Regulating Information Exchange And International Trade In Pesticides And Other Toxic Substances To Meet The Needs Of Developing Countries

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The World Health Organization estimated in 1972[1] that approximately 500,000 cases of accidental pesticide poisoning[2] occur annually worldwide, resulting in about 9200 deaths.[3] The inhabitants of developing countries suffered approximately one-half of these injuries[4] and three quarters of the deaths,[5] even though they accounted for less than fifteen percent of pesticide consumption worldwide.[6] The disproportionate health effect in developing countries may be greater still if one includes industrial accidents such as the sudden explosion of a tank containing methly isocynate at a pesticide formulation plant that occurred at Bhopal, India in December 1984.[7] The dangers from improper use of pesticides in developing countries have major implications that extend beyond their own borders. The indiscriminate application of pesticides has contributed heavily to accelerating pest resistance, a phenomenon that threatens food production and

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1. WORLD HEALTH ORGANIZATION, TECHNICAL REPORT SERIES NO. 513, SAFE USE OF PESTICIDES 42 (1973); D. BULL, A GROWING PROBLEM: PESTICIDES AND THE THIRD WORLD POOR 37 nn.4-5 (1982).

2. *See generally* U.S. AGENCY FOR INTERNATIONAL DEVELOPMENT, AN AGROMEDICAL APPROACH TO PESTICIDE MANAGEMENT: SOME HEALTH AND ENVIRONMENTAL CONSIDERATIONS 50-61 (J. Davies, V Freed & F Whittemore, eds. 1981)

3. D. BULL, *supra* note 1, at 38.

4. *Id.* at 37 n.6.

5. *Id.* at 38 n.7

6. *Id.* at 38.

7 The explosion injured approximately 200,000 people. Estimates of deaths ranged from 2,500 to as many as 15,000. A. AGARWAL, J. MERRIFIELD & R. TANDON, NO PLACE TO RUN: LOCAL REALITIES AND GLOBAL ISSUES OF THE BHOPAL DISASTER 1 (1985).

public health worldwide. Also, industrial countries are finding that imported foods and beverages may contain dangerous residues caused by improper handling of pesticides in the exporting countries. For example, in 1978, the U.S. Food and Drug Administration estimated conservatively that ten percent of food imported into the United States contains illegal pesticide residues.[8]

Most of the active ingredients and finished pesticide products used in developing countries are imported, and these countries cannot evaluate the benefits and risks effectively because they lack adequate research and regulatory capabilities.[9] Governments and consumer groups in developing countries have long complained about the lack of information made available to them and the fact that many imported pesticides are banned or severely restricted in the industrial countries where they are manufactured.[10] In 1979 the U.S.. government sponsored an international confer ence on pesticide management that identified two major problems facing developing countries: 1 receiving inadequate information, that is difficult to supplement, concerning hazards associated with specific pesticides; and 2. having the information fail to reach the appropriate individuals.[11]

Until recently the United States had the only active program for notifying other governments about exports of banned or se verely restricted chemicals, and about related regulatory decisions that could have international significance. However other national governments and several international organizations have begun to establish information exchange programs for pesticides and other toxic substances. The development of these programs provides an exciting opportunity for developing nations to profit from the mistakes and knowledge of the industrial world. It also presents them with a great challenge because they will need

8. H.R. REP No. 1686, 95th Cong., 2d Sess. 28 (1978); *See generally* D. BULL, *supra* note 1, at 59-62 (the boomerang effect: imported foods contain pesticides exported from the U.S.); D. WEIR & M. SCHAPIRO, CIRCLE OF POISON 28-31 (1981) (the boomerang); PILLS, PESTICIDES AND PROFITS: THE INTERNATIONAL TRADE IN TOXIC SUBSTANCES 25-28 (R. Norris ed. 1982) (pesticide residues on imported foods).

9. PILLS, PESTICIDES AND PROFITS, *supra* note 8, at 28-36; D. BULL, *supra* note 1, at 73-77· D. WEIR & M. SCHAPIRO, *supra* note 8, at 7

10. PILLS, PESTICIDES AND PROFITS, *supra* note 8, at 28-36; D. BULL, *supra* note 1, at 143-59.

11. U.S. DEPARTMENT OF STATE AND U.S. NATIONAL COMMITTEE FOR MAN AND THE BIOSPHERE, PROCEEDINGS OF THE U.S. STRATEGY CONFERENCE ON PESTICIDE MANAGEMENT, NO. 629-322/1302 3 (1980).

to evaluate and apply the information they receive in light of the often different conditions and priorities of their own countries.[12]

This article will review American regulation of international information exchange about pesticides and other toxic chemicals, the domestic requirements of other nations, and new programs instituted by international organizations. The discussion will incorporate the findings of two recent studies of the American notification system, including a study by the author about how this program has operated in three African countries.

I. Background

A. *The function and importance of pesticides in developing countries*

A pesticide is any substance or mixture of substances intended to prevent or control any unwanted species of plant or animal.[13] While many developing countries rely on agriculture for both domestic consumption and exports to earn foreign exchange,[14] about seventy percent of their pesticide use is for export crops such as coffee, sugar tea, cotton and bananas.[15] Since at least one-third of potential crops in developing countries are de stroyed by pests, the application of chemicals can greatly improve agricultural productivity [16] Scientists have estimated that without pesticides, the cotton crop in developing countries could be reduced by as much as fifty percent.[17]

Pesticides play an equally dramatic role in the fight against insect-borne diseases, such as malaria, yellow fever river blindness,

12. *See generally* Comment, *Efforts to Prevent Misuse of Pesticides Exported to Developing Countries: Progressing Beyond Regulation and Notification,* 12 Ecology L.Q. 1025 (1985).

13. U.N. Economic and Social Council, The Influence of Environmental Protec tion Measures on the Development of Pesticide Production and Consumption, U.N. ESCOR at 91, U.N. Doc. No. E/CE/CHEM/43 (1982). Common categories of pesticides include insecticides, rodenticides, herbicides and fungicides.

14. For example, in Kenya, one of the countries surveyed for the author study of the American pesticide notification program, agriculture accounts for more than 30% of the gross domestic product, and majority of exports. The Weekly Review, Jan. 3, 1986, at 17 (Nairobi).

15. Muchiru, *Comment,* Swara The Magazine of the East African Wildlife Society, Sept.-Oct. 1985, at 7 For discussion of the implications of the fact that most imported pesticides in developing countries are used for export crops, see D. Weir & M. Schapiro, *supra* note 8, at 32-38; D. Bull, *supra* note 1, at 81-82.

16. For example, in Ghana, where cocoa exports provide majority of foreign exchange earnings, cocoa yields were more than doubled in the late 1960' through the use of insec ticides. D. Bull, *supra* note 1, at 5 n.11, 4 n.6.

17. *Id.* at 5 n.12.

elephantiasis and sleeping sickness. A malaria eradication program adopted by the World Health Organization between 1955 and 1970 is estimated to have prevented two million cases of malaria and saved 15 million lives.[18] However the need for pest control continues; approximately one billion people, most of them in developing countries, remain at risk from malaria.[19] The heavy reliance of developing countries on agriculture, combined with growing population pressures and reductions in arable land in many parts of the world, ensure that their trend of growing pesticide use will continue.[20]

B. *Processing and use patterns for pesticides*

At all stages of processing and use, pesticides pose dangers to those who are exposed to them and to the environment.[21] If stored or handled improperly pesticides can come into direct contact with people, be released to the air or leach into the ground. Pesticides are frequently imported in bulk, and then improperly labeled and repackaged prior to distribution. Even when the repackaged pesticides have adequate labeling—which they often do not—many of the ultimate users of pesticides in de veloping countries cannot read. Also, the common practice of distributing pesticides in flimsy paper or plastic bags and in make shift containers, such as empty beverage bottles and food cans, is a major cause of accidental poisonings. Local practices for handling pesticides in developing countries tend to be similarly casual. Government and private extension services to train and educate farmers are inadequate. Without understanding the reasons for recommended dosages and application guidelines, farmers tend to use excessively heavy or frequent doses, and to mix

18. *Id.* at 5 n.13.

19. *Id.* at 4 n.7

20. From 1974-78, the value of pesticides imported by developing countries increased from $641 million to nearly $1 billion. PILLS, PESTICIDES AND PROFITS, *supra* note 8, at 7 By 1978, developing countries accounted for 38% of the international trade in pesticides. *Id.* Worldwide, the annual rate of pesticide use was about 5% between 1972 and 1980, compared to 10% in the 1980's. *State-of-the-Environment Report 1985* 13 U.N. Environment Programme (Provisional Agenda Item 5) at 9, U.N. Doc. EP/GC.13/4/Add.1 (1985). However, from 1964 to 1974, pesticide imports in Africa increased fivefold; in the Philippines from 1972 to 1978, imports increased by the same amount. PILLS, PESTICIDES AND PROFITS, *supra* note 8, at 7 n.11. As percentage of total imports, pesticides account for 30 times higher proportion in developing countries than in industrial countries. 38 FAO TRADE YEARBOOK, FAO Statistics series No. 63, at 306 (1985).

21. *See generally* D. BULL, *supra* note 1, at 37-53.

pesticides together improperly Such indiscriminate application threatens people using the chemicals, and contributes to insect resistance and environmental damage.

People applying pesticides are often unfamiliar with safe procedures for their use. The recommended protective clothing, even if it were available, is usually unsuitable for warm climates be cause it is too heavy and too hot. Many farmers use manual applicators, such as backpack sprayers, that allow contact with the chemicals being applied if the equipment is not working properly or if safe practices are not observed. They may lack facilities for washing or changing clothes after handling pesticides. People living in areas where pesticides are being applied rarely receive ade quate warnings, and even more rarely observe them. People eating domestic or imported food treated with pesticides may be exposed to unsafe levels of chemicals, if the farmers did not know or observe the established time limits for safe harvesting after the application of pesticides. Improper disposal of pesticides and empty pesticide containers is yet another source of danger For example, empty containers are popular for use as water buckets and cooking vessels.

C. *Health and environmental effects*

In addition to the dangers of accidental poisoning discussed above, pesticides may become part of the food chain. This occurs when they accumulate in the general environment as a result of agricultural runoff and improper storage, application or disposal.[22] Although there is limited information about the general environmental effects of pesticide use in developing countries,[23] we do know that pest resistance is an accelerating problem. Between 1960 and 1980, the number of insect species resistant to at least one pesticide tripled, from 137 to approximately 432.[24] This included 51 species of mosquitoes that transmit malaria, and 42

22. *Id.* at 63-67

23. One important question is how climatic conditions in the tropics and sub-tropics, where most developing countries are located, may alter the environmental effects of pesticides. For example, some scientists believe that the harmful components of DDT may degrade more quickly in the tropics, and thus pose danger to the environment. *Ad Hoc Meeting on the Influence of Environmental Protection Measures on the Development of Pesticide Production and Consumption*, U.N. ESCOR (9-10 Mar. 1982) at 5, U.N. Doc. No. CHEM/AC.9/R.2/Add.6 (1982).

24. D. BULL, *supra* note 1, at 17 n.6. The World Health Organization has estimated the number of pesticide-resistant insect species in 1980 to be slightly lower (392). 13 U.N.

species of mosquitoes that transmit other debilitating diseases, such as yellow fever [25] Over the same time period, the number of species of pesticide-resistant fungi and bacteria was estimated to be about 50.[26]

When pest resistance occurs, particularly in developing countries, it often leads to a vicious cycle. Farmers and disease control programs use increasingly frequent and heavy dosages and combinations of pesticides to try to combat pest resistance, thus making the problem even worse. These practices are also likely to increase environmental harm and accidental poisonings.[27] If pest resistance continues to accelerate, the effects will be felt by all nations, both in terms of decreased agricultural production and increased needs for health care, economic assistance and food aid.

D *The need for information exchange*

As a result of discoveries about the health and environmental effects of pesticides, there has been a drive by industrial countries to develop pesticides that are more selective in their effects and to monitor carefully the movement of pesticides. These governments collect extensive information to help them regulate pesticide registration and use. Educational and enforcement programs reinforce these restrictions. However the governments of developing countries face major obstacles in trying to develop similarly effective responses. They need to cope with many other pressing problems. Many of them have only marginally funded and staffed environmental agencies with inadequate research facilities, limited regulatory programs, and even more limited educational and enforcement capabilities. As a result, developing countries must rely heavily on industrial countries for information, regulatory judgments and help in controlling the trade in pesticides and other hazardous chemicals. Well-structured and well-run international information exchange programs could give them crucial assistance.

Environment Programme (Provisional Agenda Item 5) at 9, U.N. Doc. UNEP/GC.13/4/Add.1 (1985).

25. 13 U.N. Environment Programme, *supra* note 24.

26. *Id.*

27 *See generally* D. BULL, *supra* note 1, at 16-26, 27-36.

E. *Other toxic chemicals and hazardous waste*

Developing countries have accounted for approximately twenty-five percent of chemical imports during the last decade.[28] International concerns about dangerous chemicals in developing countries have focused primarily on pesticides because of their widespread use and their prevalence in both our food and the environment.[29] However pesticides represent only two to three percent of total chemical sales worldwide.[30] In time, developing countries will have to turn more of their attention to the complexities of regulating toxic chemicals other than pesticides and regulating hazardous waste.[31]

II. International Information Exchange Programs

The key elements for international notification programs about toxic chemicals are the content and format of the notices, and how they are transmitted. Only the United States and the United Nations have programs for notifying other governments about new regulatory decisions. The notices describe the applicable notification program, summarize the regulatory action, and explain how to obtain additional information. The more common type of information exchange program involves notification about exports of banned and severely restricted substances. The notices summarize the program, identify the substance that is being exported, confirm that an export has occurred or is about to occur

28. 38 FAO Trade Yearbook, *supra* note 20, at 1157 It may be that pesticides comprise larger percentage of chemical imports in developing countries than of chemicals traded worldwide.

29. U.S. Environmental Protection Agency, Chemical Emergency Preparedness Program, Interim Guidance, Appendix A (November 1985). This document is discussed in 50 Fed. Reg. 51,451 (1985). Out of the E.P.A. list of approximately 400 chemicals, 140 chemicals, or 35%, are pesticides or pesticide components. N.Y. Times, Nov. 18, 1985, at A1, col.4, B9, cols. 3-4.

30. *U.N.E.P Ad Hoc Working Group of Experts for the Exchange of Information on Potentially Harmful Chemicals (In Particular Pesticides) in International Trade*, 1. U.N. Environment Programme Annex 1 at 2, U.N. Doc. No. EP/WG.96/2 (1984). About 50,000 chemicals are traded internationally each year. *Id.* at 1. In 1981, the estimated value of this trade ranged from $11 billion, *State-of-the-Environment Report 1985* 13 U.N. Environment Programme (Provisional Agenda Item 5) at 9, U.N. Doc. EP/GC.13/4/Add.1 (1985), to $14 billion, *U.N.E.P Ad Hoc Working Group of Experts for the Exchange of Information on Potentially Harmful Chemicals*, *supra*, at 2.

31. Initial regulation of chemicals in most developing countries tends to emphasize pesticides, perhaps because population exposure is so widespread and the dangers are well known. *See* Pills, Pesticides and Profits, *supra* note 8; D. Bull, *supra* note 1; D. Weir & M. Schapiro, *supra* note 8; *see supra* text accompanying notes 80-86.

and explain how to obtain additional information. Exporters are required to notify their own government on or before the date of export. Some programs also require the exporter to notify directly the foreign importer or importing government about the regulatory status of the chemical in question. The exporting government then notifies the importing government after receiving the required information from the exporter The purpose of the notice is usually to inform the importing government about the transaction, rather than to enable it to stop an unwanted shipment. Notice is required for either the first shipment of a designated chemical to a particular country after the program begins, or for the first shipment in each calendar year There is usually no provision for the exporting government to halt a shipment at the request of the government of the country of destination.

Regulatory and export notices may be transmitted to: (1) overseas embassies of the country issuing the notice, for transmittal to their host governments; (2) other governments foreign embassies based within the country issuing the notice; (3) designated "contact points" in other countries; or (4) an international organization that will transmit notices to member countries participating in the program. Notices may be in the form of cables or typewritten documents.

A. *American Laws*

1 Pesticides: Federal Insecticide, Fungicide and Rodenticide Act (FIFRA).[32]

Section 17(a) of FIFRA, enacted in 1978, establishes notification requirements for the export of pesticides that are not registered for domestic use in the United States.[33] This includes more than fifty pesticides whose registration has been cancelled, suspended or voluntarily withdrawn,[34] as well as pesticides that have never been registered. Each year prior to the first sale of such a product to a foreign buyer the American seller must obtain a statement from the buyer confirming that he is aware that the product may not be sold in the United States. The seller may export the pesticide once he receives this statement, which he

32. 7 U.S.C. §§ 136(a)-(y) (1982).

33. 7 U.S.C. § 136(a) (1982); 40 C.F.R. §§ 162-180 (1986); 40 Fed. Reg. 20,987 (1975) (notification to foreign governments of certain pesticide actions).

34. U.S. ENVIRONMENTAL PROTECTION AGENCY, SUSPENDED AND CANCELLED PESTICIDES, Doc. No. OPA 159/9 (3rd revision, Jan. 1985).

must forward to the U.S. Environmental Protection Agency (EPA). EPA then notifies the foreign government, through the U.S. Department of State. Shipment of the unregistered pesticide may proceed before the foreign government has received the notice, since its purpose is only informational. From 1980 through January 1986, EPA sent approximately 1026 export notices.[35] The notices were distributed geographically as follows: Africa, 73; Asia, 204, Australia and New Zealand, 53; Canada, 56; Europe, 245; Latin America, 330; the Middle East, 54, to unspecified countries, 11

Section 17(b) of FIFRA, enacted in 1972, requires EPA to notify foreign governments about regulatory actions that EPA believes to have international significance.[36] These include registration of a pesticide that contains a new active ingredient or a changed use pattern, and cancellation or suspension of an existing registration.[37] Since 1978, EPA has issued approximately forty-five of these notices. The author's research project focused on a Section 17(b) notice issued in October 1983 about EPA s emergency suspension of the pesticide ethylene dibromide.[38]

EPA prepares Section 17 notices and then sends them to the Department of State, which forwards the information to the appropriate American embassy or embassies for transmittal to their host governments. It takes about two weeks to prepare and send out a Section 17(a) notice about export shipments, and about five weeks for a Section 17(b) notice about a major regulatory decision. Section 17(a) notices go by diplomatic pouch, and Section 17(b) notices go by cable. Once a notice arrives at an American embassy it is usually forwarded to the foreign government within one or two weeks. If the embassy requests that the Department of State provide a translation in French or Spanish, there will usually be a delay of an additional two to four weeks.

During recent years, there have been several proposals to strengthen the information exchange provisions of FIFRA. These

35. This number represents only shipments of restricted and unregistered pesticides; it does not include shipments of pesticides that are registered in the United States without special restrictions that would trigger export notification requirements.

36. 7 U.S.C. § 136(b) (1982).

37 40 Fed. Reg. 20,987 (1975).

38. EPA suspended the use of EDB as soil fumigant on October 11, 1985. 48 Fed. Reg. 4626. EPA has also suspended other fumigation uses of EDB, 49 Fed. Reg. 4452 (1984), and has listed as hazardous waste, two waste products from the production of EDB. 49 Fed. Reg. 44,718 (1984).

have included proposals to require an annual report of all federal actions to ban or severely restrict pesticides, which would be circulated to foreign governments and the American public,[39] and to limit exports of such pesticides to specific annual requests from foreign governments, where the foreign governments acknowledge applicable U.S. regulations and explain the intended use of the pesticides.[40]

In 1985, a coalition of environmental, consumer labor and industry representatives developed proposed amendments to FIFRA that would include changes in the Section 17(a) export notification program.[41] (The proposal would not significantly affect notice of regulatory actions pursuant to Section 17(b), except that EPA would have to send other governments and international agencies an annual update.) Under this coalition proposal, the exporter of a banned or severely restricted pesticide would have to notify the importer and appropriate foreign government official (as designated on a list to be maintained by EPA) of the pesticide s regulatory status at least thirty days before shipment. The shipment could not proceed until the exporter received written acknowledgement from the government and the importer Export notices would have to include: the names and addresses of the exporter and importer· the name of the product and the active ingredient; the regulatory status of the pesticide in the United States and the reasons for that status; and any applicable use restrictions.

Congress will probably include the coalition proposal when it next amends FIFRA. During the most recent legislative session, the House adopted a bill that closely tracked these provisions.[42] The Senate considered (but did not adopt) a bill with similar requirements, except that EPA, rather than exporters, would be required to notify foreign governments about shipments of banned or restricted pesticides.[43]

39. S. 1380, 99th Cong., 1st Sess. (1985).

40. S. 1303, 99th Cong., 1st Sess. (1985); H.R. 2580, 99th Cong., 1st Sess. (1985); H.R. 3254, 98th Cong., 1st Sess. (1983).

41. Environmental/Labor/Consumer Coalition and National Agricultural Chemicals Association, et al., Agreement on Proposed Amendments to the Federal Insecticide, Fungicide, and Rodenticide Act (Sept. 10, 1985).

42. H.R. 2482, 99th Cong., 2d Sess. (1986).

43. S. 2792, 99th Cong., 2d Sess. (1986).

2. Toxic Substances: Toxic Substances Control Act (TSCA).[44]

Section 12(a) of TSCA[45] authorizes EPA to restrict the export of a chemical substance, mixture or article if the Administrator finds that it will "present an unreasonable risk of injury to health within the United States or the environment of the United States."[46] Section 12(b) requires export notification for chemicals regulated under Section 12(a), as well as several other categories of chemicals.[47] Unlike FIFRA, which requires notification only for pesticides subject to a final regulatory action (as well as unregistered pesticides), Section 12(b) of TSCA also applies to chemicals subject to proposed regulations, enforcement proceedings and testing requirements.[48] Altogether Section 12(b) applies to more than eighty chemicals; however only about ten percent of them have actually been exported.[49]

The exporter of a chemical for which notice is required under Section 12(b) must notify EPA of the first shipment each calendar year to a particular country Notice must be sent to EPA within seven days of executing the sales contract or by the date of ex port, whichever is sooner EPA will only notify the importing government of the first annual shipment of a specific chemical, even if different exporters later ship the same chemical to that country during the same year From 1983 through September 1985, EPA sent approximately 499 TSCA notices to foreign gov-

44. 15 U.S.C. § 2601 (1982).

45. 15 U.S.C. § 2611(a)(2) (1982).

46. EPA regulates four substances under Section 12(b): polychlorinated biphenyls (PCBs); fully halogenated chlorofluoralkanes (CFCs); asbestos; and tetrachlorodibenzo-p-dioxin (2,3,7,8-TCDD). 45 Fed. Reg. 82,844 (1980). For an additional explanation of export restrictions on these substances, see 46 Fed. Reg. 29,115 (1981).

47 45 Fed. Reg. 82,844 (1980) (final rule, chemical imports and exports, notification of export); 46 Fed. Reg. 37,608 (1981) (clarification of export notification requirements for asbestos).

48. Section 12(b) applies to any chemical substance or mixture: (1) for which data must be submitted to EPA under Section 4, 15 U.S.C. § 2603 (1982) (final rule requiring testing of health and environmental effects), or Section 5(b), 15 U.S.C. § 2604(b) (proposed or final rule requiring submission of test data); (2) for which proposed or final order has been issued under Sections 5 or 6, 15 U.S.C. §§ 2604, 2605 (limiting or prohibiting activities such as manufacture, processing, distribution, use and disposal); or (3) which is currently involved in proceeding, or which was involved in proceeding where EPA prevailed, under Sections 5 or 7 15 U.S.C. §§ 2604-06.

49. Jellinek, Schwartz, Connolly & Freshman, *Toxic Substances Control Act Section 12(b) Export Notification Program Review* 10 (Feb. 10, 1986) (report prepared for the Office of Toxic Substances, U.S. Environmental Protection Agency).

ernments:[50] 142 (1983); 167 (1984); and 190 (first three quarters of 1985).

TSCA does not require EPA to notify other governments of regulatory decisions. However EPA does send notice of both proposed and final actions to participants in an information ex change program on chemicals established by the Organization for Economic Development and Cooperation (OECD).[51] The notices consist of an explanatory letter and a copy of the relevant Federal Register notice. In 1985, EPA issued about 100 such notices.[52]

EPA transmits both regulatory and export notices to foreign embassies in the United States. Export notices, which are sent within five working days of EPA s receipt of a notice from the ex porter only state that a shipment of a specified chemical has oc curred, and identifies the EPA official who can provide additional information.

3. Hazardous Waste: Resource Conservation and Recovery Act (RCRA).[53]

Unlike the American programs for pesticides and toxic substances, this program includes notices only for exports, not for regulatory actions. Since 1980, EPA regulations have required export notification for all shipments of hazardous waste (except materials intended for recycling or beneficial reuse),[54] but Congress only recently established such requirements by statute, in Section 3017 of the Hazardous and Solid Waste Amendments of 1984.[55]

50. *Id.* at 15. EPA actually received about three times this number of notices. However, as mentioned above, EPA only notifies country of the first annual shipment of toxic chemical regulated under Section 12(b), not the first such shipment from each American exporter. These figures represent only shipments of chemicals regulated under Section 12, not all chemical exports.

51. Chemicals Programme Complementary Information Exchange Procedure, OECD Directive No. ENV/CHEM/77.2/M (June 1977).

52. Estimates by EPA officials.

53. 42 U.S.C. §§ 6921-34 (1982 & Supp. II 1984).

54. 40 C.F.R. §§ 262-63 (1980).

55. 42 U.S.C. § 6938 (1982 & Supp. II 1984). An Executive Order that would have restricted exports of hazardous waste was in effect for four weeks in early 1981. It would have banned most exports of products that represent substantial threat to human health, safety or the environment, if exporting them would cause clear and significant harm to American foreign policy interests. Former President Carter issued the Order at the end of his term, and it was revoked by President Reagan shortly after he took office. *See* Note, *Hazardous Export to the Third World: The Need to Eliminate the Double Standard*, 12 COLUM. J. ENVTL L. 71, (1986).

The 1980 RCRA regulations were similar in purpose to the FIFRA and TSCA regulations, although they placed more emphasis on tracking the movement of the export shipment. An exporter had to notify EPA thirty days before the first shipment in each calendar year of a regulated hazardous waste to a particular country EPA then notified the foreign government. The exporter also had to require the importer to confirm delivery of the waste. From 1980 through January 1986, EPA issued 823 notices, which represent all legal exports of hazardous waste. Canada received ninety percent (742) of these shipments. An additional six percent (46) were sent to Europe, and the remaining four percent (35) were distributed about evenly between Asia and Latin America. The number of annual notices rose from 20 in 1980 to 380 in 1985.

Section 3017 makes a critical change—beginning in November 1986, it requires prior consent from the country of ultimate destination for shipments of hazardous waste. Violation of this requirement is a criminal offense.[56] These stringent provisions reflect the extreme concern in the United States about the problems of hazardous waste pollution and Congressional concerns about foreign policy as well as health and the environment.[57]

On August 8, 1986, EPA published final regulations requiring exporters to notify EPA at least sixty days before the intended date of shipment.[58] Alternatively one notice may cover planned shipments for up to two years.[59] However any subsequent alteration in a planned shipment, such as a change in the composition or quantity of the waste, will require renotification and new prior consent for that shipment.[60] EPA will provide advance notice to the governments of countries through which the waste will pass in transit, but their prior consent is not necessary [61] Section 3017 also establishes detailed reporting and recordkeeping requirements similar to those governing domestic movement of hazardous waste. These will enable EPA to track the type, quantity

56. 42 U.S.C. § 6928(d)(6) (1982 & Supp. II 1984).

57 S. REP No. 284, 98th Cong, 1st Sess. 47 (1983); 129 Cong. Rec. H8163-64 (daily ed. Oct. 6, 1983) (statements by Reps. Mikulski & Florio); 130 Cong. Rec. S9152 (daily ed. July 25, 1984) (statement by Sen. Mitchell).

58. 51 Fed. Reg. 28,664 (1986), *amending* 40 C.F.R. §§ 260, 262, 263 and 271 (1985).

59. 51 Fed. Reg. 8748 (1986).

60. 51 Fed. Reg. 8749 (1986).

61. 51 Fed. Reg. 8748-49 (1986).

frequency and ultimate destination of all exported hazardous waste.[62]

EPA will continue its present practice of preparing a cable for the Department of State to send to the appropriate American embassy for transmission to its host government. EPA will supplement the cables with materials sent by diplomatic pouch, including a summary of the information submitted by the ex porter and a copy of the regulations governing the treatment, storage and disposal of the waste in the United States. The Amer ican embassy will cable back the foreign government s written response, to be followed by written confirmation sent by diplomatic pouch. Within fifteen days of EPA s receipt of an export notice, the Department of State will notify the foreign government through the appropriate American embassy It should take about the same amount of time for transmission by cable of the foreign government s response to the export notice. This timetable anticipates that the foreign government will be able to decide within thirty days whether to allow the shipment of hazardous waste. If the foreign government does not decide within that period, then the American exporter will have to wait for that decision, even if it properly notified EPA at least sixty days before the scheduled date of shipment.[63]

B. *Domestic Programs Of Other Countries*

The information exchange programs of other governments pertain only to export notification, not notification of regulatory actions. The Netherlands has the only program that is comparable to American requirements. Dutch law requires exporters to notify developing countries and to obtain their prior consent for the export of certain substances that are potentially dangerous to human health or the environment.[64] The government is developing a list of both pesticides and industrial chemicals which must be reviewed and updated annually With regard to human health

62. An exporter' notice to EPA must include: the name, address, telephone number and EPA identification number of the exporter; the identity of the waste, including the EPA identification number; the expected number, quantities and dates of shipment; points of entry to and departure from each foreign country of transit; the means of shipment; the manner of treatment, storage and disposal at the ultimate destination of the waste; and the name and site address of the consignee and any alternate consignee. 51 Fed. Reg. 8748 (1986).

63. 51 Fed. Reg. 8749 (1986).

64. Article 29, as cited in Jellinek, *supra* note 49, at 30-31.

effects, the emphasis is on chronic, rather than acute, toxicity As of late 1985, there were about twenty-five substances on the proposed list.[65] A Dutch exporter must obtain prior consent for the first shipment of a regulated chemical to a particular country in each calendar year The government provides exporters with copies of the regulatory information to be included with each ex port notice, and with a list of designated contacts in the importing countries. After receiving permission from the importing government, the exporter must send a copy of the export notice and formal consent to the Dutch Ministry of Foreign Affairs, which will then forward these documents to the appropriate Dutch embassy for transmission to its host government.[66]

The following governments also have or are considering programs to restrict the export of toxic chemicals: Denmark (author ity to ban or restrict exports by administrative order[67]); Federal Republic of Germany (ban on the export of DDT [68] authority to require licensing or notification for the export to EEC countries of chemicals other than pesticides,[69] and negotiations with private industry to develop a voluntary program for regulating chemical exports[70]); France (developing a program to notify other OECD member countries of certain regulatory actions through the OECD's Complementary Information Exchange Procedure and negotiating a voluntary export notification program with industry[71]); and the United Kingdom (export notice to other member

65. *Id.* at 30-31.

66. *Id.*

67 *U.N.E.P Ad Hoc Working Group of Experts for the Exchange of Information on Potentially Harmful Chemicals (In Particular Pesticides) in International Trade*, 1. U.N. Environment Programme at 4, 8, U.N. Doc. No. EP/WG.112/4 (1984).

68. *Id.* at 9; S. Scherr & E. Spitalnik, National Laws Relating to Exports of Chemicals, In Particular Pesticides: A Selected Review (Draft) at 21, prepared for the Environmental Liaison Center (October 1983).

Under German law, there are no restrictions on the export of other pesticides. The Plant Protection Act (Pflanzenschutzgesetz vom 10 mai 1968, zuletzt geandert durch das Dritte Gesetz zur Anderung des Pflanzenschutgesetzes vom 16 Juni 1978) places no restrictions on the export of unregistered pesticides, but as of 1983, the government was considering an amendment to the Plant Protection Act that would allow banning the export of pesticides under narrowly circumscribed conditions. *U.N.E.P supra* note 67 at 4, 9-10.

69. *U.N.E.P supra* note 67 at 4; Scherr, *supra* note 68, at 22-23. This authority applies where required classification, packaging and labeling cannot fully eliminate risks against human health or the environment.

70. Jellinek, *supra* note 49, at 31.

71. This program, which may be finalized by the end of 1986, would require notice of exports of certain chemicals; *Id.* at 31-32.

countries of the EEC[72] and at the request of an exporter issuance of a "certificate of free sale" for a pesticide that is approved for use in the United Kingdom).

C. *International Organizations*

1 United Nations

In May 1984, the Governing Council of the United Nations Environment Programme (UNEP) adopted the "Provisional Notification Scheme for Banned and Severely Restricted Chemicals." [73] This is the only program outside the United States that gives notice of regulatory decisions, as well as specific export shipments. The voluntary guidelines encourage member countries to notify other governments about regulatory actions to ban or severely restrict chemicals, including pesticides. The guidelines also recommend notifying the country of destination about exports of pesticides and other chemicals that are subject to use restrictions or are not licensed domestically because of danger to human health or the environment. Each member government is encouraged to notify the government of an importing country on the first occasion that a shipment of a banned or severely restricted chemical occurs. The program does not call for any additional notification, unless there is a significant new regulatory action regarding the same chemical. The exporting country should try to notify before the shipment occurs. Notices should identify the chemical to be exported, summarize the applicable regulatory action, and provide a contact point for more information. Governments participating in the UNEP program can send notices to other countries either directly or through the U.N. s International Register of Potentially Toxic Chemicals (IRPTC). Each government has been asked to designate a contact point for receipt of notices, and about sixty have already done so. The IRPTC is responsible for maintaining and circulating the list of designees.

In November 1985, the Director General of the Food and Agriculture Organization (FAO) submitted for approval similar voluntary guidelines that apply only to pesticides (not other toxic substances or hazardous waste).[74] The timing, type of informa-

72. *U.N.E.P supra* note 67 at 4, 10-11.
73. U.N. Doc. No. EP/WG.112/2, Annex I (Nov. 23, 1984).
74. FAO, Doc. No. C 85/25 (Sept. 1985).

tion to be supplied, and transmittal mechanism match the UNEP notification program for restricted chemicals.

Since December 1985, UNEP has been considering draft guide lines for exports of hazardous waste.[75] The program would re quire notice to countries of transit and prior consent from countries of import. The guidelines do not propose specific time schedules or transmittal mechanisms.

2. Organization for Economic Cooperation and Development (OECD)

For exports of pesticides and toxic substances, the OECD adopted in April 1984 "Guiding Principles on Information Ex change Related to Export of Banned or Severely Restricted Chemicals."[76] These voluntary guidelines encourage member countries to require export notification that would comport with the UNEP program. The OECD has directed its Environment Committee to develop guidelines for exports of hazardous waste by December 31, 1987 [77] The new guidelines are to address the responsibilities of member countries to non-member countries, and may provide for participation by the latter

3. European Economic Community (EEC)

The EEC is drafting a regulation that may require export notification for a specific list of banned and severely restricted chemicals, including pesticides.[78] In contrast to the other international programs discussed above, this one would be binding on member governments, obligating them to enact legislation. The regulation may require advance notice of ninety days for exports to member countries. The first time an export to another member country was scheduled, the exporting government would have to notify the Commission of the EEC. The Commission would then contact the importing government, transmit its response to the exporting government, and maintain records of all such responses. If the importing government gave consent, or did not

75. *U.N.E.P Cairo Guidelines and Principles for the Environmentally Sound Management of Hazardous Wastes, Report of the Ad Hoc Working Group of Experts on the Environmentally Sound Management of Hazardous Wastes*, U.N. Environment Program at 12, 13, U.N. Doc. No. EP/WG.122/L.1/Add.3/Rev.1 (1985).

76. OECD, Doc. No. C(84)37 (1984).

77 Resolution of the Council on International Co-operation Concerning Transfrontier Movements of Hazardous Wastes, OECD Doc. C(85)100, (July 3, 1985).

78. Jellinek, *supra* note 49, at 29.

respond within ninety days, the export would be permitted. Once a member state had consented to shipment of a specific chemical, other members could ship the same chemical to that country after verifying the EEC Commission s record of consent.

For hazardous waste, an EEC directive requires member states to see that exports are accompanied by a standard consignment document. Prior consent from member countries is necessary for both transit and import.[79] For shipments beyond EEC borders, the shipper would have to verify arrival at the final destination within six weeks of the date when the shipment left the EEC. Notice, without consent, would be required for certain shipments intended for reuse or recycling.

III. OPERATION OF THE AMERICAN NOTIFICATION PROGRAMS

A. *Study of Operation of the FIFRA Notification Program in Africa*

1 Regulatory Actions: Emergency Suspension of Ethylene Dibromide

On September 30, 1983, EPA announced the immediate emergency suspension of all use of ethylene dibromide (EDB) in the United States. EPA s action was triggered by the discovery that EDB was contaminating groundwater supplies. EDB is a carcinogen and mutagen and has caused reproductive disorders in test animals. It has been used as a soil fumigant for citrus and fruit trees, soybeans, pineapples, cotton, tobacco and peanuts in the southern United States, California and Hawaii.

EPA s decision about EDB qualified for a FIFRA Section 17(b) notice to foreign governments because it was the precursor to a severe reduction in tolerance levels for pesticide residues on produce and had potentially widespread environmental and economic implications. On October 22, the Department of State sent a five page cable about the emergency suspension of EDB to all American embassies. Like other Section 17(b) cables, this one consisted of a short introduction for embassy officials and a text with background information and a description of EPA s decision. The author tracked this cable and discussed it with American and foreign government officials in Kenya, Senegal and Zambia.[80] In

79. *Directive on the Supervision and Control Within the European Community of the Transfrontier Shipment of Hazardous Waste*, 27 O.J. EUR. COMM. (No. L 326) 31 (1984).

80. This research was funded by EPA and UNEP The opinions expressed in this article belong to the author alone and should not be attributed to either agency.

addition, the U.S. Agency for International Development's (AID) Regional Pesticide Adviser for East and Southern Africa, who was based in Zambia, gathered some information about transmittals of the EDB notice in Burundi, Lesotho, Swaziland and Zimbabwe.

2. American embassy receipt of FIFRA notices

There are no formal procedures governing the processing of a FIFRA notice once it arrives at an American embassy In the absence of any specific instructions, the Communications Program Unit at each embassy distributes incoming cables to embassy staff.

In Burundi, Lesotho, Senegal and Zambia, the cable about the EDB decision was sent to the economic office. In Kenya, the economic office of the embassy had previously received such cables, but the EDB cable was sent to the agricultural attache. In Swaziland, the American charge d'affaires received the cable. In Senegal and Lesotho, the economic office received the cable and sent a copy to the local U.S. AID office. In Lesotho, the embassy s economic office coordinated with the AID office on notifying the host government. AID's Regional Pesticide Adviser learned infor mally about the EDB notice from the author and a local U.S. embassy official, but would not ordinarily have been notified.

3. Transmitting notices to host governments

Some of the embassies forwarded a copy of the cable as it was received, some had it retyped to improve legibility and some summarized its contents in a diplomatic note. Five of the seven embassies surveyed notified the Ministry of Foreign Affairs. In two cases, that was the only host government office notified. Two embassies also notified the Ministry of Agriculture, and a third notified the parastatal company responsible for tobacco.

The agricultural office in Kenya, the economic office in Sene gal, and the AID offices in Lesotho and Zambia notified a larger number of organizations. These included ministries of agriculture, health, and environment, agricultural parastatals, agricultural research centers, and environmental organizations. It is noteworthy that in three of the four American offices that provided this more extensive coverage, the responsible official worked on agricultural matters.

This was the first time that a notice in Kenya was handled by the agricultural attache. Previous notices had been processed by the economic office, which only sent them to the Ministry of Envi-

ronment and Natural Resources (which is not responsible for agriculture) and to a local environmental group. This was also the first time that the economic office in Senegal gave a FIFRA notice such wide coverage. Previously the economic office had sent FIFRA notices to only one or two government offices. However when the EDB notice arrived, the new economic officer asked his staff to compile a list of addressees who should receive incoming information about pesticides. None of the American embassies surveyed had received any reaction from their host governments about FIFRA information.

4. Transmission within foreign governments

Most notices sent to government agencies, particularly those sent by non-agricultural officers, were addressed to senior officials such as the Minister or the Permanent Secretary Some of these central offices were able to confirm receipt of the EDB notice, but most could not. None of the offices visited had any rec ord of further processing. Not a single foreign government official with direct responsibility for pesticides reported receiving a copy of the EDB notice through his central ministry office. The only ones who knew of the notice were those to whom notices were mailed directly or who learned about it through the author s survey One problem was undoubtedly that most offices receiving the notice did not appreciate its significance and may not have been responsible for pesticides. Another reason for failure of the notice to circulate may have been the fact that many government agencies in developing countries have few functioning copying machines, and poor telephone facilities. Communicating with laboratory and research facilities can be especially awkward because they are often located far from the main ministry building, sometimes in a different city

Of the seven countries surveyed, only in Kenya did any government official recall ever having seen a FIFRA notice before. The Senior Pesticide Chemist at the National Agricultural Laboratory recalled that a few years earlier the Ministry of Agriculture issued circulars banning the use of 2,4,5-T and 1,2 dichloropropene about two to three months after receiving notices from the U.S. Embassy The general manager of Kenya s National Cereals and Produce Board vaguely remembered receiving information from the United States about the hazards of DDT malathion and chlo-

roform. More recently there have been local news stories that the Kenyan government may ban the sale of DDT [81]

5. Reaction of foreign officials to the EDB notice

Several officials, especially those in agricultural ministries, said that they would give considerable weight to regulatory decisions of EPA, and that they would like to know if unregistered or se verely restricted pesticides were being imported from the United States. None of the officials interviewed had received similar notices from any other foreign governments or international organizations. Most people who read the five page EDB notice thought that it was clearly written and provided adequate information, although some embassy officers complained that there was too much scientific or regulatory jargon. Foreign officials would have liked more clarification of several points—references to groundwater contamination, the major risks and benefits evaluated by EPA, the names of trade products containing EDB, safe disposal methods for unwanted EDB stocks, and the availability of alternative pesticides.

a. Kenya

It was unclear whether EDB was being used in Kenya. Some officials said that it was in use, while others stated that only methyl bromide was used. The Senior Pesticide Chemist, who believed EDB was not presently in use, said that he would still ask the newly formed Kenyan Chemical Products Control Board to review the EDB notice. The Kenyan Ministry of Health requested additional information about EDB, including health and safety effects.

b. Senegal

EDB has been used in Senegal to fumigate export shipments of peanuts in their shells. During late 1983, the training center in the Ministry of Agriculture obtained some EDB from France which it planned to use for the first time to fumigate soil for vegetables. The Ministry decided to switch to EDB because of growing pest resistance to the soil fumigant previously used. After learning of the EDB notice, the director of the training center said

81. The Weekly Review, Sept. 12, 1986, at 22 3; Sept. 19, 1986, at 19; Nov. 7 1986, at 24-5 (Nairobi).

that he would delay distribution of the EDB. He thought that the center would probably distribute its EDB stock for the next planting season, and consider requesting a different pesticide after that.

In Senegal, the author encountered an example of the differences that may occur between American priorities and those of another government. Senegal has serious agricultural problems from nematodes—microscopic worms which invade the roots of susceptible plants, including peanuts. The Senegalese office of ORSTOM,[82] a French research organization, was experimenting with both EDB and dibromochloropropane (DBCP) as soil fumigants for nematodes. EPA cancelled the American registration of DBCP in 1981, because its use was associated with severe human health risks, including male sterility in workers who handled DBCP

ORSTOM's experiments with EDB and DBCP had produced striking results. In some cases, productivity doubled or tripled and soil remained free of nematodes for up to four years after treatment, especially with DBCP The ORSTOM scientists believed that there was much less chance of environmental harm in the peanut regions of Senegal than in the United States. Preliminary studies showed that both pesticides change to a harmless state much more quickly in Senegal because of intense solar radiation and high soil temperatures. Also, the scientists thought that there would be less chance of any harmful residues contaminating groundwater than in the United States because Senegal has an arid climate and low water tables.[83]

The Senegalese Ministry of Agriculture and Water Development was preparing for field tests to learn more about EDB and DBCP including their environmental and health effects. The Ministry had asked officials at U.S. AID's office in Dakar for assistance in conducting their experiments. Although the AID officials would have liked to participate, they were obliged to refuse this request because AID Headquarters had informed them that the project would not qualify under Agency regulations that restrict the use in development projects of pesticides that are severely re

82. ORSTOM is the acronym for l'Office de la Recherche Scientifique et Technique Outre-Mer (Bureau for Overseas Scientific and Technological Research).

83. The author did not learn whether ORSTOM was also assessing the potential health effects of DBCP and EDB on Senegalese workers who might come into contact with them.

stricted or not registered in the United States.[84] Both Senegalese and American officials in Dakar expressed great frustration with this situation. They thought that despite the restricted status of EDB and DBCP in the United States, further experimentation in Senegal was warranted. The Ministry of Agriculture and Water Development had been trying unsuccessfully to find an alternative pesticide that would be effective against nematodes and would be eligible for AID assistance. The AID officials were troubled at not being able to support what they regarded as one of the most important agricultural development projects in Senegal.

c. Zambia

In Zambia, EDB is used as a soil fumigant. About sixty percent is used for tobacco, and the rest for vegetables. A purchasing officer for the National Agricultural Marketing Board, a parastatal company said that he was hoping to phase out imports of EDB and paraquat if he could find an effective and affordable substitute, because of reports he had heard about them when he visited the United States the year before. His trip had coincided with publicity about the discovery of EDB in groundwater supplies in Florida.

6. Export Notices

The author showed a sample FIFRA Section 17(a) export notice to the foreign officials whom she interviewed. The notice consisted of a foreign buyer s letter to an American seller ac knowledging that the pesticide he was purchasing was not registered in the United States. It was accompanied by a one to twelve page handout from EPA that briefly explained the meaning of the notice and indicated whether the pesticide was unregistered or whether its registration had been cancelled or denied. The handout identified the office at EPA that could provide additional information. Everyone agreed that this was sufficient information to serve as an initial warning. However many officials would have

84. 22 C.F.R. § 216 (1986). *See also* BUREAU FOR PROGRAM AND POLICY COORDINATION, AGENCY FOR INTERNATIONAL DEVELOPMENT, POLICY ON PESTICIDE SUPPORT (May 1978). In addition to general procedures for assessing the environmental impact of AID projects, 22 C.F.R. § 216.3 (1985), the regulations require additional scrutiny of all projects involving the use of pesticides, especially if the pesticides are banned or restricted in the United States, 22 C.F.R. § 216.3(b) (1985).

liked to know what the risks were and why the pesticide was not registered.

Foreign and American officials in each country were asked to estimate how long it would take the local government to respond to a U.S. request for permission to export an unregistered or severely restricted pesticide. The estimates were two or three months for Kenya, one or two months for Senegal and six months for Zambia. The Kenyan estimate was based in part on the amount of time it took for the government to resolve a public controversy about whether to permit the sale of toothpastes containing fluoride.

Foreign government reactions to the idea of requiring their prior consent for pesticide imports ranged from favorable to lukewarm. Kenyan officials were most positive. Several Zambian officials said that they would prefer to have shipments proceed if they did not object within a fixed period of time; some of them were more concerned about reduced availability of certain pesticides if the United States were to restrict their registrations. Senegalese officials, who did not have a strong reaction, said that if it became too burdensome to purchase American pesticides, they would buy them elsewhere.

American embassy and AID officials were skeptical about the idea of requiring prior approval each year for certain classes of pesticides. They thought that it would be hard to get a response from foreign officials because of bureaucratic inefficiency and a probable reluctance to take responsibility for affirmative decisions on this issue. Some American officials thought that foreign governments might view this approach as putting undue pressure on them. Another common reaction was that this would create a new opportunity for foreign officials to collect bribes. There was also concern that while American companies might be able to afford the extra paperwork, delay and expense, many foreign purchasers could not. Some interviewees wondered whether the United States would be using valuable resources for marginal effects, and thought that it might be more effective simply to ban the export of unregistered and severely restricted pesticides.

B. *Study of the TSCA Export Notification Program*

During 1985, the office that administers EPA's international notification program under TSCA hired a consulting firm to review

EPA s export notification program under Section 12(b).[85] The main purpose was to study EPA s internal resource management, but the consultants also considered the effectiveness of the program. They did not study notification of regulatory actions. The consultants interviewed officials at sixteen foreign embassies, about one-third of them from developing countries.[86] Each of the embassies had been sent at least one export notice in the previous two years.

As noted above, the purpose of the TSCA export notification program is only to inform importing governments when chemicals entering their country from the United States are subject to certain regulations there. Interviewees said that the notices they received did perform this function. The notices would not have been adequate for purposes of trying to stop unwanted shipments; they arrived too late and contained too little information. The people interviewed were most interested in information about banned and severely restricted chemicals (as opposed, for example, to chemicals subject to proposed or final testing requirements). Some foreign officials suggested that the notices use less bureaucratic and scientific jargon. Several, especially those from developing countries, were confused about the distinctions among the TSCA, FIFRA and RCRA notification programs, and suggested harmonizing the programs where possible.

The study found a striking dichotomy between industrial and developing countries. The officials of most developing countries said that the notices could be extremely helpful because their governments did not participate in an information exchange program, and they lacked sufficient resources to monitor U.S. regulatory activities independently In contrast, industrial government officials said the notices were not critically important, since their governments were already well-informed about American regulation of potentially toxic chemicals. They routinely monitored relevant Federal Register notices, and often received notice from other channels, such as the OECD Complementary Information Exchange Scheme. They thought that the notices might help their home ministries to update their data bases or to double-check on imports of a particular substance.

85. Jellinek, *supra* note 49, at 18-21.

86. Brazil, Canada, Czechoslovakia, Denmark, Egypt, Federal Republic of Germany, France, Italy, Japan, Malaysia, Holland, Philippines, Saudi Arabia, Switzerland, Trinidad and Tobago, United Kingdom, Venezuela. *Id.* at Appendix E.

All but two of the sixteen embassies interviewed had records of having received the notices that EPA sent to them, even though one-quarter of the people to whom the notices were addressed (according to previous requests by their embassies) were no longer posted in Washington, D C. The interviewees noted that it took two to six weeks for them to forward the notices to their home ministries, and they did not know whether the notices ever reached anyone who could use them. Only one embassy distributed copies of notices widely to its home government ministries. None of the foreign officers knew of any significant action that his government had taken as a result of a TSCA export notice. Only four people showed active interest in the Section 12(b) notification program. This low response was consistent with the experience of the TSCA office; although it has sent out hundreds of notices, there have been only ten to fifteen inquiries since the program began in 1978.

III. ANALYSIS AND RECOMMENDATIONS

The studies of the FIFRA and TSCA notification programs show that the difficulties with information exchange identified in 1979 at the U.S. government s international conference on pesticide management still exist.[87] Even under the detailed American programs, developing countries have trouble obtaining adequate information for decision making; information still does not reach the appropriate people in most instances, and obtaining additional information can be cumbersome. To completely eliminate these problems is not feasible, but it is possible to strike an adequate balance between minimizing administrative burdens and maximizing program effectiveness.

A. *Regulatory notices*

Officials in all seven countries surveyed about the EDB notice said that they would give great weight to regulatory decisions of EPA. Previous decisions by Kenyan officials to ban the use of cer tain pesticides on the basis of information that they received from the United States confirm the potential influence of an information exchange system. Until developing countries effectively es-

87 U.S. DEPARTMENT OF STATE AND U.S. NATIONAL COMMITTEE FOR MAN AND THE BIOSPHERE, PROCEEDINGS OF THE U.S. STRATEGY CONFERENCE ON PESTICIDE MANAGEMENT, NO. 629-322/1302 3 (1980).

tablish their own regulatory programs, their ability to make independent use of information they receive will be quite limited. For the most part, they will simply have to rely on the judgments of industrial countries. However as developing countries advance their domestic programs, the availability of detailed regulatory information will prove increasingly useful. In the long run, this kind of information will probably be more important than notices about specific export shipments.

All regulatory information about dangerous chemicals is potentially useful for developing countries. However governments should be careful to avoid overwhelming the capacities of any information exchange program. The current scope of the TSCA notification program about regulatory actions is much too broad. The author recommends following the approach of the FIFRA program by limiting regulatory notices to final decisions likely to have international significance. Information about acute health effects is probably of the most immediate importance. Information exchange programs about regulatory actions should continue to focus most heavily on pesticides because of their prevalence and the likelihood of human exposure, as well as environmental contamination. Standardizing the types of information provided will help to minimize the confusion that arises from differences among the American FIFRA, TSCA and RCRA notification programs. As developing countries become increasingly industrialized and their need for information exchange about such other subjects as toxic substances, hazardous waste and air toxics grows, new information exchange programs should be integrated with existing efforts. As the scope of such programs increases, governments will have to be more selective in deciding what information should be included, to avoid overburdening the system.

Notices should be brief and easy to read, with a minimum of scientific and bureaucratic language. Their purpose is simply to alert readers and to explain how they can obtain more information. Simple notices will be easier for the originator to prepare, and are more likely to be read and circulated by recipients. This aspect will be increasingly important as information exchange programs become more widespread and the volume of regulatory notices increases. Governments and interested organizations should encourage developing a standardized format for notices. A good example is the form designed for UNEP's provisional no-

tification scheme. This simple two-page document clearly identifies the chemical in question, summarizes the control action and the reasons supporting it, and explains how to obtain additional information.[88] One item the UNEP form lacks that would probably be helpful is a brief description of the primary crops and pests for which the chemical is used, including uncontrolled uses. This would assist readers in deciding whether the notice was likely to be relevant to their countries. Additional information that interested recipients would probably request includes the evaluated risks, benefits and costs, safe disposal methods for unwanted stocks of the regulated chemical, and suggestions for alternative chemicals whose use poses fewer hazards.

There is no inherent reason why notices of regulatory actions should go through diplomatic channels. Both studies of the American notification system showed that embassies—whether American embassies abroad or foreign embassies in the United States—are not effective as distribution points (except, perhaps, where agricultural officers are responsible for pesticide notices): their staffs have many responsibilities; there is rarely anyone familiar with environmental issues; and it is difficult for embassy staffs to identify the best people to receive the notices. Even if embassy officials receive adequate guidance from the transmitting government, regulatory notices are likely to receive low priority sketchy distribution, and inadequate follow-up where additional information is requested. It would be far more effective to follow the lead of the UNEP and FAO programs, and send notices through the IRPTC to designated recipients in each country.[89] This would facilitate distribution in several ways. Those transmitting the notices would be familiar with the information exchange programs and appreciate their importance. Maintaining a central

88. The U.N.E.P form, entitled "Notification of control action, includes the following information: (1) country; (2) ministry/department and responsible authority; (3) name(s) of chemical (chemical name, common name, trade name(s); (4) specification (e.g., for pesticides); (5) code numbers (Chemical Abstract Service registration number, Customs Cooperation Council number and any other relevant number); (6) description of the control action (ban or restriction, uses controlled and summary of control action, effective date, reference number to national document); (7) reasons supporting the control action; (8) contact point for additional information; (9) designated national authority; (10) name and title of official issuing the notification; and (11) date. U.N. Doc. No. EP/WG.112/2, Annex III (Nov. 23, 1984).

89. Participants should provide the title and office of designated recipients, rather than their names. This will minimize the problem identified in Jellinek, *supra* note 49, where many named recipients were no longer working at the same job.

distribution point would reduce transaction costs. Another advantage of using the IRPTC would be its availability as a central repository of information available to all governments.

One problem the studies of the American programs identified that use of the IRPTC might not fully cure is the poor transmission of notices within developing countries. Regulatory notices should receive wide distribution in developing countries to help compensate for the limited availability of scientific information.[90] In programs where foreign embassies are responsible for distributing regulatory notices, a list of suggested recipient offices should be included with the instructions for transmittal. However where the IRPTC is responsible for distributing notices, it is probably not practical to have more than one designated recipient in each country The explanation accompanying notices should encourage recipients to distribute the information to a suggested list of potentially interested parties.

For regulatory notification programs that continued to rely on diplomatic channels for distribution, it would be more effective to follow the FIFRA and RCRA practice of using the notifying government s embassies abroad, rather than the TSCA practice of notifying the recipient government s embassy The embassies re sponsible for transmission should be directed to coordinate with any other appropriate organizations of their own government, such as U.S. AID for distribution of American notices about pesticides.

B. *Export Notices*

Most industrial countries already regulate the import of pesticides and other chemicals.[91] As the TSCA study showed, export notices are primarily useful for them as monitoring and enforce ment tools. However for many developing countries, export notices may be the *only* means of readily identifying which banned or severely restricted substances are being imported. As a practical matter export notification programs will not help developing countries to regulate specific imports unless the programs require prior consent—in which case they can serve as a partial substitute

90. It would be helpful if notices were sent to the technical directors in key government agencies, parastatal companies, major laboratories, farmers cooperatives, environmental and consumer groups, and local trade associations.

91. The author questions whether the value of sending export notices to countries of transit will justify the administrative burden involved.

for import licensing. Requiring prior consent will greatly affect the structure of an export notification program, as demonstrated by the contrast between the minimal requirements of the UNEP and OECD guidelines, and the extensive requirements of the new American hazardous waste regulations. The American and Dutch programs show that a prior consent program places more constraints on the exporting and importing governments, as well as on the seller and buyer The author advocates requiring prior consent only for trade in toxic substances that have no beneficial use, such as hazardous waste.

Requiring prior consent is based on an assumption that the importing government cannot otherwise adequately control movement of the regulated chemicals into its country and that the resulting problems can be so severe that the exporting government and seller should provide a substitute for that control. The Dutch program makes this assumption explicit by requiring notice and prior consent only for shipments to developing countries. As a practical matter requiring affirmative approval from the importing government will probably tip the scales against imports, especially in developing countries. The estimate under the proposed RCRA regulations of thirty days for a government to decide whether to permit an import is much too short. The decision making process will often take much longer than that; African and American officials estimated between two and six months. Such delays are likely to interfere with trade and the proposed use of pesticides that would have to be imported in time for specific agricultural seasons. Also, government officials in developing countries may be reluctant to accept formal responsibility for approving imports in such a program, particularly if there are no official guidelines for making their decisions.[92]

When focusing on the need to reduce hazards associated with pesticides and other toxic chemicals, it may seem appealing to favor the most restrictive controls on international trade. However especially in the case of pesticide use in developing countries, this approach may interfere with related and equally important goals—improving agricultural production and reduc ing insect-borne diseases. Placing too many restrictions on trade may make it more difficult and expensive for developing countries

92. The speculation of some American embassy officials about the likely influence of bribery is concern, but how to avoid this potential problem is unclear.

to obtain pesticides suited to their needs, and greatly increase the burden on companies involved in international trade.[93]

In general, the author believes that the benefits of requiring prior consent for exports of most dangerous substances will be marginal, compared to the costs. Virtually *all* chemicals, including pesticides, can harm human health and the environment; and different governments may legitimately assess costs and benefits differently Using prior consent seems a simplistic, cumbersome and generally ineffective way to try to compensate for the real problem, which is the lack of effective domestic regulation and control in many developing countries. The exception may be for exports of hazardous waste, where requiring prior consent probably makes better sense. By definition, hazardous waste has no beneficial use, and improper disposal may create enormous long-term problems that are exceptionally difficult and expensive to solve. Hazardous waste is already subject to extensive reporting requirements in industrial countries. The burdens on government and industry of requiring prior consent are therefore of less concern, since they are merely an extension of already detailed tracking programs.

A less restrictive alternative to controlling exports would be the approach taken by the EEC for shipments of pesticides and other toxic substances. This program requires prior notice, but allows a shipment to proceed if there is no objection within a limited period of time. To minimize delay the program could set a relatively short decision making time, such as one month, and allow the importing government to request a limited extension. This approach would probably provide more protection in appearance than in actual effect, but governments could consider it as a middle ground.

Export notices should apply to the same kinds of chemicals as discussed above for regulatory notices. The UNEP form used in its provisional export notification scheme is a good model. It provides similar information to the UNEP notices of regulatory ac tion.[94] To assist the receiving government in determining

93. U.N. Economic and Social Council, *supra* note 13; *Ad Hoc Meeting on the Influence of Environmental Protection Measures on the Development of Pesticide Production and Consumption*, *supra* note 23.

94. UNEP form, *supra* note 88; country(ies) of destination; designated national authority in country(ies) of destination; relevant control action (date when notice was sent or else copy of notice attached); information regarding export; designated national authority;

whether and how to react, the notifying government should include the following information about the export: the regulatory status of the chemical and the underlying reasons, the identity of the importer the quantity shipped, the date of export, and the means of transport to the importing country Where prior consent is required, clear and direct communications should be especially important.

The author suggests using the IRPTC for transmittal of export notices that are for informational purposes only [95] Programs such as the current American FIFRA, TSCA and RCRA systems, that do not rely on the IRPTC to transmit notices, should still use the IRPTC's list of designated recipients.

Under the recently proposed FIFRA amendments, the coalition and House versions would make exporters responsible for notifying foreign governments, whereas the Senate version would maintain this as a duty of EPA and the Department of State. Who has responsibility for transmitting informational export notices is secondary so long as the notices reach their proper destinations. Requiring exporters to transmit these notices directly abroad may be preferable because it is less cumbersome. However instead of requiring exporters to provide EPA with proof of delivery the author would require proof of transmittal by air mail. This would eliminate the difficulty of obtaining reliable confirmation of delivery especially for notices sent to developing countries. Also, proof of mailing would reach EPA much more quickly than proof of delivery If EPA received export notices well before the date of shipment, the agency would have the opportunity (even if rarely exercised) to inspect shipments for appropriate labeling and packaging before they left the country and to react to any peculiarly sensitive political concerns.

name and title of official providing this information; and date. U.N. Doc. EP/WG.112/2, Annex IV (Nov. 23, 1984).

95. Using the IRPTC could cause problems in the United States where company has claimed that the required notice contains confidential business information (CBI) that is protected from disclosure under 40 C.F.R. § 2 (1986) (rules governing disclosure of EPA documents). It should be possible in most cases to provide basic notice to foreign government without violating legitimate business confidentiality. Nevertheless, as American law is now structured, there are no restrictions on what information company can claim as CBI, and reviewing claim to determine its validity is time-consuming process. If valid CBI claims should become problem, one possible solution would be to promulgate generic regulation that exempts from CBI protection certain information that is required for export notices.

All three versions of the proposed FIFRA amendments would continue to require American exporters to notify foreign importers about the regulatory status of the pesticide to be shipped. The author questions the practical value of this requirement. There is little reason to believe that foreign purchasers have more scruples than American sellers about sales of banned or restricted pesticides. The regulatory status of such pesticides seems unlikely to influence an importer unless he must consider domestic import restrictions or product liability laws—and in that case, the importer will presumably request this information prior to concluding the sales contract. It would be interesting to learn what, if any evidence there is that FIFRA export notices have affected the decisions of pesticide importers.

Export notices that require prior consent should be sent through diplomatic channels, in light of their potential political sensitivity and the need for accurate communication. This argues against contacting foreign embassies based in the exporting country because of slow communication with their home ministries, and the difficulties they may have in identifying the appropriate official to respond. Export notices regarding prior consent should be cabled directly to the exporting government's embassy in the importing country with sufficient guidance to enable the embassy to respond effectively [96] As in the American RCRA program, more detailed regulatory information should be sent promptly by diplomatic pouch.

Except for the American systems, most of the export notification programs require notice only the first time that a chemical is exported to a particular country The likelihood of a government benefiting from a one-time export notice will undoubtedly decrease as time passes. This applies to an organization with the regulatory authorities and sophisticated information storage and retrieval capabilities of EPA, and even more so to a government agency in a developing country In the case of the EEC program, this drawback may not be pressing; all the participating countries are industrialized and will likely rely on the program as a supplementary rather than as a primary source of information and con-

96. The author recommends cabling information about exports to the exporting country' embassy, instead of directly to foreign officials, because of the potential political sensitivity, the frequent changes in the assignments of responsible officials (as found in Jellinek, *supra* note 49), and poor communications systems, particularly in developing countries.

trol. However for developing countries, the author predicts that the UNEP and FAO systems of one-time export notification will have little practical value.[97] Requiring export notification every one or two years would be far more helpful to governments, espe cially in developing countries, that want to monitor and intelligently respond to imports of dangerous substances.[98]

C. *Limitations*

No matter how well the mechanisms of an international infor mation exchange program work, there will be significant limitations to its effectiveness. First, international information exchange does not cover domestic activities within countries receiving the information. Second, countries without established regulatory programs often cannot readily circulate, evaluate and apply the information they receive. Third, information exchange can only supplement—not substitute for—the more demanding actions that are needed to minimize the harmful impact of pesticides and other hazardous substances in developing countries.

As more production of basic ingredients and formulation of finished products occurs in developing countries, their governments will be faced with growing internal movement of chemicals that cannot be identified through export notification programs and are not manufactured (and therefore not regulated) in industrial countries. Most developing countries do not yet have adequate infrastructures for processing the information they receive through information exchange programs. Many of them have not yet established requirements for pesticide registration or import licensing. They are even more unlikely to regulate other toxic chemicals and hazardous waste because the dangers are less publicized and understood. This lack of infrastructure means that de veloping countries are usually unable to perform the sophisticated scientific and policy analysis necessary to adjust the findings of industrial countries to their own circumstances.[99] Even where the scientific findings of industrial countries apply

97 The inadequacy of this system may be mitigated insofar as the IRPTC maintains records that would enable government to obtain list of all export notices that had ever been sent to it through this channel.

98. If the volume of notices becomes problem, participants could consider sending them at set intervals, such as quarterly.

99. *See generally* Ashford & Ayers, *Policy Issues for Consideration in Transferring Technology to Developing Countries*, 12 ECOLOGY L.Q. 871 (1985).

equally to circumstances in developing countries, the governments of developing countries may legitimately assess risks, benefits and cost-effectiveness differently [100] For example, a risk of major concern to Americans, such as carcinogenicity may weigh much less heavily in a country with a high infant mortality rate and low average life expectancy [101] Similarly chemicals that are relatively inexpensive and safe for human use may be a better choice in a developing country than more expensive chemicals that pose less of an environmental threat but are more expensive and virtually impossible to use safely under existing conditions.[102]

The fact that few developing countries have the ability to evaluate independently the information that they receive restricts its value considerably If EPA bans a particular pesticide because it presents unreasonable risks based on American conditions and values, the governments of developing countries can either follow suit or not. Thus, information exchange programs, combined with international and domestic public pressure, may encourage developing countries to adopt without critical examination the research and regulatory decisions of industrial countries.

D *Need for other actions*

Information exchange is only one means to a larger goal. The international community should not lose sight of the many other actions that are necessary to reduce the risks of pesticides and other hazardous substances.[103] Governments are already studying how to prevent and respond to sudden releases of toxic materials, such as occurred at Bhopal. The need for better labeling and packaging of toxic substances is also well known and is the subject of both regulation and voluntary programs. Other areas that need continuing attention are the development and implementation of domestic regulatory programs, improved extension training services, increased research on the environ-

100. U.N. ECONOMIC AND SOCIAL COUNCIL, *supra* note 13, at 85-7 The flexibility of developing countries in choosing pesticides for export crops will inevitably be restricted as industrial governments respond to the hazards of pesticide residues on imported products by setting more stringent residue tolerances.

101. The Dutch notification system recognizes this point by emphasizing chemicals with acute, rather than chronic, health effects.

102. This consideration has figured in the current debate on whether to restrict or ban the use of DDT in Kenya. *See* The Weekly Review, Nov. 7 1986, at 25 (Nairobi).

103. D. BULL, *supra* note 1, at 87-161.

mental effects of pesticides and other hazardous chemicals in tropical and sub-tropical climates, finding safe disposal methods in such places, and designing equipment and protective clothing that are better suited for use in hot climates. Another important area is "integrated pest management," which encompasses a wide range of techniques that strive to reduce dependency on chemical pesticides by combining them with other means of pest management. While primary responsibility for many of these efforts lies with developing countries, the international community as a whole will have to continue providing extensive support.

CONCLUSION

International exchange of information can help developing countries to control pesticides and other toxic substances. At least for the time being, many developing countries will have to rely on industrial countries for help in controlling the movement in trade of toxic substances including pesticides. Industrial nations act in their own self-interest by providing other countries with clear information that will assist effective regulation.

The most helpful of the measures discussed in this article is likely to be the dissemination of news about regulatory actions taken by industrial countries. As developing countries establish their own regulatory programs, notices about specific export shipments are likely to become more helpful. In the author's view the costs of requiring importing nations to give prior consent for certain export shipments are likely to outweigh the potential benefits; exports of hazardous wastes may be an exception where requiring prior consent is warranted.

Since any program conducted by a single government can produce only limited results, it is vital to continue efforts to coordinate notification programs of various nations and organizations. Legislation in industrial countries, such as that already in effect in the United States, can serve as a model for other programs. Studies of the American system have shown that unless information exchange programs are designed to reach people who can effec tively use the material provided, a great deal of effort can be ex pended with few practical results. Information exchange programs are not an adequate substitute for domestic regulation of pesticides and other toxic substances by developing countries. The international community needs to supplement information exhange programs with more fundamental help. However infor

mation exchange is a readily available step that governments can take now as they grapple with the larger challenge of effectively controlling the technologies that they have fostered.