (Clark, 1999). And PIC also shows how these characteristics can change – and in this case improve – over time.

The legally binding procedure has improved the clarity, transparency, and process by which information about PIC chemicals is exchanged. Standardization of information is important for its credibility, as is transparency important for political legitimacy. Or as Keohane and Nye (1998) put it, "... information must be produced through a process that is in accordance with professional norms and characterized by transparency and procedural fairness". But perhaps most clearly illustrated by this case is that the salience and relevance of the information provided by this regime is very high for those countries that lack domestic capacity to otherwise obtain that same information. However, although the scope of the legally binding procedure is now more clearly set out, it remains to be seen if the regime can show flexibility in adapting to new information, circumstances and perceptions. That is, in order to maintain the credibility, legitimacy, salience and relevance that is has attained to date, the Rotterdam Convention must continue to be a *process* that adapts to new practices in chemical management and new political realities. This type of dynamism has been shown to be a key aspect to the effectiveness of other environmental regimes – such as the Montreal Protocol (Gehring, 1994; Parson and Greene, 1995) – and will also be required here if the PIC system is to continue to be relevant and have significant international support.

While this study has concentrated mainly on the functioning of the PIC process at the international level, it is clear that a key element in making the system work is located at the national and local levels. Section 4.2 showed how the PIC process, and the creation of DGDs in particular, is intended to help governments assess the risks connected with the handling and use of the chemical and to make more informed decisions about future import and use *taking into account local conditions*. Thus, PIC can also be seen as a 'distributed assessment system' working across scales (local, national, international) and creating long-term networks of decision-makers, scientists and stakeholders; it may therefore be more effective than traditional, top-down, 'committee-and-report' driven processes.[39] Information about particular chemicals and pesticides can be gained from, and made available back to, regional and local researchers and decision-makers. Future research – such as national and local level case studies regarding the use of PIC information – could serve to improve our understanding of this dynamic.

In the broader context of international environmental regimes, information based systems like prior informed consent – and perhaps ecolabelling, certification, and environmental standards like ISO 14000 – can be a constructive option in international policymaking.[40] In the case of a politically controversial issue, information and capacity-building processes like PIC can represent a compromise between the options of taking 'radical measures' and 'doing nothing'. Both command-and-control systems, like many national air pollution strategies in the 1970s, and policies based on market-based incentives, like the concept of 'emissions trading' in the evolving climate change regime, have been tried and are known not

to suit all types of environmental problems nor always command broad international support. Institutions and agreements centered on information provision offer an alternative means of addressing the difficulties of achieving international cooperation on global problems.

Indeed, some scholars argue that increased information provision and transparency – "regulation by revelation" – is part of the broader trend towards globalization in international relations (Florini, 1998). That is, the processes of globalization and the relative inability of the state to enforce compliance with regulations in a 'borderless world' may foster a new approach to cross-border governance based on revelation rather than coercion. PIC may represent such a trend in the environmental sphere,[41] but this dynamic may also be observed in other issue-areas such as international finance – demands for higher levels of disclosure regarding World Bank and IMF policies, for example – and security and arms control – such as on-site inspection of military installations. It remains to be seen, however, to what degree transparency actually entrenches itself as a norm of state and non-state behavior.

The lack of data regarding certain factors – such as information about changes in trade flows of PIC chemicals – that would assist a more thorough determination of PIC's effectiveness must be acknowledged. Nevertheless, the analysis in this paper suggests that there is some evidence that PIC procedures – such as import responses – are being followed and more generally that PIC activities have had the effect of moving the issue of chemical safety higher up on national agendas. One observer has noted that "if it operates properly, PIC could be one of the largest organized transfers of useful regulatory information to developing countries, which in turn could contribute to the ultimate goal of the PIC system – improving management of hazardous chemicals and pesticides" (Victor, 1998: 247). Hopefully as data reporting improves under the legally binding procedure and new mechanisms are created to improve the state of knowledge about the use of PIC chemicals – such as the initiative taken at the first interim CRC meeting to develop a PIC 'incident report form' – it will be easier to get a better sense of the effectiveness of PIC in terms of whether trade levels of PIC chemicals are changing or if there are fewer reported poisonings resulting from PIC pesticides. Given the lack of data at this time on these factors, this paper has used other indicators – relating to the information flows and response rates – to build an initial picture of PIC success. But continued observation of the PIC process will be required in order to ascertain if the progress documented here continues in the future. After all, the PIC system represents only first steps along the long and winding road of improving the capacity of all countries to more safely manage hazardous chemicals and pesticides.

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TABLES

Table 1: Chemicals Subject to the PIC Procedure (December 1999)

Chemical	Relevant CAS number(s)	Category	Date
2,4,5-T	93-76-5	Pesticide	1997
Aldrin	309-00-2	Pesticide	1991
Binapacryl	485-31-4	Pesticide	1999
Captafol	2425-06-1	Pesticide	1997
Chlordane	57-74-9	Pesticide	1992
Chlordimeform	6164-98-3	Pesticide	1992
Chlorobenzilate	510-15-6	Pesticide	1997
DDT	50-29-3	Pesticide	1991
Dieldrin	60-57-1	Pesticide	1991
Dinoseb and dinoseb salts	88-85-7	Pesticide	1991
1,2-dibromoethane (EDB)	106-93-4	Pesticide	1992
Fluoroacetamide	640-19-7	Pesticide	1991
HCH (mixed isomers)	608-73-1	Pesticide	1991
Heptachlor	76-44-8	Pesticide	1992
Hexachlorobenzene	118-74-1	Pesticide	1997
Lindane	58-89-9	Pesticide	1997
Mercury compounds, including inorganic mercury compounds, alkyl mercury compounds and alkyloxyalkyl and aryl mercury compounds		Pesticide	1992
Pentachlorophenol	87-86-5	Pesticide	1997
Toxaphene	8001-35-2	Pesticide	1999

Chemical	Relevant CAS number(s)	Category	Date
Methamidophos (Soluble liquid formulations of the substance that exceed 600 g active ingredient/l)	10265-92-6	Severely hazardous pesticide formulation	1997
Methyl-parathion (emulsifiable concentrates (EC) with 19.5%, 40%, 50%, 60% active ingredient and dusts containing 1.5%, 2% and 3% active ingredient)	298-00-0	Severely hazardous pesticide formulation	1997
Monocrotophos (Soluble liquid formulations of the substance that exceed 600 g active ingredient/l)	6923-22-4	Severely hazardous pesticide formulation	1997
Parathion (all formulations - aerosols, dustable powder (DP), emulsifiable concentrate (EC), granules (GR) and wettable powders (WP) - of this substance are included, except capsule suspensions (CS))	56-38-2	Severely hazardous pesticide formulation	1997
Phosphamidon (Soluble liquid formulations of the substance that exceed 1000 g active ingredient/l)	13171-21-6 (mixture, (E)&(Z) isomers) 23783-98-4 ((Z)-isomer) 297-99-4 ((E)-isomer)	Severely hazardous pesticide formulation	1997
Crocidolite	12001-28-4	Industrial	1993
Polybrominated biphenyls (PBB)	36355-01-8 (hexa-) 27858-07-7 (octa-) 13654-09-6 (deca-)	Industrial	1993
Polychlorinated biphenyls (PCB)	1336-36-3	Industrial	1993
Polychlorinated terphenyls (PCT)	61788-33-8	Industrial	1993
Tris (2,3-dibromopropyl) phosphate	126-72-7	Industrial	1993

Table 2: The PIC Negotiation Process

EVENT	CONTENT	OUTPUT
• FAO "Code of Conduct" [1985]	Mechanics of distribution and use of pesticides	Point of reference
• UNEP "London Guidelines" [1987]	Mechanics of exchange of information on chemicals	Point of reference
• Amendment of "Code" and "Guidelines" [1989]	PIC Procedure	Start of voluntary framework
• Rio Earth Summit [1992]	Intent towards mandatory PIC	Date target setting
• 107th FAO Council [1994]	Mandate to prepare draft of PIC Convention	Mission for the FAO Secretariat
• 18th session of the UNEP Governing Council [1995]	Mandate to form Intergovernmental Negotiating Committee [INC]	Mission for the UNEP Ex. Director
• INC-1 Brussels [March 1996]	Rules of Procedure Election of bureau	Emergence of a work group
• INC-2 Nairobi [Sept 1996]	Draft text of the PIC Convention Creation of Technical Working Group and Legal Drafting Group	Shape of the PIC Convention
• INC-3 Geneva [May 1997]	Discussion of PIC Convention	Heightened interest in PIC Convention
• INC-4 Rome [Oct. 1997]	Discussion of relevant issues vis-à-vis articles in the draft Convention	Clarification Agreement on some issues
• INC-5 Brussels [March 1998]	• Detailed/exhaustive discussion of hard core issues/concerns • trade and environment • needs of developing countries • impact of transit movements and illegal traffic • Convention's conditionality vis-a-vis other agreements. • Clarifications/definitions vis-à-vis substantive and procedural points about the Convention	Final text of the Convention Text of the Resolution on Interim Arrangements
• Rotterdam Diplomatic Conference [Sept. 1998]	Adoption of the Convention and the Resolution on Interim Arrangements	Prelude to an international legally binding agreement on PIC
• Implementation of the Rotterdam Convention [90 days after the date of deposit of the 50th instrument of ratification]	Commitment of the international community	Mandatory PIC

Table 3: Information Requirements for Notifications of National Bans or Severe Restrictions, Rotterdam Convention

Notifications shall include:

1. Properties, identification and uses

   (a) Common name;

   (b) Chemical name according to an internationally recognized nomenclature (for example, International Union of Pure and Applied Chemistry (IUPAC)), where such nomenclature exists;

   (c) Trade names and names of preparations;

   (d) Code numbers: Chemicals Abstract Service (CAS) number, Harmonized System customs code and other numbers;

   (e) Information on hazard classification, where the chemical is subject to classification requirements;

   (f) Use or uses of the chemical;

   (g) Physico-chemical, toxicological and ecotoxicological properties.

2. Final regulatory action

   (a) Information specific to the final regulatory action:

      (i) Summary of the final regulatory action;
      (ii) Reference to the regulatory document;
      (iii) Date of entry into force of the final regulatory action;
      (iv) Indication of whether the final regulatory action was taken on the basis of a risk or hazard evaluation and, if so, information on such evaluation, covering a reference to the relevant documentation;
      (v) Reasons for the final regulatory action relevant to human health, including the health of consumers and workers, or the environment;
      (vi) Summary of the hazards and risks presented by the chemical to human health, including the health of consumers and workers, or the environment and the expected effect of the final regulatory action;

   (b) Category or categories where the final regulatory action has been taken, and for each category:

      (i) Use or uses prohibited by the final regulatory action;

(ii) Use or uses that remain allowed;
(iii) Estimation, where available, of quantities of the chemical produced, imported, exported and used;

(c) An indication, to the extent possible, of the likely relevance of the final regulatory action to other States and regions;

(d) Other relevant information that may cover:

(i) Assessment of socio-economic effects of the final regulatory action;
(ii) Information on alternatives and their relative risks, where available, such as:
- Integrated pest management strategies;
- Industrial practices and processes, including cleaner technology.

Table 4: Criteria for Listing Banned or Severely Restricted Chemicals in Annex III of the Convention (the PIC list)

In reviewing the notifications forwarded by the Secretariat pursuant to paragraph 5 of Article 5, the Chemical Review Committee shall:

(a) Confirm that the final regulatory action has been taken in order to protect human health or the environment;

(b) Establish that the final regulatory action has been taken as a consequence of a risk evaluation. This evaluation shall be based on a review of scientific data in the context of the conditions prevailing in the Party in question. For this purpose, the documentation provided shall demonstrate that:

- (i) Data have been generated according to scientifically recognized methods;
- (ii) Data reviews have been performed and documented according to generally recognized scientific principles and procedures;
- (iii) The final regulatory action was based on a risk evaluation involving prevailing conditions within the Party taking the action;

(c) Consider whether the final regulatory action provides a sufficiently broad basis to merit listing of the chemical in Annex III, by taking into account:

- (i) Whether the final regulatory action led, or would be expected to lead, to a significant decrease in the quantity of the chemical used or the number of its uses;
- (ii) Whether the final regulatory action led to an actual reduction of risk or would be expected to result in a significant reduction of risk for human health or the environment of the Party that submitted the notification;
- (iii) Whether the considerations that led to the final regulatory action being taken are applicable only in a limited geographical area or in other limited circumstances;
- (iv) Whether there is evidence of ongoing international trade in the chemical;

(d) Take into account that intentional misuse is not in itself an adequate reason to list a chemical in Annex III.

Table 5: Designated National Authorities (DNAs) in the PIC Procedure

	1997	1999
Separate DNAs for chemicals and pesticides	59 (39%)	67 (41%)
Combined DNAs	61 (40%)	64 (40%)
DNA for pesticides only	33 (22%)	31 (19%)
DNA for chemicals only	0 (0%)	0 (0%)
Total number of countries that have named DNAs	153	162

Source: 1997 figures adapted from D. Victor (1998), "Learning by Doing in the Nonbinding International Regime to Manage Trade in Hazardous Chemicals and Pesticides", in D.G. Victor, K. Raustiala and E.B. Skolnikoff (eds), *The Implementation and Effectiveness of International Environmental Commitments* (Cambridge: MIT Press), Table 6.1 (p. 251). 1999 figures compiled by author from the FAO/UNEP, *Register of Designated National Authorities for the Implementation of the Interim Prior Informed Consent Procedure* (Rome/Geneva, December 1999).

Table 6: Import Responses for Pesticides and Chemicals, as of December 1999

		No Consent	Consent	Total responses	Response rate (%)*
Pesticides (ban or SR)					
First set – September 1991					
	Aldrin	83	28	111	69
	Dieldrin	78	32	110	68
	DDT	88	22	110	68
	Dinoseb and dinoseb salts	82	25	107	66
	Fluoroacetamide	86	20	106	65
	HCH (mixed isomers)	84	24	108	67
Second set -November 1992					
	Chlordane	80	26	106	65
	Chlordimeform	87	17	104	64
	EDB (1,2 dibromoethane)	76	24	100	62
	Heptaclor	77	27	104	64
	Mercury compounds	96	7	103	63
Third set - January 1997					
	Captafol	50	8	58	36
	Chlorobenzilate	51	6	57	35
	Hexachlorobenzene	53	5	58	36
	Lindane	31	24	55	34
	Pentachlorophenol	45	10	55	34
	2,4,5-T	53	4	57	35

* 'Response rate' is based on the number of named DNAs that responded.

Pesticide formulation (conditions of use)					
First set – September 1997	methamidophos	15	16	31	19
	methyl-parathion	17	15	32	20
	monocrotophos	16	18	34	21
	parathion	28	8	36	22
	phosphamidon	20	12	32	20
Industrial Chemicals					
First set – March 1993	Crocidolite	35	11	46	35
	Polybrominated Biphenyls (PBB)	16	27	43	33
	Polychlorinated Biphenyls (PCB)	35	12	47	36
	Polychlorinated Terphenyls (PCT)	33	10	43	33
	Tris (2,3 dibromopropyl) phosphate	19	27	46	35

Table 7: Sample differences in response rates from DNAs, 1996-1999

	1996 (%)	1999 (%)
Fluoroacetemide	57	65
Heptachlor	52	64

Source: 1996 data adapted from Victor (1998), "Learning by Doing in the Nonbinding International Regime to Manage Trade in Hazardous Chemicals and Pesticides", Table 6.2 (p. 252); 1999 data compiled by author based on PIC Circular X.

FIGURES

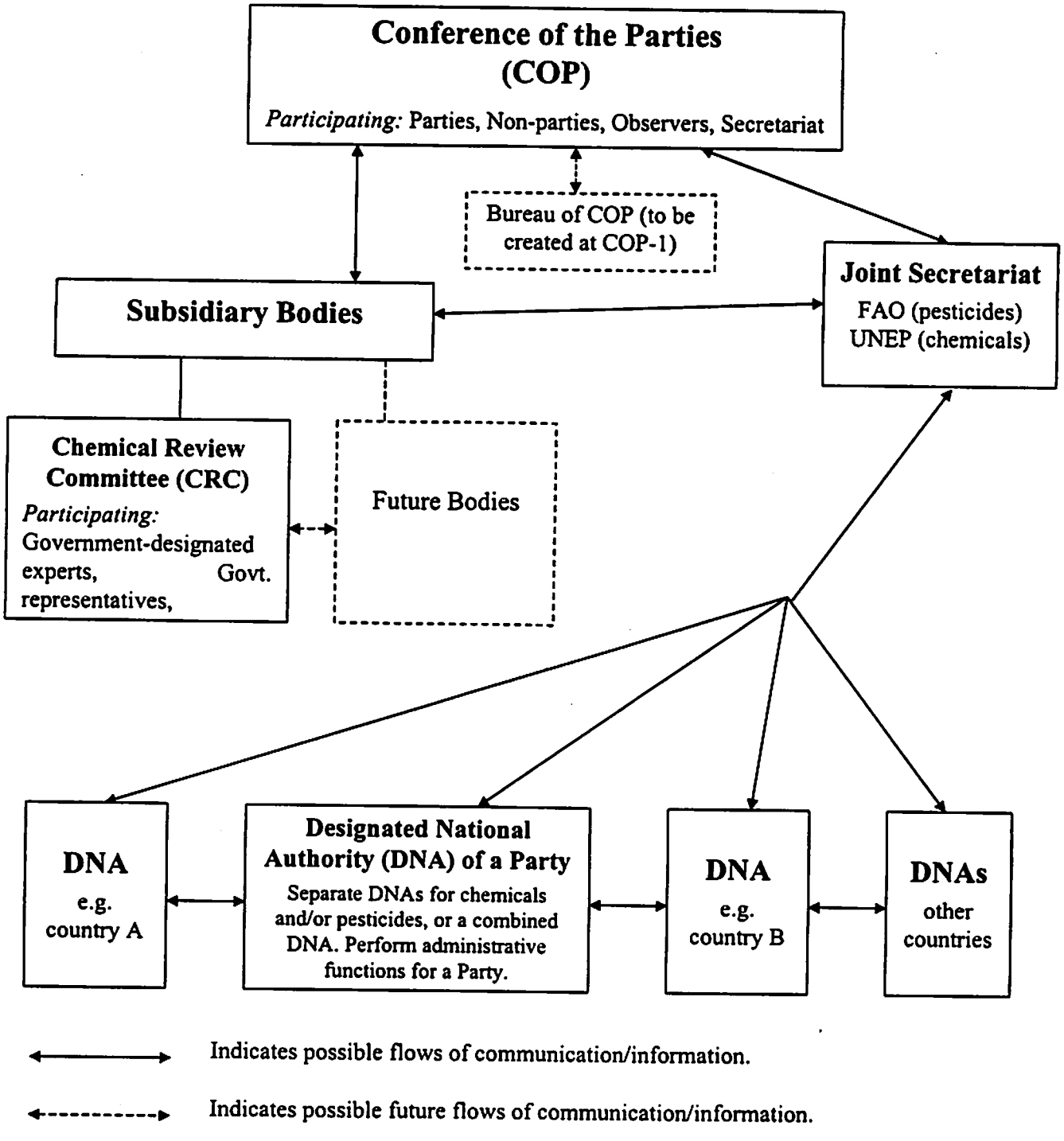


Figure 1: Institutional Structure of the Rotterdam Convention

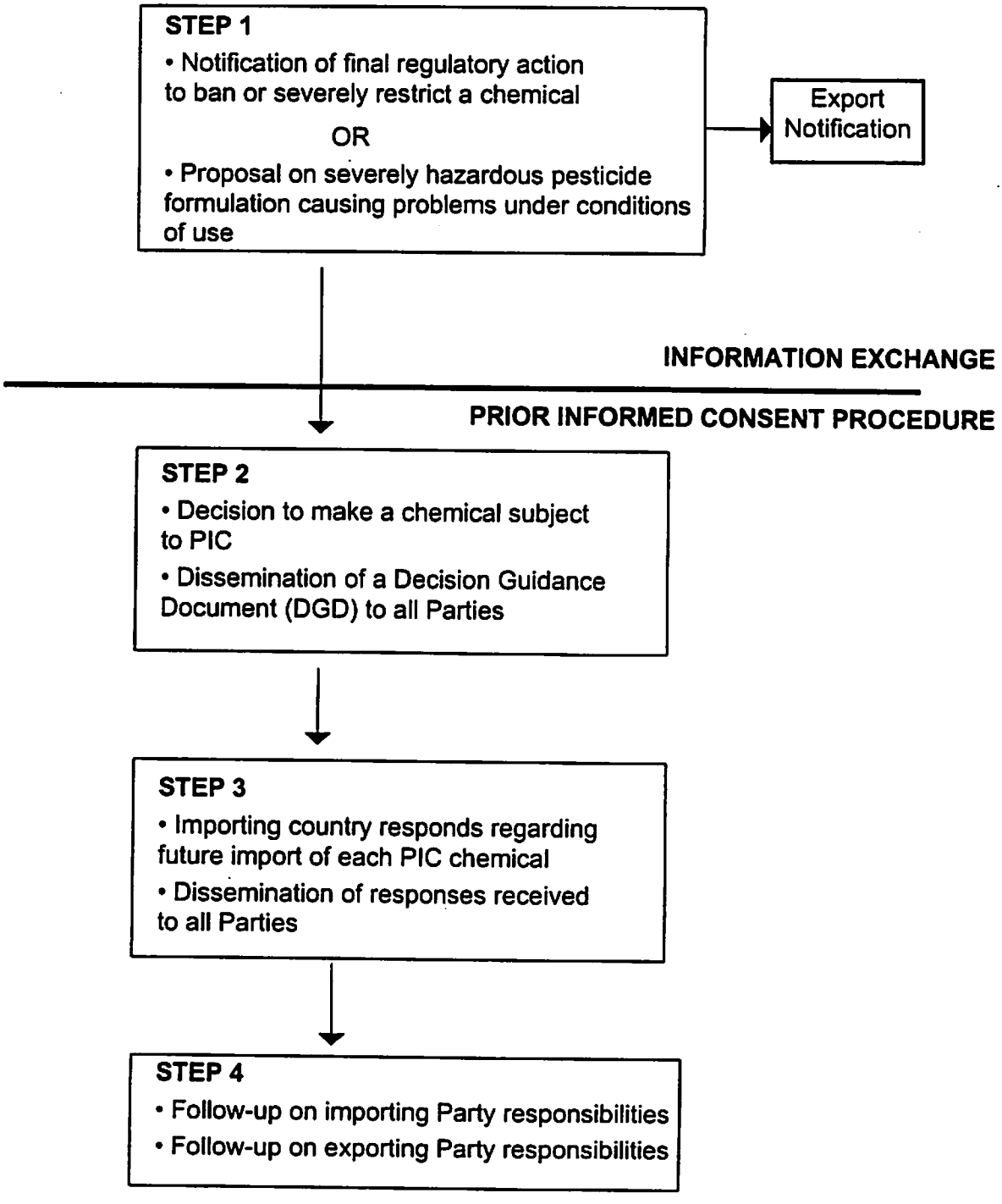


Figure 2: Summary of Information Exchange and PIC Procedure

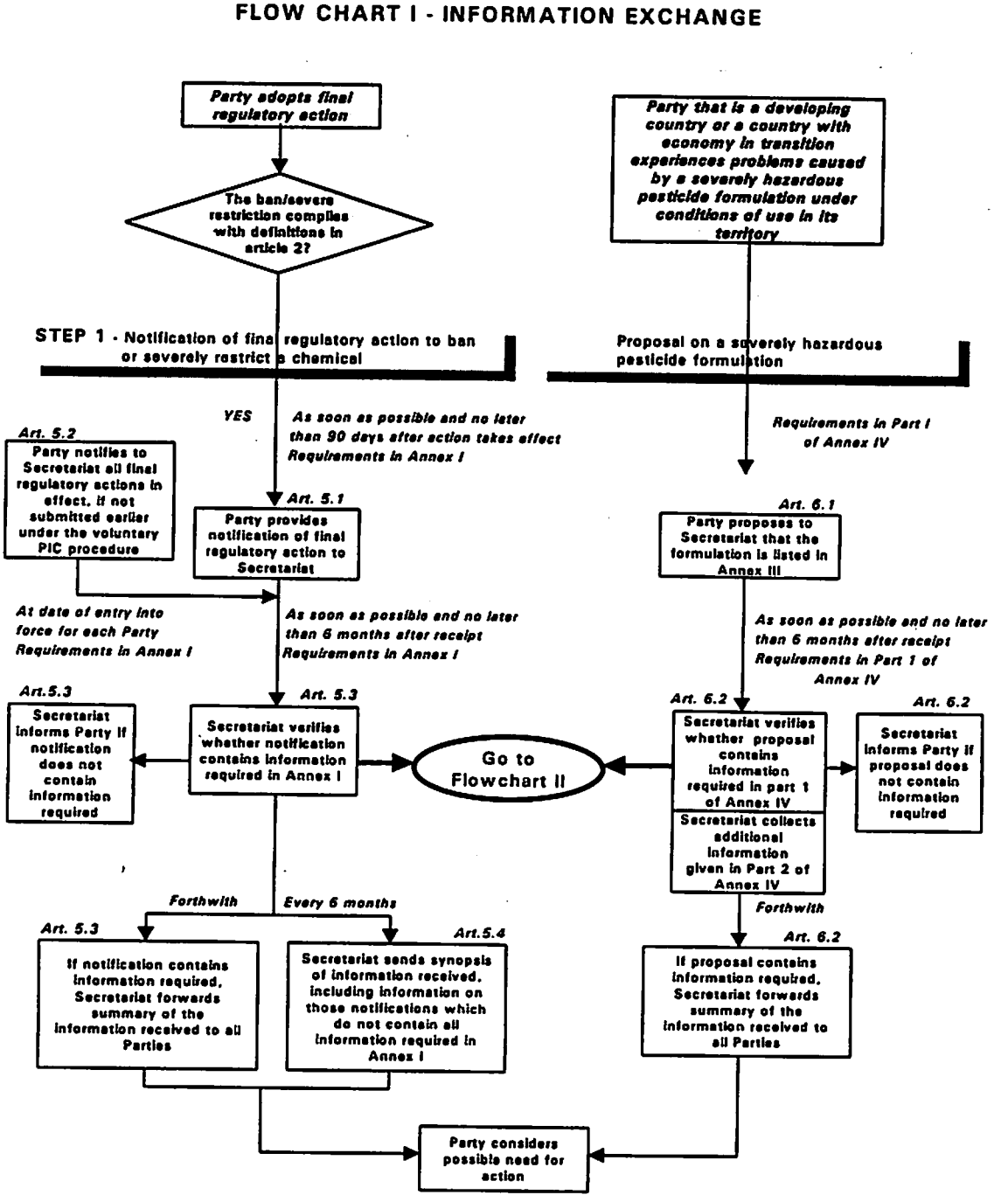


Figure 3: Flowchart on Information Exchange in the Rotterdam Convention

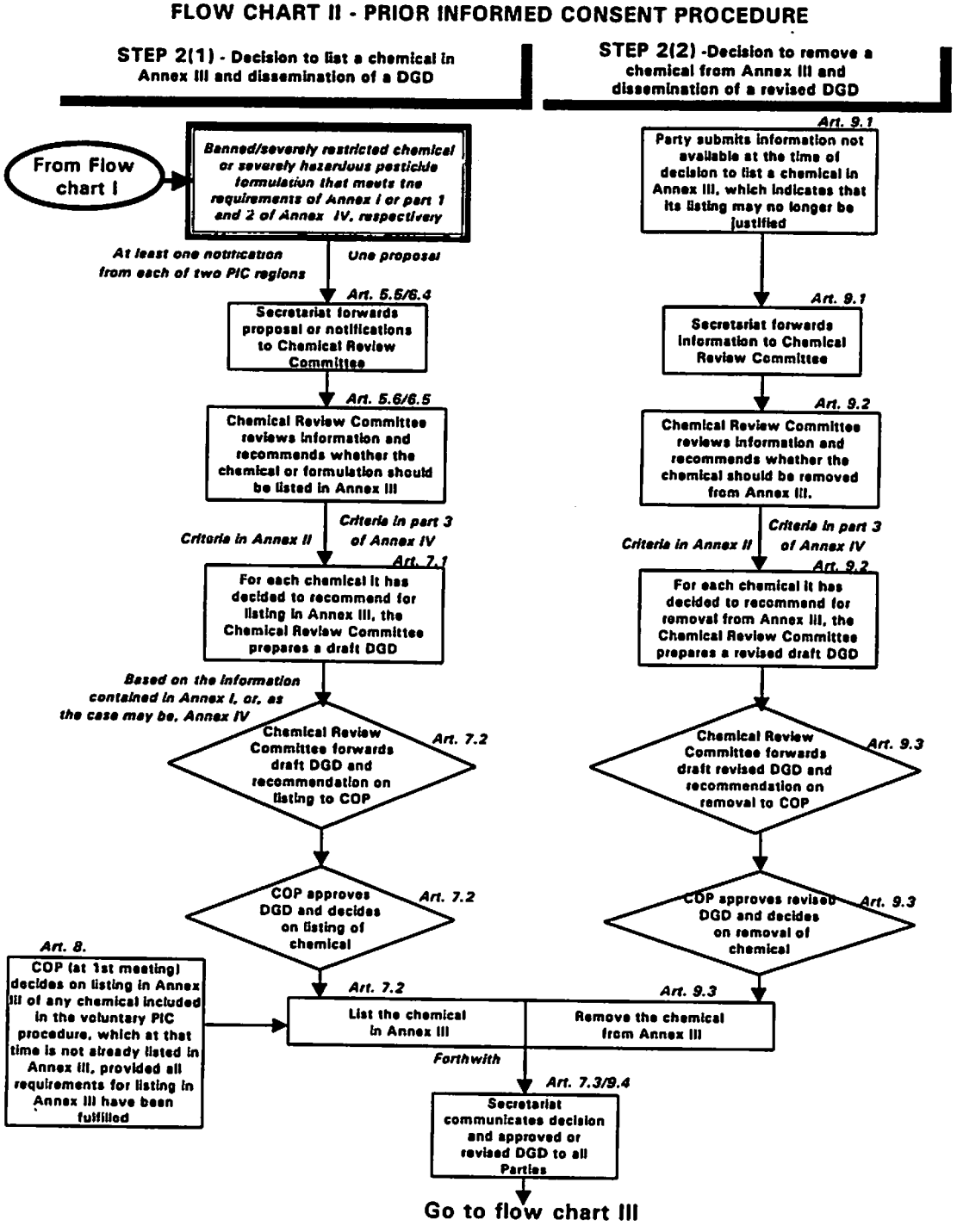
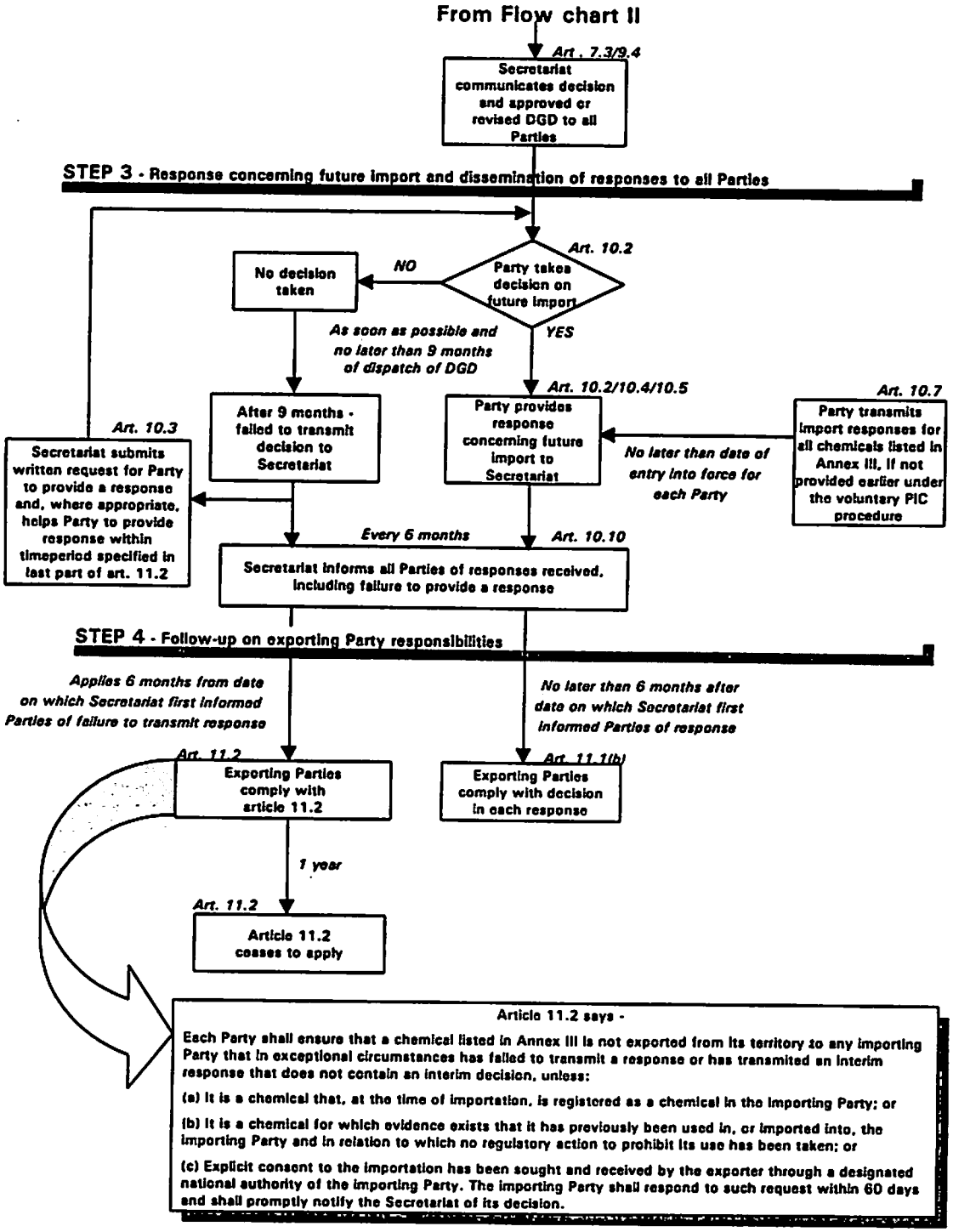


Figure 4: Detailed Flowchart of PIC Procedure in the Rotterdam Convention

FLOW CHART III - PRIOR INFORMED CONSENT PROCEDURE - continued



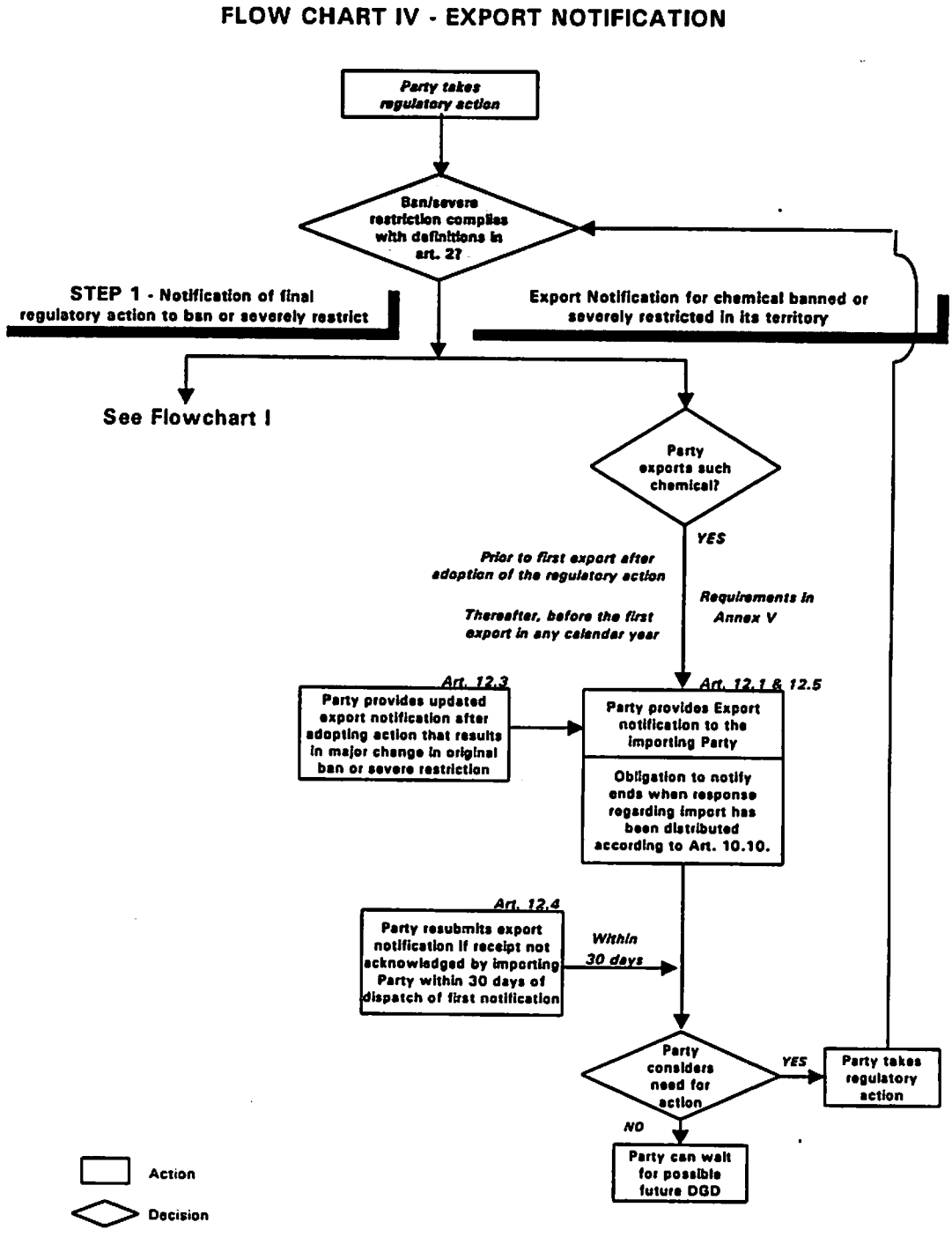


Figure 5: Export Notification in the Rotterdam Convention

APPENDIX 1: LIST OF INTERVIEWS AND PERSONAL COMMUNICATIONS

1. Dr. Elisabet Berggren,
   European Chemicals Bureau.
   Interview with author,
   Geneva, 23 February 2000.

2. Richard Nielsson,
   Global Crop Protection Federation.
   Interview with author,
   Geneva, 22 February 2000.

3. Ambassador Maria Celina de Azevedo Rodrigues,
   Brazil and Chair of Rotterdam Convention INC.
   Interview with author,
   Geneva, 24 February 2000.

4. Marc Debois,
   European Commission, DG Environment.
   Interview with author,
   Geneva, 24 February 2000.

5. Edwin Johnsson,
   Technology Sciences Group/former US EPA.
   Interview with author,
   Geneva, 25 February 2000.

6. Peter Hurst,
   Health, Safety and Environment Coordinator, IUF.
   Interview with author,
   Geneva, 28 February 2000.

7. Bill Murray,
   Pest Management Regulatory Agency, Health Canada.
   Interview with author,
   Geneva, 23 February 2000.

8. Dr. R.R. Khan,
   Ministry of Environment and Forests, India.
   Interview with author,
   Geneva, 23 February 2000.

9. Aase Tuxen,
UNEP Chemicals.
Interview with author,
Geneva, 28 February 2000.

10. Erik Larsson,
UNEP Chemicals.
Interview with author,
Geneva, 28 February 2000.

11. Gerold Wyral,
FAO Pesticide Management.
Interview with author,
Rome, 29 February 2000.

12. Gero Vaagt,
FAO Pesticide Management.
Interview with author,
Rome, 1 March 2000.

13. Harizo Rasolomanana,
Henri Rakotobe,
Environment Ministry, Madagascar.
Written communication,
27 April 2000.

14. Flor de María Perla de Alfaro,
Ministry of Environment and National Resources, El Salvador.
Written communication,
3 May 2000.

15. Sukhum Wong-ek,
Department of Agriculture, Thailand.
Written communication,
3 May 2000.

16. Guiseppe Battaglino,
Ministry of Health, Italy.
Written communication,
4 May 2000.

17. Dudley Achu Sama,
Ministry of Environment and Forests, Cameroon.
Written communication,
5 May 2000.

18. Paul Whylie,
Pesticides Control Authority, Jamaica.
Written communication,
6 June 2000.

19. Magnus Nyström,
Finnish Environment Institute (Chemicals Division), Finland.
Written communication,
13 July 2000.

ENDNOTES

[1] In the GEA "Institutions Working Group Theme Paper: Information and Governance" (June 1998), the contributors suggest that information institutions (and their credibility) will vary according to available resources, design criteria and the level of 'informational dominance' or 'embeddedness'.

[2] Interestingly, in order to avoid the perception that GMOs were dangerous in the same manner as hazardous wastes or toxic chemicals, GM food exporters like the US insisted that the phrase 'advance informed agreement' be used instead of 'prior informed consent'. See Gupta, 1999: 6.

[3] DDT, for example, is still used in some tropical developing countries for malaria control – to kill mosquitoes.

[4] A number of good anecdotal cases, such as Nicaraguan boys washing in the family bathtub (a barrel once containing the highly toxic pesticide toxaphene – a PIC chemical), can be found in Ross, 1999.

[5] In the case of the FAO Code of Conduct, Paarlberg suggests that its development was in part due to FAO's need to be seen as responding to NGO concerns to the issue of safe pesticide use in developing countries and maintain its jurisdiction over the issue (i.e. not to lose it to UNEP or WHO). The pesticide industry supported FAO development of the Code, hoping in turn that its traditional close relationship to that body would ensure only a weak set of voluntary obligations (Paarlberg, 1993: 320). UNEP's Governing Council had, on the other hand, already passed a resolution in 1977 "calling upon" exporting countries not to permit exports of non-domestically used, potentially harmful chemicals without the knowledge and consent of importing countries. However, these resolutions were non-binding and had no formal status (Gündling, 1989: 66).

[6] Most observers credit OXFAM's David Bull with coining the phrase "prior informed consent" in the early 1980s (Victor, 1998: 230; Paarlberg, 1993: 317). See also Bull, 1982.

[7] However, as Victor notes, even by adopting the weaker OECD model, UNEP ensured that participation in the provisional notification procedure scheme was then extended and available to all UN member states (Victor, 1998: 233).

[8] Compliance with the voluntary PIC procedure subsequently became mandatory for membership in the pesticide industry association, the Global Crop Protection Association (GCPF).

[9] JMPIC was a group of 10 experts (5 each chosen by the FAO and UNEP), joined by non-governmental observers, convened to provide guidance on technical questions regarding the operation and implementation of PIC.

[10] Chapter 19 contains an international strategy for action on chemical safety with six priority Program Areas: (1) expanding and accelerating international assessment of chemical risks; (2) harmonization of classification and labeling of chemicals; (3) information exchange on toxic chemicals and chemical risks;

(4) establishment of risk reduction programs; (5) strengthening of national capacity and capability for chemicals management; and (6) prevention of illegal international traffic in toxic and dangerous products. Initiatives on PIC tend to fall within programme area 3.

[11] The reference to banning export from OECD countries echoed the recently taken decision in the Basel Convention to ban exports of hazardous wastes from OECD to non-OECD countries (see Krueger, 1999: 31).

[12] In fact, at the UNEP experts meeting on "further measures" (noted above) in 1996, the Netherlands and Belgium jointly proposed an integrated international legal instrument for PIC, the phasing out of POPs, and other additional measures – the so-called framework chemicals convention. Opposed by the US and Australia, the proposal was forwarded to the 1997 meeting of the UNEP GC (Pallemaerts, 1998: 76).

[13] The UNEP progress report presented to the GC stated that "the majority of delegations supported a legally binding instrument which follows more closely the existing, voluntary PIC procedure" (UNEP, 1996: 3).

[14] The 9 ratifications are Bulgaria, the Czech Republic, El Salvador, Kyrgyzstan, the Netherlands, Oman, Panama, Slovenia, and Suriname. While some expect that it could enter into force in 2001 (see UNEP/FAO, 1999a: 3), 2002 seems more likely.

[15] By a decision at the Diplomatic Conference in Rotterdam, the voluntary (or original) PIC procedure was brought into line with the Convention PIC procedure – e.g. by using the new procedures and criteria – and continues to operate until the Convention enters into force. This is sometimes referred to as the interim PIC procedure. During the interim period the INC oversees the operation of PIC – including deciding on the inclusion of new chemicals – and thus essentially acts as a 'COP-in-waiting'. Thus, until the COP meets for the first time to formalize procedures and subsidiary bodies, the Secretariat is the 'interim Secretariat', the Chemical Review Committee is the 'interim CRC', and so forth.

[16] Article 10(9) of the Rotterdam Convention.

[17] The document then quoted from Agenda 21 that "environmental policies should deal with the root causes of environmental degradation, thus preventing environmental measures from resulting in unnecessary restrictions to trade".

[18] The draft article, Article 14, read as follows: "Non-parties that are in compliance with the substantive provisions of this Convention should, as far as the application of trade measures is concerned, be treated on an equal basis with parties that are in compliance" (UNEP/FAO, 1996b: 22). At INC-1, it had simply been noted that "the complex issues of trade provisions and control of trade with non-Parties should be further discussed" (UNEP/FAO, 1996a: 12).

[19] Draft proposal presented to the Technical Working Group on 22 October 1997, emphasis added (on file with the author).

[20] From a legal standpoint, language in the pre-amble does not outline specific commitments and may not be legally-binding, unlike obligations in the body of the Convention. Similar language was subsequently used in the more controversial Cartagena Protocol on Biosafety; see Gupta, 2000: 30-31.

[21] Indeed, different countries continued to present their version of events right up until the signing of the Convention in Rotterdam in September 1998. European Environment Commissioner Ritt Bjerregaard, for example, stated that the "objectives and obligations of multilateral environmental agreements should not be hampered by other international agreements, and WTO rules...must take full account of the need to promote a high level of environmental protection". Denmark's Environment Minister also said that "MEAs should not be hampered or restricted by WTO rules". Representatives of Australia, Canada and New Zealand, on the other hand, were more supportive of the WTO. Australia's representative said that he "opposed a hierarchy between MEAs and trade agreements", but noted that WTO agreements should not be regarded as detrimental to the environment. Canada's Ambassador for the Environment "highlighted the Convention's preambular clauses relating to international trade agreements and stressed that the Convention does not affect the rights and obligations of parties under other agreements". Finally, New Zealand's representative "expressed satisfaction that the Convention's preamble did recognize important principles, including the safeguarding of other conventions". All the above quotes are taken from Campbell and Mead, 1998.

[22] Despite the assertion by some observers that "compliance with the nonbinding regulatory commitments in PIC has been perfect" (Victor, 1998: 258), and the industry claim that "there have been no documented violations of the voluntary PIC scheme" (GCPF, 1996), there is little actual data to support such a statement. Hough, for example, notes only that PIC "appeared" to be followed (Hough, 1998: 122) and NGOs have stated that their monitoring of the implementation of the voluntary PIC procedure indicated "weaknesses which have prevented the procedure from fulfilling all the desired objectives (Consumers International, 1997: 3). And the results of a (limited) FAO survey in 1993-94 showed that: 34% of developing countries who responded reported that they did not notify actions to ban or severely restrict chemicals; 27% of participating pesticide-importing countries had not established internal procedures for the receipt and handling of PIC information; 56% of developed pesticide-exporting countries had not been able to use the PIC procedure effectively for advising their pesticide exporters and industry of the decisions of importing countries participating in PIC; and 50% of developed pesticide-exporting countries indicated that the measures they had taken to prevent exports to countries not wishing to import a certain pesticide had been partially or not at all successful (UNEP/FAO, 1995c: 6). It should be noted, however, that non-compliance is not always intentional; it can also arise from lack of capacity or understanding of the procedure or the responsibilities of DNAs. Such problems are not necessarily improved by making a legally binding convention *per se*, but that the added elements regarding implementation assistance (e.g. training, technical assistance, etc.) that almost always accompany the creation of a legally binding agreement – and that otherwise would be less likely to exist – would improve the effectiveness of PIC. It is as yet too soon to determine whether or not this proves to be the case for the Rotterdam Convention, though preliminary indications are positive (see section 5).

[23] There is, however, ongoing work regarding a globally harmonized system (GHS) for the classification and labeling of chemicals under the auspices of the ILO, OECD, and the UN/ECOSOC Committee of Experts on the Transport of Dangerous Goods (and its new Sub-Committee of Experts on the Globally Harmonized System of Classification and Labelling of Chemicals).

[24] As Victor notes, more than 1,000 control actions existed at the time the PIC system was first initiated and therefore "setting priorities was crucial because a substance could not enter the PIC list until a DGD had been prepared – and expensive and time consuming process" (Victor, 1998: 241).

[25] These principles were subsequently included in the document meant to assist governments in implementing and understanding the operation of PIC – the Guidance for Governments document. See UNEP/FAO, 1991c.

[26] The JMPIC had, by March 1994, developed a policy for removing chemicals from the PIC procedure. First, inclusion of a chemical in PIC could be reviewed if "new scientific new scientific evidence is generated demonstrating that the health or environmental concerns that led to the ban or severe restriction which prompted inclusion in PIC are no longer substantiated"; and "that evidence has been submitted for scientific review by national governments on whose actions the compound originally entered the PIC procedure". Compounds are then removed when all original bans are reviewed or when countries concur that the basis for the ban or severe restriction is no longer valid. See UNEP/FAO, 1994: 19-21.

[27] By the November 2000 meeting of the INC, this number may increase to 31 because the first meeting of the Interim Chemical Review Committee in February 2000 recommended two more chemicals – ethylene dichloride and ethylene oxide – for inclusion in Annex III (UNEP/FAO, 2000: 13).

[28] The CRC is a subsidiary body of the COP that recommends on the inclusion or removal of chemicals, prepares draft DGDs and review the information submitted by DNAs. It is to "consist of a limited number of government designated experts" based on equitable geographical representation. INC-6 created an interim CRC of 29 members; the first COP will determine the final make-up of the CRC. NGOs are permitted to participate in the Committee as observers.

[29] In fact, for the category of severely hazardous pesticide formulations, risk evaluations are not required from the proposing Party and is information that is to be collected by the Secretariat "where available".

[30] The ICRC could not come to a decision on the inclusion of maleic hydrazide in PIC, and so has asked the INC for further guidance on the matter (UNEP/FAO, 2000: 8).

[31] Consenting to import under specified conditions often indicates that a chemical is restricted to one use in a country. For example, Costa Rica consents to the import of heptachlor, but only for "professional use on ornamentals and pine trees".

[32] Note that of the current total number of chemicals in the PIC procedure (29), binapacryl and toxaphene are not included in Table 6 as they were only added to the PIC list in 1999 and therefore there

has been little relative time available for DNA responses. The table also does not include responses from DNAs that did not address consent or refusal to import.

33 An additional difficulty with this indicator is how are "good" or "better" chemical management decisions understood? Implicit in the views of some OECD countries and industry groups is that a "good" PIC decision would be one where an importing country didn't simply ban the import of a chemical because a DGD on that chemical had been received (see section 4.3). It is clear, however, from the different interpretations above that not all participants would give the same definition of a "good" decision. The general lack of consensus regarding the visions of an 'effective' PIC is arguably reflective of international regulatory processes that must treat states 'equally' (i.e. as sovereign), even though many of the assumptions underlying 'sovereignty' (e.g. that states are equal and autonomous) are coming under increasing scrutiny.

34 Some participants argue, however, that PIC is essentially designed as a temporary system: "Generally, US chemical manufacturers and exporters of chemicals view the current PIC program as a kind of interim measure designed to last until all countries have established their own infrastructures for dealing with hazardous chemicals" (Tilton, 1995; GCPF, 2000: 5; interviews).

35 As noted in footnote 9, JMPIC consisted of 10 experts, 5 chosen by each the FAO and UNEP representing a rough balance between developing and industrialized countries (although the experts were selected as individuals rather than government representatives, most were government employees). Observers were from international organizations (WHO, OECD, ILO and EU), industry NGOs (GIFAP, now the Global Crop Protection Federation, CEFIC, the European Chemical Industry Council, and the CMA, the Chemical Manufacturers Association), and public interest and environment NGOs (Pesticides Action Network and International Organization of Consumer Unions, now Consumers International, and the WWF). However, NGOs had limited access (they could not attend closed door sessions of the Group – this was true, for example, when the JMPIC was deciding on particularly sensitive matters such as substances that might be added to the PIC list because of 'conditions of use' in developing countries) and limited participation (two pairs of representatives each from industry and public interest groups – or 8 people in total). See Victor, 1998: 240.

36 In contrast, the information of the voluntary PIC system was less relevant to some of the most industrialized countries that already possessed the required data and capacity to take decisions on chemical imports. The US, for example, did not provide import responses for any of the chemicals listed under the voluntary procedure.

37 To date, the interim Secretariat has run two regional workshops on awareness raising and implementation and has initiated a pilot project for Internet networking on chemicals management The United Nations Institute for Training and Research (UNITAR) ran regional workshops on PIC between 1991 and 1996 and the EC has now proposed a framework for joint projects between countries with more advanced programs for regulating chemicals providing technical assistance for the implementation of the Convention in developing countries and countries with economies in transition. Germany has also hosted training visits from Thai and Argentinean DNAs. The question of financing all future PIC implementation activities remains controversial with developing countries interested in an

implementation assistance fund and industrialized countries emphasizing the need to make better use of existing resources.

[38] Recall also that *all* 162 DNAs of the voluntary PIC are already functionally participating in the legal Convention by using its procedures in the 'interim' period. Participation in the Convention in the strict (i.e. legal) sense simply takes longer because of the long and often complicated procedure of domestic ratification of international treaties. And not all countries with DNAs always send representatives to PIC meetings.

[39] For an initial discussion of the value of distributed assessment systems in addressing cross-scale environmental problems, see Cash, 2000.

[40] I am grateful to Ron Mitchell for suggesting this point.

[41] A domestic example is the Toxic Release Inventory (TRI) in the United States. Companies must send information on toxic chemical releases to the EPA but are not required to limit emissions. However, the transparency generated by the public provision of this information led to a 44 percent decrease in indexed chemicals between 1988 and 1994 (Florini. 2000: 29). Further increasing access to this information is the Environmental Defense Fund's 'Scorecard' website (www.scorecard.org) that allows an internet user to enter their community location and find out local toxic releases and TRI facilities nearby.

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