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International Pesticide Trade: Is There Any Hope for the Effective Regulation of Controlled Substances

by

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INTERNATIONAL PESTICIDE TRADE: IS THERE ANY HOPE FOR THE EFFECTIVE REGULATION OF CONTROLLED SUBSTANCES?

JEFFERSON D. REYNOLDS*

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I. INTRODUCTION

> "My pregnancy was so normal, . . . they didn't even do an ultrasound test. Two or three days after the birth, I found out something was terribly wrong." The child of Eugenia Mejias was born with a swollen brain, an exposed and twisted spine, as well as deformed hands and feet. Like many other parents in developing countries, Eugenia Mejias' child was the victim of pesticide exposure.[1]

In the last decade, the international community has grown increasingly concerned with pesticides and their effects on human health and the environment, with particular emphasis on the threat

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1. Lake Sagaris, *Conspiracy of Silence in Chile's Fields: Pesticide Spraying of Fruit Results in High Levels of Birth Defects*, MONTREAL GAZETTE, Nov. 27, 1995, at C2. The article indicates that the most exposed parents in Chile work in the fruit-export industry and that the rise in birth defects coincides with the increase in the import of pesticides in Chile from $4 million to $38 million. *See id.*

posed in developing countries.[2] Workers in developing countries are exposed to pesticides in the course of their work to provide produce for domestic consumption as well as for export to developed countries like the United States (U.S.).[3] Because export dollars are so valuable to developing countries, there is added pressure to produce a higher yield of produce. These countries often obtain a higher yield through the use of pesticides considered too dangerous to use in developed countries.[4] Therein lies the crisis, large international corporations are able to sell pesticides abroad that cannot be sold in the U.S. These corporations sell pesticides that are classified as so harmful to human health and the environment, that their use cannot be justified for any purpose.[5] In response to worldwide concerns, the United Nations has advanced some important initiatives to regulate the international pesticide trade. For example, in 1985 the United Nations Food and Agriculture Organization (FAO) published the International Code of Conduct (Code) on the Distribution and Use of Pesticides,[6] giving participating countries a formal method to refuse or consent to hazardous imports. FAO designated this method the "Prior Informed Consent" (PIC) procedure.[7] Developed and developing countries alike welcomed PIC because this procedure possesses a common sense approach to the problem by providing an important link in the transfer of information on pesticides to developing countries that otherwise would not have access to the information.[8]

The United Nations London Guidelines for the Exchange of Information on Chemicals in International Trade (London Guidelines)[9] and United Nations Codex Alimentarius Commission

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2. The World Health Organization (WHO) estimates that in developing countries there is a minimum of one million unintentional and two million intentional cases of acute pesticide poisonings resulting in over 220,000 deaths each year. *See* Division of Health & Environment et al., *Pesticides and Health in the Americas*, Envt'l Series No. 12, at 15 (Feb. 1993) [hereinafter *Pesticides & Health*].

3. *See id.*

4. *See* Food & Agricultural Organization of the U.N., *International Code of Conduct on the Distribution and Use of Pesticides*, U.N. Doc. M/R8130/E/5.86/1/3000 (1986), *reprinted* in 10 Int'l. Envt. Rep. (BNA) No. 3 at 3002-07 (Mar. 11, 1987) [hereinafter *Code of Conduct*].

5. *See id.*

6. *See id.*

7. *See id.*

8. *See id.*

9. *See* London Guidelines for the Exchange of Information on Chemicals in International Trade, U.N. Doc. UNEP/GC.15/9/Add.2/Supp. 3 and Corr.1, Appendix; *amended*, Governing Council Decision 15/30, U.N. Doc. UNEP/GC. 15/12, Annex II, at 17 (1989) [hereinafter London Guidelines].

(Codex)[10] represent more recent efforts to regulate pesticide trade. The London Guidelines attempt to incorporate PIC procedures while Codex attempts to harmonize standards for maximum residue levels (MRLs) for participating nations.[11] The most frequent criticism of these efforts is that they are voluntary, providing no enforcement scheme to ensure that PIC requirements are followed before pesticides are exported.[12]

Part II of this article describes why there is a need for improved regulation with a discussion of the impact conventional use of pesticides has on human health and the environment. Part III discusses the concept of PIC. Part IV examines the substantive provisions of the London Guidelines and compares them to similar conventions attempting to control trade in pesticides. Part V reviews the substantive provisions of the FAO Code of Conduct. Part VI examines the substantive provisions of the Codex. Part VII reviews the U.S. regulatory initiatives and areas where they fail to address international concerns. This is followed by Part VIII which illustrates the U.S.'s history of neglect of pesticide trade and how this neglect may effect U.S. consumers. Part IX concludes that not only are improved exposure intervention programs needed, but nations and industries should follow stricter notification and consent procedures.

II. THE NEED FOR FURTHER REGULATION

The list of the world's most hazardous agrichemicals, originally called the "dirty dozen," has grown from twelve to eighteen.[13] U.S. manufacturers recently exported fifty-eight million pounds of these pesticides to more than twelve countries.[14] Notwithstanding regulatory obstacles in importing countries, eleven million pounds of the pesticides have been exported to countries where they are officially banned.[15] For example, even though Singapore banned Chlordane

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10. *See* Joint Food & Agriculture Organization of the United Nations/World Health Organization Food Standards Program, Codex Alimentarius Commission Procedural Manual (8th ed. 1993) [hereinafter Codex].

11. *See id.* at 17.

12. *See CSD Says More Action Needed to Blend Environmental Protection, Development*, 17 Int'l Envt. Rep. (BNA) 511 (June 15, 1994); *Pressure Mounting For United Nations to Mandate Prior Informed Consent Program*, 16 Chem. Reg. Rep. (BNA) 2337 (Mar. 5, 1993).

13. *See* Haider Rizvi, *U.S. Companies Continue to Export Banned Pesticides*, INTER PRESS SERVICE, GLOBAL INFO. NETWORK, Dec. 8, 1995 at 1, *available in* 1995 WL 10136181. The pesticides considered dangerous to human health and the environment include: Aldicarb, Camphechlor, Chlordane, Heptachlor, Chlordimeform, DBCP, DDT, Aldrin, Endrin, EDB, HCH/BHC, Lindane, Paraquat, Parathion, Methyl Parathion, PCP, and 2,4,5-T. *See id.*

14. *See id.*

15. *See id.*

more than a decade ago, manufacturers continue to export the chemical there.[16]

A small number of international corporations dominate the international pesticide market. The ten largest companies, all of which are based in Europe or the U.S., control seventy-three percent of the market share.[17] In 1994, the U.S. alone exported $1.9 billion worth, making it a key export industry for the U.S.[18] Transnational companies export much of their production outside the U.S. and Europe, where lack of information, resources and controls often result in misuse.[19] Many countries in the developing world have inadequate laws to ensure proper use of chemicals.[20] Where appropriate regulations exist, these countries often lack the resources necessary for implementation and enforcement.[21]

When pesticides leave U.S. shores for export, they are no longer subject to regulation. The U.S. ships pesticides to any country, which are then used for any purpose regardless of the risk to human health or the environment. For example, the U.S. shipped more than 114,600 tons of banned pesticides to developing nations between 1992 and 1994.[22] Although the requirement exists to specifically name exports in shipping manifests, the majority of the exports were unnamed.[23] Because agriculture is often the largest segment of the economy in developing countries, pesticide exporters naturally find a viable market. Since developing countries have limited resources, they have trouble regulating the pesticides imported to their area, due particularly to pressing concerns of economic development and political stability, which take priority over health and the

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16. *See id.* Other developing countries the U.S. exports the dirty dozen to include India, Zimbabwe, Costa Rica, Thailand, El Salvador and Brazil. The list may be much longer since almost 70% of export shipments are not listed as "hazardous pesticides" in customs records. *See id.*

17. *See* J. AGROW, FUTURE TRENDS IN THE AGRIBUSINESS INDUSTRY 140 (1990). The top 15 companies are all based in Western Europe or the U.S., led by Ciba Geigy (Swiss), ICI (UK), Bayer (German) and Rhone Poulenc (French). Others with annual sales above $1 billion include Zeneca, Monsanto, DuPont, Dow, Elanco, BASD, Cyanamid, and AgrEvo. Sumitomo, Sandoz, FMC, and Rohm & Haas all have annual sales below $1 billion. *See* Luci Young et al., *The Pesticide Market and Industry: A Global Perspective*, 31(1) BUS. ECON. (Jan. 1, 1996) at 6.

18. *See Domestic Pesticide Sales Up, Exports Down, ACPA Reports*, PESTICIDE & TOXIC CHEM. NEWS, 23 (37), July 12, 1995, at 1.

19. *See* Karen A. Goldberg, *Efforts to Prevent Misuse of Pesticides Exported to Developing Countries: Progressing Beyond Regulation and Notification*, 12 ECOLOGY L.Q. 1025, 1030 (1985).

20. *See id.*

21. *See Pesticides: Export of Unregistered Pesticides Is Not Adequately Monitored By EPA*, GAO/RCED-89-128 (Apr. 1989)[hereinafter 1989 *GAO Report*].

22. *See* N. Suresh, *Worldview Pesticides: U.S. Exports to Poor Nations Growing Study*, AMERICAN POLITICAL NETWORK GREENWIRE, July 10, 1996, at 1.

23. *See id.*; *see also* Bitte Hileman, *U.S. Exports Unnamed*, CHEMICAL & ENG'G NEWS, Mar. 4, 1996.

environment. The problem may also be overlooked because pesticides increase crop yield, which results in economic progress.

Presently, no international regulation or policy requires the pesticide industry to share responsibility for safety and efficiency in the distribution or application of pesticides. The effects of chemical misuse on human health and the environment, however, provide a strong incentive for international commitment to achieve an effective and comprehensive solution.

A. Adverse Effects of Pesticides

Pesticides play a vital role in protecting crops and livestock, as well as in controlling vector-borne diseases.[24] In many countries, pesticides also present significant dangers to people and the environment.[25] The danger to people arises from residues in food crops and livestock, as well as from the handling of pesticides by farmers.[26] Farm workers suffer from pesticide exposure the most, with an estimated 20,000 deaths each year.[27] Ninety-nine percent of these deaths occur in developing countries due to farming practices, storage of pesticides in living areas, location of residential areas near application sites, method of application and type of equipment used.[28] Pesticides also cause water pollution, soil degradation, insect resistance and resurgence, and the destruction of native flora and fauna.[29]

Of all the potential hazards of pesticides, the most serious is the risk to human health.[30] Adverse effects of exposure include cancer,

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24. *See* Roger D. Middlekauff, *Pesticide Residues in Food: Legal and Scientific Issues*, 42 FOOD DRUG COSM. L.J. 251 (1987).

25. *See id.*

26. *See id.*

27. *See id.*

28. *See* Jacobo Finkelman et al., *Environmental Epidemiology: A Project for Latin American and the Caribbean*, *in* Pan American Center for Human Ecology and Health, Division of Health and Environment, Pan American Health Organization, World Health Organization (1993), at 7; *see also* Philip Ngunjiri, *Environment: Stemming the Flow of Dangerous Chemicals*, INTER PRESS SERVICE, GLOBAL INFO. NETWORK, Sept. 24, 1996.

29. *See* BARBARA DINHAM, THE PESTICIDE HAZARD: A GLOBAL HEALTH AND ENVIRONMENTAL AUDIT 64 (1993) [hereinafter DINHAM].

30. *See* J. Jeyaratnam, *Acute Pesticide Poisoning: A Major Global Health Problem*, 43 WORLD HEALTH STAT. Q. 143 (1990); *see also* Robert Repetto & Sanjay S. Baliga, *Pesticides and the Immune System: The Public Health Risks*, World Resources Institute Executive Summary (Mar. 1996).

> Although systematic estimates of overall exposure are not available . . . farm workers, farm households, and consumers are probably exposed to dangerous levels of pesticides. Direct observations of farmers handling, spraying, and disposing of pesticides show that they can be significantly exposed at work. Observations of the way rural households in developing countries store pesticides, prepare food, bathe, obtain drinking water, and come near pesticide spray operations establish that rural household members can also be exposed through various

reproductive impairment, mutation and neuro-toxicity.[31] Recently, pesticides have also been found to cause endocrine disruption.[32] The pesticide bio-accumulates in human tissue, mimicking estrogen and disrupts regular hormonal activity.[33]

The high incidence of injury in developing countries primarily results from inadequate information on proper application methods, insufficient government resources to monitor pesticide use, and the greater availability of highly toxic substances than in developed nations.[34] For example, field and packing plant workers in Chile have little knowledge about the hazards of pesticides.[35] The workers wear no protective clothing and continue to work in the fields while airplanes or tractors pass by spraying produce.[36] The workers are primarily young, transient, uneducated individuals with little political influence to improve the situation.[37]

Common environmental problems associated with pesticides include contamination of water resources and insect resistance and resurgence.[38] Some pesticides deplete the ozone and exacerbate the greenhouse effect.[39] Further, diffuse aerial spraying of fields damages non-target crops and may destroy non-target species.[40] Pesticides that enter the waterways through run-off result in fish kills.[41]

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routes. These observations are confirmed by biological measurements of metallic and organochlorine pesticide residues in people's bodies and of acetylcholinesterase enzyme depletion, which indicates exposure to organophosphate pesticides. The presence of persistent bioaccumulative pesticide residues in foods, body tissues, and human breast milk indicate that even consumers far removed from agricultural operation can also be significantly exposed.

Id. at 1.

31. *See* Finkelman et al., *supra* note 28, at 171-79. Other effects of human exposure to pesticides can range from temporary illness such as excitation, headaches, tremors, blurred vision, cramps, dizziness and vomiting to severe and chronic health problems such as blood diseases, sterility, nerve damage, birth defects and comatose. *See id.* at 171-79.

32. *See Greenpeace Presses Global POPs Ban; PAN Hits U.S. Exports*, 23(52) PESTICIDE & TOXIC CHEM. NEWS, Oct. 25, 1995, at 2.

33. *See id.*

34. *See* Bruce Selcraig, *Costa Rica's Lethal Harvest*, 21 INT'L WILDLIFE 20, 22-24 (Nov-Dec. 1991); *see generally* Matuku A. Mwanthi & Violet N. Kimani, *Health Hazards of Pesticides*, 11 World Health Forum 430 (1990) (discussing pesticide use in Kenya); Association pour la Sauvegarde De l'Environment et le Development (ASED), *Report for the Pesticide Trust* (Apr. 14, 1992) (discussing pesticide use in Ecuador).

35. *See* Sagaris, *supra* note 1, at C2.

36. *See id.*

37. *See id.*

38. *See id.*

39. *See id.*

40. *See id.*

41. *See* THE PESTICIDES TRUST, THE FAO CODE: MISSING INGREDIENTS 29 (1989). Widespread fish kills were reported in Egyptian irrigation canals, lakes and coastal areas of the Nile because of disposal of left-over pesticides, washing of containers previously holding pesticides and even deliberate use of pesticides for fishing. *See id.* In the Sudan, hunters used

Wild animals and domestic livestock also ingest pesticides by drinking contaminated water or by eating smaller animals and vegetation in which toxic chemicals exist.[42] Persistent pesticides like DDT do not dissolve, and concentrate in the fatty tissue of animals.[43] DDT bio-accumulates, moving up the food chain until it finally becomes part of the human diet.[44]

Excessive use of pesticides leads to the destruction of natural enemies and the resurgence of pest species, which in turn leads to increased spraying.[45] This process is commonly known as the "pesticides treadmill,"[46] which leads to the resistance of pesticides.[47] In extreme cases, a pesticide can create a more destructive "super pest" by altering the genetic composition of the insect.[48] In India, the introduction of DDT to reduce malaria resulted in the number of cases dropping from 7.5 million to 50,000; however, increased resistance eventually raised the number back to 6.5 million.[49] Although only 182 existed in 1965, there are now more than 900 pesticide and herbicide resistant species of insects, weeds, and plant pathogens, while seventeen insects show resistance to all major categories of insecticides.[50] In addition, resistant species of weeds have grown from twelve to eighty-four.[51]

The foregoing information illustrates that agrichemicals have a profound and significant impact on human health and the environment. However, a solution must also objectively evaluate why these substances are so highly valued. Pesticides increase the food yield for an ever-increasing populace.[52] Measuring the environmental and health damage that results from pesticide exposure against the famine that would result without pesticides is a model not yet constructed.[53]

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pesticides to kill wild antelope and gazelle by poisoning their water-holes. *See id.* The meat was subsequently processed and sold for human consumption. *See id.*

42. *See* Robert L. Metcalf, *Changing Role of Insecticides in Crop Protection*, 25 ANN. REV. ENTOMOLOGY 219, 239-40 (1980).

43. *See id.* at 238.

44. *See id.*

45. *See* Agrow, *supra* note 17, at 147.

46. *See id.*

47. *See* RUTH NORRIS, PILLS, PESTICIDES, AND PROFITS 24 (1982).

48. *See id.* at 19-25.

49. *See* Meri McCoy-Thompson, *Brazil Enlists DDT Against Malaria Outbreak*, WORLD WATCH, July–Aug. 1990, at 9.

50. *See* Gary Gardner, *IPM and the War on Pests*, WORLD WATCH, Mar. 13, 1996, at 36.

51. *See id.*

52. *See id.*

53. The concern for feeding an ever expanding world population is serious. In the 1930's, 6.5 million American farmers each fed 19 people. *See* National Agricultural Chemicals Association, *Environmental Agriculture: 60 Years of Inspiration* (1993). The population of the U.S. was roughly 123 million compared to approximately 249 million now. *See id.* The number of

DDT probably best illustrates the double-edged nature of pesticides. Although restricted from use in the U.S. in 1972, several developing countries still use it as an effective defense against vector-borne diseases like malaria, yellow fever, river blindness, elephantiasis and sleeping sickness.[54] Developing countries must consider what is more beneficial to public health by balancing the disabling or fatal effects of vector-borne disease with the disabling or fatal effects of DDT use. This is particularly important since DDT is a known carcinogen found to increase the risk of breast cancer in women exposed to the pesticide by a magnitude of four.[55]

Vietnam exemplifies the abuse of pesticides. Since Vietnam's shift to a free market economy in 1988, agricultural exports have been increasing with the use of pesticides.[56] Emphasizing agriculture, Vietnam has enjoyed steady economic growth.[57] To maintain yield, farmers have applied increasing amounts of DDT to fight pest resistance.[58] Unfortunately, this practice shows little sensitivity to the long-term adverse effects on the environment and sustainable economic development.[59] Soil acidification and salinization has occurred in conjunction with contamination of fisheries and water resources.[60] The U.S. exhibits little sensitivity to the issue. The Pesticide Action Network (PAN), a special interest group tracking pesticide exports, reported that the U.S. exported fifty-eight million pounds of banned pesticides between 1991 and 1994,[61] making the

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farmers has decreased to only 2.1 million individually supplying food to 129 people. *See id.* By 2050, estimates are that the world agriculture will have to supply food to more than 11 billion people. *See id.* Farmers currently cultivate 5.8 million square miles of land (about the size of South America). *See id.* To meet the needs of the future, 35 million square miles of cropland will be needed, equaling an area the size of North America, South America, Europe and most of Asia. *See id.* The figures are alarming to those committed to conservation of the natural environment. *See id.* The challenge to the agro-chemical industry is evident—food staples must triple in output over the next six decades, while reducing any agricultural and environmental impact. *See id.* Beginning in the 1960's, agro-chemicals, genetically enhanced strains of crops and biotechnology, have produced higher yields of wheat, rice, corn, soy and other staples. However, whether these methods can meet the needs of an exponentially exploding world population is speculative at best. *See id.*

54. *See* Faith Halter, *Regulating Information Exchange and International Trade in Pesticide and Other Toxic Substances to Meet the Needs of Developing Countries*, 12 COLUM. J. ENVTL L. 1, 3-4 (1987).

55. *See* Bill Lambrecht, *Crop Sprays Leave Residue of Ailments*, ST. LOUIS POST-DISPATCH, Dec. 12, 1993, at A1.

56. *See* Johanna Son, *Vietnam Agriculture: Farmers Forget Environment*, INTER PRESS SERVICE, GLOBAL INFO. NETWORK, Feb. 19, 1996, at 1.

57. *See id.*

58. *See id.* at 2.

59. *See id.* at 2-3

60. *See id.*

61. *See Greenpeace Presses Global POPs Ban, Pan Hits U.S. Exports*, *supra* note 32. The Pesticide Action Network (PAN) reported the U.S. exported aldicarb, camphechlor, chlordane, heptachlor, chlordimeform, DBCP, DDT, aldrin, dieldrin, endrin, EDB, HCH/BHC, lindane,

U.S. a key contributor to the degradation of human health and the environment in Vietnam.

B. The "Circle of Poison"

As early as 1981, various pesticides restricted in the U.S. were exported to developing countries, only to return as residues concentrated in imported foods.[62] This problem has been termed the "circle of poison."[63] In 1989, the General Accounting Office (GAO) reported that the circle of poison was a concern because the EPA was not monitoring the content, quantity, or destination of exported, unregistered pesticides under sections 17(a) and 17(b) of the Federal Insecticide, Fungicide and Rodenticide Act (FIFRA).[64] Specifically, the GAO found that the EPA "does not know whether export notices are being submitted, as required under FIFRA" and that "notices were not sent for three pesticides (out of four) that were voluntarily canceled [by the manufacturer] because of concern about toxic effects."[65]

The U.S. is a leading producer of pesticides, contributing fourteen percent of the world's export market.[66] At least twenty-five percent of the four to six hundred million pounds of pesticides exported annually are not registered with the EPA.[67] The EPA canceled or suspended some of these chemicals because of the dangers they pose to human health and the environment, and in some cases manufacturers voluntarily withdrew their products.[68] Because the U. S. exports a high percentage of unregistered pesticides, these chemicals have a high potential to reenter this country as residues on imported foods. For example, Chile is a large market for U.S. manufacturers of pesticides.[69] Included in the 1,460 pesticides used by

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paraquat, parathion, methyl parathion, pentachlorophenol and 2,4,5-T. Aldicarb was registered with the EPA in 1995 for use on potatoes. *See id.* PAN reports that aldicarb is so toxic that "[o]ne drop . . . absorbed through the skin is enough to kill the average adult." *Id.* In addition, several shampoos sold in the United States for the treatment of hair lice have been found to contain lindane, a substance linked to blood disease, lymphoma, seizures and brain damage. *See id.*

62. *See* DAVID WEIR & MARK SCHAPIRO, CIRCLE OF POISON: PESTICIDES AND PEOPLE IN A HUNGRY WORLD 3-4 (1981).

63. *See id.*

64. *See 1989 GAO Report, supra* note 21, at 11-12, 25, 36.

65. *Id.* at 3. The Assistant Administrator for Pesticides and Toxic Substances at EPA acknowledged the deficiencies during his testimony before a U.S. Senate subcommittee in March 1986. *See id.* at 19.

66. *See U.S. Chemical Trade Surplus Sets a New High*, CHEMICAL & ENG'G NEWS, June 19, 1989, at 76.

67. *See 1989 GAO Report, supra* note 21, at 11-12.

68. *See id.*

69. *See* Sagaris, *supra* note 1, at C2.

Chile are Lindane, a substance banned in the U.S; Paraquat, which contains dioxin; and Parathion, a toxic organic phosphate that has restricted use in the U.S.[70] In addition, Chile uses Methyl Bromide.[71] Ironically, these pesticides are either banned or restricted in the U.S., but may be used on produce that is eventually imported by the U.S.[72]

III. THE CONCEPT OF PRIOR INFORMED CONSENT

Prior Informed Consent (PIC) is the regulatory process countries use to control products for export by providing notification and adequate data to the importing country.[73] PIC presently exists as the most effective way to regulate the international trade of pesticides and prevent damaging exposure because it encourages importing countries to make well-informed decisions through an affirmative deliberation.[74] After reviewing the notification, importing countries must give express consent before exporters are permitted to ship pesticide products.[75] PIC preserves the sovereignty and self-determination of an importing state, and enhances the ability of a country to protect its citizens and environment.[76] However, the PIC system is flawed. Opponents argue that the process duplicates information exchange systems already in existence.[77] The system is also impractical, because it burdens a high-speed industry that requires rapid movement of agricultural products to prevent spoilage, food shortages, and famine.[78]

Finally, PIC does nothing to help developing countries build an enforcement and regulatory foundation that will assist in evaluating a pesticide for import. Even if developing countries had the regulatory structure to make informed decisions on what pesticides to

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70. *See id.*

71. *See id.*

72. *See id.*

73. *See* Cyrus Mehri, *Prior Informed Consent: An Emerging Compromise for Hazardous Exports*, 21 CORNELL INT'L L.J. 365, 387 (1988).

74. *See id.*

75. *See id.*

76. *See id.*

77. *See* NATIONAL AGRICULTURE CHEMICAL ASSOCIATION, *National Agricultural Chemicals Association Position on the "Prior Consent" Concept of Export Control of Agrichemicals in* INT'L TRADE (Nov. 30, 1986) [hereinafter *NACA Position Paper*].

78. *See id.* The London Guidelines suggest a balance between regulation and economics. Specifically, the London Guidelines advise that any "measure to regulate chemicals with a view to protecting . . . the environment, should ensure that regulations and standards for this purpose do not create unnecessary obstacles to international trade." London Guidelines, *supra* note 9, at 3. *See also* Mehri, *supra* note 73, at 387. A 1978 Report from the House Government Operations Committee indicated that 68 percent of the foreign countries surveyed were interested in having the U.S. notify them of chemicals regulated under FIFRA. HOUSE COMM. ON GOV'T OPERATIONS, REPORT ON EXPORT OF PRODUCTS BANNED BY U.S. REGULATORY AGENCIES, H.R. REP. NO. 95-1686, 95th Cong., 2d. Sess. 13-14 (1978).

import, there is no mechanism to force manufacturers to comply. Manufacturers have routinely violated PIC provisions in the course of their pesticide trade.[79]

IV. THE LONDON GUIDELINES

The United Nations Environmental Programme Governing Council (EPGC) adopted the London Guidelines on June 17, 1987,[80] and amended them in 1989 to introduce voluntary measures for information exchange on pesticides.[81] Although the London Guidelines attempt to increase pesticide safety through the exchange of information, they do not adequately ensure compliance with PIC requirements because they are voluntary.[82]

The PIC procedure adopted in 1989 provides a structure for exporting countries to formally obtain the consent of importing countries on future shipments of "banned" and "severely restricted" pesticides.[83] Participating countries also have the opportunity to explain their policies regarding the future receipt of banned or restricted products.[84] Decisions to ban or severely restrict a chemical are circulated to all participating countries.[85] Notices provided to importing countries also appear in the International Register of Potentially Toxic Chemicals (IRPTC),[86] which maintains a file of circulated notices.[87] Under the IRPTC, each participating nation is

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79. *See* Janet Raloff, *The Pesticide Shuffle*, SCIENCE NEWS, Mar. 16, 1996. The practice of manufacturers hiding their identity on exported products to prevent competitors from receiving confidential marketing information is legal in the United States, but presents an obstacle for developing countries and special interest groups trying to expose the risks posed by the careless use of the pesticide. A common illegal practice is masking the identity of the pesticide in customs records. *See id.*

80. *See Report of the Governing Council*, U.N. Environment Programme, 14th Sess., Agenda Item 14/27 at 79, U.N. Doc. A/42/25 (1987). At the June 1987 conference, United Nations Environment Programme (UNEP) Governing Council instructed UNEP to begin developing a system of PIC to supplement the London Guidelines. The draft revisions were completed in February 1989 and subsequently approved by the UNEP Governing Council in May 1989. *See* U.N. Doc. UNEP/PIC WG.2/L1/Rev.1 (May 25, 1989).

81. *See generally* London Guidelines, *supra* note 9.

82. *See id.*

83. *See id.* The London Guidelines provide in pertinent part:

> 1. Definitions
> (b) "Banned chemical" means a chemical which has, for health or environmental reasons, been prohibited for all uses by final governmental regulatory action; (c) "Severely restricted chemical" means a chemical for which, for health or environmental reasons, virtually all uses have been prohibited nationally by final government regulatory action, but for which certain specific uses remain authorized;

Id. art. 1 (b)-(c).

84. *See id.* art. 7.

85. *See id.*

86. *See id.* art. 6(a).

87. *See id.* art. 5.8.

assigned a Designated National Authority (DNA) to exchange information regarding pesticide imports and exports.[88] The IRPTC prepares Decision/Guidance documents for pesticides covered by PIC and then forwards them to each participating nation through the DNA.[89] Once a country decides whether to import a pesticide, the DNA notifies the IRPTC. In turn, the IRPTC forwards the decision to all participating governments.[90] The IRPTC has a database of all these decisions for reference by exporters and importers.[91] The main benefit received by importing countries participating in this program is that the IRPTC forwards notifications to them directly rather than having to rely on exporting countries to provide them.

The London Guidelines are focused on the promotion of information exchange for the protection of human health and the environment.[92] Although the London Guidelines were not designed to address the complex problems encountered by developing countries,[93] they nonetheless succeed in identifying and resolving some of the areas of concern. The two-step system provides developing countries an opportunity to receive export notifications for banned and severely restricted substances.[94] The first step requires the circulation of notices where regulatory actions have been taken under domestic law.[95] Circulation is only required for those regulatory actions constituting bans or severe restrictions.[96] The second step identifies those chemicals that have been banned or restricted by ten or more participating countries.[97]

In an effort to prevent shipment of unwanted chemicals to importing countries, the London Guidelines include a PIC procedure requiring formal correspondence between importing and exporting countries.[98] Exporting countries must obtain an affirmative response from importing countries before shipment.[99] The notices must include the reasons for the importing country's regulatory action and a contact point for further information.[100] The London Guidelines PIC procedure requires exporting nations to inform other countries,

88. *See id.* art. 5.4.
89. *See id.* art. 9(c).
90. *See id.* art. 7.4(a).
91. *See id.* art 7.4(a).
92. *See id.* Introduction, para. 2.
93. *See id.* Introduction, para. 8.
94. *See id.* Introduction, para. 2.
95. *See id.* art. 7.4.
96. *See id.* art. 7.2.
97. *See id.* Annex II (1)(b)(i).
98. *See id.* art. 1(h), Annex II-IV.
99. *See id.* art. 7.3.
100. *See id.* art. 6(c).

either directly or through the IRPTC, that a chemical has been domestically "banned" or "severely restricted."[101] The notification includes the chemical identification, a summary of the control action taken, alternative compounds to the chemical, and the contact where importing nations can request additional information.[102] All interested participating countries receive the list.[103] The London Guidelines also require exporting governments to declare the regulatory status of a pesticide at the earliest stage of export.[104] Although the notice is ideally supposed to be given to an importing country before the export actually occurs, no firm guidance on timing is provided.

The London Guidelines encourage exporting countries to use classification, labeling, and packaging requirements that are as stringent as those in their own domestic market.[105] In addition, they call for the exchange of technical advice and precautionary information on chemicals introduced into the market.[106] Finally, developed countries are encouraged to recognize the unique circumstances of developing countries by providing them financial and technical assistance.[107]

Another significant feature of the London Guidelines is its provisions covering notification and labeling requirements for hazardous chemicals.[108] These provisions are especially important because they are the first step to insuring that instructions and warnings about pesticides are communicated in the language of the importing country.[109] The London Guidelines state that "[a]s far as practicable, precautionary information should be provided in the principal language or languages of the State of import and of the area of intended use, and should be accompanied by suitable pictorial and/or tactile aids and labels."[110] This provision continues by requiring "harmonized procedures for the classification, packaging and labeling of chemicals . . . tak[ing] into account the special circumstances surrounding the management of chemicals in developing countries."[111]

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101. *See id.* art. 1.
102. *See id.* art. 6.
103. *See id.*
104. *See id.* art. 8.
105. *See id.* art. 14(a).
106. *See id* art. 2(e). Article (2)(e) of the London Guidelines provides that "[s]tates with more advanced systems for the safe management of chemicals should share their experience with those countries in need of improved systems." *Id.*
107. *See id.* art. 15.
108. *See id.* art. 13.
109. *See id.*
110. *Id.* art. 13(d).
111. *Id.* art. 14(b).

The apparent weakness of the London Guidelines is that the provisions are voluntary, and consequently fail to adequately address the needs of the developing world. The London Guidelines state that "exporting countries are expected to participate in the PIC procedure[s]."[112] Further, IRPTC should invite countries to participate in the PIC procedure with respect to imports.[113] Although there is language in the London Guidelines reflecting a sensitivity to developing countries, the lack of specificity and their non-binding nature place developing countries at a significant disadvantage. Even if the London Guidelines were binding, enforcement would be difficult without incentives to ensure adequate participation and compliance.

V. THE FAO INTERNATIONAL CODE OF CONDUCT

The United Nations Food and Agriculture Organization (FAO) adopted the International Code of Conduct on the Distribution and Use of Pesticides (Code)[114] in 1985 to reduce the health and environmental hazards caused by pesticides, and to establish firm guidance for their export and sale.[115] The Code strives to combine different domestic policies for pesticide regulation into a universally accepted pesticide trade program.[116] Like the London Guidelines, the Code is voluntary, serving as a reference for a developing country until they have established their own regulatory infrastructure for pesticide control.[117] The FAO also recognizes the importance of PIC and adopted it as part of the Code in 1989.[118]

The practical application of the Code is fairly easy to follow. A pesticide is placed in the PIC process noted above if the pesticide meets one of three criteria: (1) the chemical has been banned for health or environmental reasons in five or more countries; (2) the chemical has been banned or severely restricted for health or environmental reasons in a single country after January 1, 1992; or (3) the chemical causes health or environmental problems under the conditions of use in developing countries.[119]

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112. *Id.* art. 7.1(b).
113. *See id.* art. 7.1(c).
114. *See Code of Conduct, supra* note 4.
115. *See id.* art. 1.
116. *See id.*
117. *See id.*
118. *See id.* at 3. UNEP adopted the PIC scheme under the London Guidelines and operates jointly with the Food and Agriculture Organization (FAO) through IRPTC. *See* London Guidelines, *supra* note 9, art. 5.2.
119. *See Code of Conduct, supra* note 4, at 3.

In drafting the substantive provisions of the Code, the FAO sought to balance the divergent needs of developing and developed countries. For example, developed countries have concerns over the existence of residues in food or commodities imported from developing countries.[120] If a pesticide is restricted in a developed country, but completely unregulated in a developing country, little control may exist over the safety of imported food. The Code provides that since "it is impossible to eliminate all such occurrences, because of diverging pest control needs, it is none the less essential that . . . [pesticides are applied] in accordance with good and recognized practices."[121] In addition, the Code encourages developed countries to recognize the needs of developing countries when promulgating residue control programs for imported food.[122]

As a method of enforcement, the Code encourages "collaborative action" by participating countries,[123] instructing governments to report to the FAO on their methods of compliance and progress.[124] Although the Code recognizes that governments possess the ultimate responsibility to regulate the distribution and use of pesticides in their countries,[125] the Code encourages governments to meet this responsibility through the implementation of a "pesticide registration and control program."[126] Under this program, governments must register pesticides before they can be used domestically,[127] and all registration programs must include provisions for enforcement.[128] To facilitate international respect for each country's registration program, the Code encourages governments to establish registration schemes and infrastructures that ensure that each pesticide product is registered under the laws or regulations of the country of use before it can be made available there.[129]

The Code delineates responsibilities between the private and public sectors by establishing "voluntary standards of conduct for all public and private entities engaged in or affecting the distribution and use of pesticides."[130] The Code establishes standards for both governments and industries in several reporting categories including

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120. *See id.* at 2.
121. *Id.*
122. *See id.*
123. *See id.* art. 12.1.
124. *See id.* art. 12.6
125. *See id.* art. 6.1.2.
126. *See id.* art. 5.1.1.
127. *See id.* art. 6.1.2.
128. *See id.* art. 6.1.1.
129. *See id.* art. 6.1.2.
130. *Id.* art. 1.1.

pesticide development,[131] packaging,[132] labeling,[133] advertising,[134] disposal, and storage.[135] Within these categories, the Code notes that concerted efforts between governments and the pesticide industry are acceptable means to develop and promote integrated pest management (IPM) systems and the use of safe and efficient application methods.[136] The Code dictates that even though governments retain the responsibility and specific authority to regulate the distribution and use of pesticides in their countries, the pesticide industry must adhere to the provisions of the Code in the manufacture, distribution, and advertising of pesticides.[137] Manufacturers must ensure that they test each pesticide by recognized methods to fully evaluate safety, efficacy, and long-term effects, with an emphasis on the expected conditions in the regions of use.[138] In an effort to reduce public health hazards, the Code then requires governments to review the pesticides that are marketed in their country, determine their acceptable uses and identify the intended consumers within the public sector.[139] Although adherence to the Code is voluntary, the

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131. *See id.* art. 4, 8. Manufacturers are required to assess effects on human health and the environment before introducing a pesticide to a foreign market. *See id.* art. 4.1.2.

132. *See id.* art. 3.4, 5.2, 10. The Code expects manufacturers to introduce products in ready-to-use packages that cannot be reused. *See id.* art. 5.2.2.2.

133. Labels and warnings should be clear and concise with symbols and pictures for the illiterate. *See id.* art. 10.2. Finally, the labels and warnings are to be written in the language of the importing country. *See id.* art. 3.4.2.

134. *See id.* art. 11.

135. *See id.* art. 10.3.

136. *See id.* art. 1.

137. *See id.* art. 3.

138. *See id.* art. 4.1. Article 4 provides in pertinent part:

> Pesticide manufacturers are expected to: make available copies or summaries of the original reports of such tests for assessment by responsible government authorities in all countries where the pesticide is to be offered for sale. Evaluation of the data should be referred to qualified experts; take care to see that the proposed use pattern, label claims and directions, packages, technical literature and advertising truly reflect the outcome of these scientific tests and assessments; provide, at the request of a country, advice on methods for the analysis of any active ingredient of formulation that they manufacture, and provide the necessary analytical standards; provide advice and assistance for training technical staff in relevant analytical work. Formulators should actively support this effort; conduct residue trials prior to marketing in accordance with FAO guidelines on good analytical practice . . . and on crop residue data . . . in order to provide a basis for establishing appropriate maximum residue limits (MRLs).

Id.

139. *See id.* art. 5. Article 5 provides in pertinent part:

> Governments which have not already done so should: keep extension and advisory services, as well as farmers' organizations, adequately informed about . . . the range of pesticide products available for use in each area.
>
> 5.2 Even where a control scheme is in operation, industry should: cooperate in the periodic reassessment of the pesticides which are marketed and in providing the poison control centers and other medical practitioners with information about hazards; make every reasonable effort to reduce hazard by: making less toxic

labeling and packaging provisions attempt to establish a system to implement PIC procedures.[140] The Code places controls on advertising to prevent deception and promote safe application.[141] Labeling is expected to be appropriate for each specific market,[142] and to include "information and instructions in a form and language adequate to ensure safe and effective use."[143] Manufacturers must guarantee that labels truly reflect testing data.[144] The Code charges industry with making "every reasonable effort to reduce hazard[s]"[145] by using "clear and concise labeling."[146] Labels must state "recommendations consistent with those of the recognized research and advisory agencies in the country of sale,"[147] and should include "symbols and pictograms whenever possible, in addition to written instructions, warnings and precautions."[148] Finally, labels should reflect appropriate hazard classifications of the contents.[149] Labels must contain a warning against the reuse of containers, as well as instructions for the safe disposal or decontamination of empty containers.[150]

As with labeling, the Code requires that packaging is appropriate for each specific market.[151] The goal of the packaging requirement is to introduce products in "ready-to-use" packages for a safer method of application.[152] The Code's packaging provision seeks to discourage repackaging and decanting or dispensing of pesticides into food

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formulations available; introducing products in ready-to-use packages and otherwise developing safer and more efficient methods of application; using containers that are not attractive for subsequent reuse and promoting programs to discourage their reuse; using containers that are safe (e.g. not attractive to or easily opened by children), particularly for the more toxic home-use products;
using clear and concise labeling; halt sale, and recall products, when safe use does not seem possible under any use directions or restrictions.
5.3 Government and industry should further reduce hazards by making provision for safe storage and disposal of pesticides and containers at both warehouse and the farm level, and through proper siting and control of wastes from formulating plants.

Id.

140. *See id.* art. 9.
141. *See id.* art. 11.
142. *See id.* art. 3.4.1.
143. *See id.* art. 3.4.3.
144. *See id.* art. 4.1.4.
145. *Id.* art. 5.2.2.
146. *Id.* art. 5.2.2.5.
147. *Id.* art. 10.2.1.
148. *Id.* art. 10.2.2.
149. *See id.* art. 10.2.3.
150. *See id.* art. 10.2.4.
151. *See id.* art. 3.4.1.
152. *See id.* art. 5.2.2.2.

or beverage containers.[153] Accordingly, packaging or repackaging should take place only on licensed premises.[154]

Although labeling and packaging are aspects of the PIC procedure that assist in a remedy for the pesticide problem, their importance may be overemphasized. The pesticide industry has made an effort to address labeling shortcomings;[155] however, workers using pesticides are often illiterate[156] or speak a different language than that printed on the pesticide container.[157] Additionally, the instructions are often so complex that consumers simply ignore them. Countries with citizens who speak multiple languages may import pesticides with instructions incomprehensible to some users.[158] The ethnic diversity of a developing country often includes a diverse number of language dialects, making effective labeling nearly impossible.[159] For example, in Tamil speaking regions of India, labels are in English or Hindi. In Tunisia, pesticides are commonly sold with labels printed in a language other than Arabic.[160] If the population does not speak the official language or labels simply are not in the official language, written instructions on the use of pesticides are useless.

A PIC amendment to the Code was adopted in 1989 at the request of several interested developing countries.[161] The amendment prohibits exportation of any pesticide severely restricted or banned to another country participating in the PIC system that has expressly requested not to receive imports of that pesticide.[162] The amendment includes importing countries that elect participation, as well as each exporting country.

If a pesticide exporting country decides to ban or severely restrict the use of a pesticide, that country must notify FAO,[163] which in turn will forward the action to all participating countries through the

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153. *See id.* art. 10.4.

154. *See id.* art. 10.3.2.

155. *See* DINHAM, *supra* note 29, at 58.

156. Countries such as Benin, Togo, South Africa, Brazil, Ecuador and India report that illiteracy is a serious problem. *See id.*

157. *See id.*

158. *See id.*

159. Although Kenya's official languages are Standard Swahili and English, there are between 30 and 40 dialects of Swahili. *See* William Kalmbach, III, *International Labeling Requirements for the Export of Hazardous Chemicals: A Developing Nation's Perspective*, 19 LAW & POLICY INT'L BUS, 811, 820 (1987).

160. *See* Bouguerra, GREEN PEACE INTERNATIONAL, REPORT ON ORGANOPHOSPHORUS PESTICIDES IN TUNISIA OVER THE PERIOD 1987-1990 (1990).

161. *See* FAO Res. 6/89, COAG, *Report of the Conference of FAO*, 95th Sess., U.N. Doc. C/89/Rep. 120 (1989).

162. *See id.* at App. E.

163. *See Code of Conduct*, *supra* note 4, art. 9.5.

IRPTC.[164] If an importing country refuses to accept a pesticide, the exporting country must respect that decision. In addition, the country refusing a pesticide must stop any domestic production of that pesticide.[165]

The pesticide industry has, to some extent, cooperated in the implementation of PIC under the Code.[166] Industry occupies a crucial role in a successful PIC program because PIC does not require exporting countries to introduce any export controls or monitor exports.[167] Goodwill and product stewardship within the industry are necessary ingredients for a successful PIC program.[168] With effective product stewardship, the pesticide industry assumes responsibility for pesticides after they leave the factory.[169] This concept promotes industry policies consistent with requirements of the Code, including checks on labeling, advertising, and marketing.[170] In fact, Groupement International des Associations Nationales de Fabricants de Produits Agrochemiques (GIAFP), a major pesticide manufacturing association, makes compliance with the Code a condition of membership.[171]

The Code requires pesticide manufacturers to test each pesticide "so as to fully evaluate its safety, efficacy . . . and fate . . . with regard to the various anticipated conditions in regions or countries of use."[172] The data must show that the pesticide can be used safely without posing an "unacceptable hazard to human health, plants, animals, wildlife [or] the environment."[173] Additionally, the Code calls for residue trials to help establish maximum residue limits (MRLs),[174] and requires industry to conduct testing prior to marketing.[175] To enhance international control, industry must submit the results of the test "to the local[ly] responsible authority for independent evaluation and approval before the products enter trade channels in that country."[176]

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164. *See id.*

165. *See id.* art. 9.6 ("Guidelines on the Operation of Prior Informed Consent"). The FAO adopted these provisions on November 21, 1989, prohibiting the pesticide importing country from using the PIC as a trade barrier in order to assist that country's domestic pesticide industry. *See id.* art. 9.8.2.

166. *See* DINHAM, *supra* note 29, at 4.

167. *See id.*

168. *See id.*

169. *See id.*

170. *See id.*

171. *See id.* at 17.

172. *Code of Conduct*, *supra* note 4, art. 4.1.1.

173. *Id.* art. 4.1.2.

174. *See id.* art. 4.1.7.

175. *See id.* art. 8.1.1.

176. *Id.* art. 8.1.2.

Industry and local authorities forwarded the first list of pesticide notifications in September of 1991, indicating implementation of PIC under the Code was initially slow.[177] Unfortunately, the Code shares the same central weakness as the London Guidelines—participation and compliance are voluntary.[178] The adopting resolution by the FAO conference emphasized the non-binding nature of the standard:

> THE CONFERENCE,
>
> *Hereby adopts* a voluntary International Code of Conduct on the Distribution and Use of Pesticides as given in the annex to this Resolution;
>
> *Recommends* that all FAO member Nations promote the use of this Code in the interests of safer and more efficient use of pesticides and of increased food production;
>
> *Requests* governments to monitor the observance of the Code, in collaboration with the Director-General who will report periodically to the Committee on Agriculture;
>
> *Invites* other United Nations agencies and other international organizations to collaborate in this endeavour within their respective spheres of competence.[179]

The Code attempts to respond to opposing interests between industrialized countries that export pesticides and developing countries that import them.[180] While industrialized countries enjoy relatively extensive pesticide regulatory programs, they have little control over how exported pesticides are used once they leave their borders.[181] A double standard exists whereby pesticides may be exported to countries without effective regulatory protection exposing them to pesticide hazards where use of the same pesticides in the

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177. Pesticides included in PIC and candidates for inclusion in 1992:
INCLUDED: aldrin, captafol, chlordane, chlordimeform, cyhexatine, dieldrin, dinoseb, DDT, EDB, fluoroacetamide, HCH (mixed isomers), heptachlor, hexachlorobenzene, mercury compounds, parathion ethyl, phosphides (aluminium and magnesium), toxaphene 2,4,5,-T.
UNDER CONSIDERATION: methamidophos, methomyl, methyl bromide, monocrotophos, paraquat, parathion methyl, phosphamidon.
Minutes of the UNEP/FAO Expert Meeting on PIC, Geneva (Feb. 1992).

178. The European community Member states were the first to implement the Code of Conduct. Effective November 1992, compliance with the PIC provisions of the Code of Conduct became mandatory. *See* Council Regulation 2455/92, 1992 O.J. (L 251)13 (concerning the export and import of certain dangerous chemicals).

179. *United Nations Food and Agriculture Organization Conference Resolution* 10/85 (Nov. 28, 1985) (Adopting the Code of Conduct), *reprinted* in 41 Int'l Envt. Rep. (BNA) 3002 (Mar. 11, 1987).

180. *See Code of Conduct*, *supra* note 4, at 3.

181. *See id.*

exporting country is prohibited.[182] PIC attempts to eliminate the double standard.

Despite the voluntary nature of the Code, it is a useful model for developing countries to initiate their own pesticide control programs. The Code cites the need for the participation of several segments of society to effectively reduce the adverse effects on human health or the environment.[183] These segments of society include the public, industry, and government.[184]

Several governments and organizations have expressed concern about the propriety of supplying pesticides to countries that lack infrastructures to register them.[185] The absence of a compulsory pesticide registration process and an adequate international regulatory infrastructure for controlling the availability of pesticides forces some importing countries to rely heavily on the pesticide industry to promote safe and proper pesticide distribution and use.[186] "In these circumstances foreign manufacturers, exporters and importers, as well as local formulators, distributors, repackers, advisers and users, must accept a share of the responsibility for safety and efficiency in the distribution and use" of pesticides.[187]

Under the Code, the fact that a product is not used or registered in a particular exporting country is not necessarily a valid reason to prohibit the export of that pesticide.[188] However, the notion that no company should trade in pesticides without a proper and thorough evaluation of the pesticide, including a risk analysis, has gained acceptance in the international community.[189] A large number of developing countries are situated in tropical and semi-tropical regions where the conditions and pest problems can differ markedly from those in countries manufacturing and exporting pesticides.[190] Thus, governments of exporting countries may not be able to adequately assess the suitability, efficacy, or safety of pesticides under the conditions in the country of ultimate use.[191] The responsible authority in the importing country must make such judgments in

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182. *See* Charlotte Uram, *International Regulation of the Sale and Use of Pesticides*, 10 N.W. J. INT'L L. & BUS. 460, 469 (1990).

183. *See Code of Conduct*, *supra* note 4, art. 1.2.

184. *See id.*

185. *See id.* Introduction, para. 1.

186. *See id.* Introduction, para 5.

187. *Id.*

188. *See id.* Introduction, para 6.

189. *See id.*

190. *See id.*

191. *See id.*

conjunction with industry, considering the available scientific data and the conditions prevailing in the country of proposed use.

Although the Code does not solve all of the problems in the international pesticide trade, it does define and clarify the responsibilities of the various parties involved in the development, distribution and use of pesticides. The Code is of particular value to countries which are without their own control procedures. Furthermore, the London Guidelines and the Code overlap in many areas. Both generally share the same objective; to promote the responsible trade of pesticides.[192] A close comparison of the two reveals the conceptual identity of many provisions. Thus, combining the two initiatives into a single binding formal agreement could reduce confusion of PIC requirements and render a more comprehensive, acceptable solution to the chemical trade problem.[193]

VI. THE CODEX ALIMENTARIUS COMMISSION

The United Nations established the Codex Alimentarius Commission (Codex) to address the effects of pesticides on food safety.[194] Codex recognizes that pesticides are an ubiquitous component of food placed in the market for consumption.[195] However, not all pesticide-containing food is dangerous for consumption. A paramount objective of Codex is to set food safety standards that apply on an international level and to publish them on behalf of the international community.[196]

On the basis of the research conducted by the FAO/World Health Organization (WHO) Joint Meeting on Pesticide Residues, Codex compiles a list of pesticides that should be authorized for use in light of food safety risks.[197] At the same time, Codex establishes over 2,000 maximum limits for residues (MRLs),[198] taking into

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192. *See id.* Introduction, para. 1; *see also* London Guidelines, *supra* note 9, at 1.

193. Two significant conventions should be noted that limit the international trade and movement of hazardous waste: Bamako Convention on the Ban of Import Into Africa and the Control of Transboundary Movement of Hazardous Waste, 28 I.L.M. 657 (Mar. 22, 1989).

194. *See* Codex, *supra* note 10, at 39.

195. *See id.*

196. *See id.*

197. *See generally id.*

198. *See id.* at 59-60. The primary purpose of setting MRLs for pesticide residues in food, and in some cases animal feeds, is to protect human health. *See id* at 39. Codex MRLs help to ensure that only the minimum amount of pesticide is applied to food consistent with pest control needs. *See id.* Codex MRLs are based on residue data from supervised trials and not directly derived from Acceptable Daily Intakes (ADIs). *See id.* at 60. ADIs are a quantitative expression of acceptable daily amounts of residue that persons may ingest on a long term basis, based on toxicological data from animal studies. *See id.*

The acceptability of Codex MRLs is based on a comparison between the ADI and suitable intake studies. *See id.* at 59-60. Intake data from these studies, compared with ADIs, helps to

account findings on toxicities from their Expert Committee and good agricultural practices. The MRLs are particularly relevant to countries that export staple crop foods, including the U.S. A food manufacturer must avoid using raw materials that may lead to undesired levels of pesticides in the finished food product. Codex MRLs are tolerances based on standards that the Committee determines to be good agricultural practice in a variety of countries with differing climatic conditions and pest problems.[199] Codex MRLs are also valuable tools representing a consensus of international opinion regarding safety and practicability of pesticides in food staples.[200]

Establishing an MRL is an eight-step process. The process may take several years to complete. The steps are: (1) the FAO commission determines the need for a standard and assigns the work to a committee, known as the WHO Expert Group on Pesticide Residues,[201] which usually recommends that Codex establish an MRL or elaborate a standard; (2) a draft standard is then prepared;[202] (3) the Commission submits the proposed draft standard to interested international organizations for comment on all aspects including possible implications of the draft standard on their economic interests;[203] (4) the Codex Committee on Pesticide Residue (CCPR) will also evaluate the proposed draft standard by considering "all appropriate matters"[204] including the need for urgency, comments submitted by individual governments, and the likelihood of new information becoming available in the near future;[205] (5) CCPR then sends the draft standard to the Commission through the Secretariat for adoption as a draft standard;[206] (6) international organizations and governments receive the draft standard for comment;[207] (7) the Secretariat, along with private organizations, forwards any comments to the committee;[208] and (8) the Commission reviews and

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determine the safety of food in relation to pesticide residues. Guidelines for predicting Dietary Intakes of Pesticide Residues have been prepared under the joint sponsorship of UNEP, FAO and WHO. *See* Joint Food & Agricultural Organization of the United States World Health Organization, *Guidelines for Predicting Dietary Intake of Pesticide Residue,* 66(4) BULLETIN OF THE WORLD HEALTH ORG. 429-34 (1988).

199. *See generally* Codex, *supra* note 10.
200. *See id.*
201. *See id.*
202. *See id.*
203. *See id.* at 27-55.
204. *See id.*
205. *See id.*
206. *See id.*
207. *See id.*
208. *See id.* at 27-55.

considers comments and finally executes the draft standard for adoption and publication as a Codex Standard.[209]

Codex recognizes the balance between the need for fair and unrestricted trade and the protection of human health and the environment. The provisions of Codex state that it "is a collection of internationally adopted food standards presented in a uniform manner. These food standards aim at protecting consumers' health and ensuring fair practices in the food trade."[210] One key value to the international trade community is that Codex establishes harmonized international MRLs that prevent food product trade barriers.[211] As early as the 1950's, the U.S. recognized the need for international harmonization when the European Economic Community (EEC) attempted to adopt draft residue standards with higher tolerances than similar pesticides manufactured in the U.S.[212] The adoption of Codex was one of the first attempts by the U.S. to prevent the use of pesticide residue standards as artificial trade barriers.[213]

VII. U.S. REGULATORY EFFORTS TO DEVELOP EXPORT CONTROLS

The U.S. is commonly depicted as a leader in the international community, confronting difficult issues and adopting bold and progressive initiatives to benefit all countries.[214] However, the recommendation that the U.S. take the lead in resolving the pesticide trade dilemma is not likely to occur.[215] In 1993, the Department of Commerce valued the U.S. chemical industries at just over $4.5 billion for both domestic and international sales.[216] As one of the largest U.S. industry sectors, chemicals have in the past accounted

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209. *See id.*

210. *Id.* at 39.

211. *See generally id.*

212. *See id.*

213. John P. Frawley, Ph. D., *Codex Alimentarius—Food Safety—Pesticides*, 42 FOOD DRUG COSM. L.J. 168, 168-69 (1987).

214. The United States is a leader in using alternatives to pesticide application. For example, the Clinton Administration presently promotes the biological pesticide industry's integrated pest management (IPM) system that minimizes chemical harm by using beneficial natural pest enemies. *See* Ronald Begley, *Biopesticides on the Rise*, CHEMICAL WEEK, Oct. 27, 1993, at A-4; Philip J. Hilts, *White House Moves on Easing Food-Pesticide Law*, N.Y. TIMES, Aug. 20, 1993, at A-14.

215. *See* Greenwood, *Restrictions on the Exportation of Hazardous Products to the Third World: Regulatory Imperialism or Ethical Responsibility?*, 5 B.C. THIRD WORLD L.J. 129, 148-49 (1985) (recommending an approach to developing binding regulations of chemical trade and discussing the need for U.S. leadership).

216. *See* U.S. Department of Commerce, Bureau of the Census (FT900-E) (Dec. 1993).

for approximately ten percent of the nation's export income.[217] Consider that the amount of residue on imported food and types of pesticides permitted in the U.S. is not necessarily selected with the health of U.S. consumers in mind.[218] The EPA balances the incidence of cancer against the economic advantage to the pesticide industry and its market.[219] Consequently, the U.S. is unlikely to coordinate an international convention absent a commitment by other key chemical producing countries to participate. Leveling the economic playing field by mandating total participation by major chemical exporting countries is the only way to prevent non-participating countries from taking economic advantage of participating countries. Thus far, economic benefits in an under regulated world market have stifled any incentive to adopt a leadership role to propose a convention or domestic legislation. Trade restricting legislation may inure to the economic detriment of the U.S. because if the U.S. does not export pesticides, another country will.

The U.S. Customs Service has compiled a public record on pesticide exports. Although the U.S. has taken steps to regulate the domestic sale and use of particularly hazardous substances, exports have escaped similar regulation. At present, the U.S. does not effectively regulate the export of pesticides the EPA has banned or restricted due to health or environmental concerns.[220]

In 1990, it reported the shipment of 465,338,865 pounds of pesticide products from U.S. ports.[221] Although the importance of specificity in identifying and labeling pesticides is critical to human health and the environment, 56.2% of the chemicals exported could not be identified in Customs records beyond the most general terms.[222] Labels generally referred to chemicals in terms such as "agricultural insecticide" or "seed killing compound."[223] A lack of appropriate identification and incomplete labeling precluded an accurate identification of the hazard level for over 73% of the chemicals shipped.[224]

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217. *U.S. Chemical Trade Falls but Remains Key to Growth*, CHEMICAL MKTG. REP., Feb. 14, 1994, at 7.

218. Caroline Cox & Norman Grier, *Is EPA Registration a Guarantee of Pesticide Safety?*, J. OF PESTICIDE REFORM, Spring 1992, at 10.

219. *See id.* at 6.

220. Although Congress has often attempted to enact legislation controlling American chemical exports, these attempts have been unsuccessful. *See* S. 898, 102d Cong. (1991); H.R. 2083, 102d Cong. (1991); S. 2227, 99th Cong. (1990); H.R. 6587, 96th Cong. (1980).

221. *Circle of Poison: Impact on American Consumers*, Hearing Before the Comm. on Agriculture, Nutrition and Forestry, U. S. Senate, 102d Cong. (1991) (referring to CARL SMITH & SHELLEY BECKMANN, EXPORT OF PESTICIDES FROM U.S. PORTS IN 1990 1 (Foundation for Advancements in Science and Education 1991).

222. *See* Smith & Beckmann, *supra* note 221, at 2.

223. *Id.*

224. *See id.*

"Despite these omissions, Customs records indicate that 52,022,337 pounds of banned, unregistered or restricted-use pesticides were exported in 1990."[225] The problem continued between 1992 and 1994, when three-quarters of the exports failed to adequately identify their chemical contents.[226]

A. The Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA)

The Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) is the basic statute that the EPA uses to regulate pesticides in the U.S.[227] Pesticides intended for use in the U.S. found to cause an "unreasonable adverse effect" on human health or the environment, may be canceled, suspended or significantly restricted by the EPA.[228] A manufacturer that wishes to register a pesticide product must file efficacy data with the EPA, including the pesticide's formula and labeling, a statement of all claims to be made regarding the pesticide, direction for its use, and the pesticides safety data.[229] FIFRA requires the EPA to register a pesticide if there is a finding that: (1) the composition of the pesticide achieves what the manufacturer claims; (2) labeling and other promotional materials comply with claims and are not deceptive; (3) the pesticide will perform without unreasonable adverse effects on the environment; and (4) when used in accordance with generally recognized practices, the pesticide will not unreasonably affect the environment.[230]

FIFRA establishes a broad risk-benefit analysis for the EPA to evaluate how a pesticide affects the environment and human health.[231] The statutory mandate to avoid "unreasonable effect on the environment" explicitly directs the EPA to consider the economic, social and environmental costs and benefits from the use of a particular pesticide, in addition to the risks that the pesticide poses to humans or the environment.[232]

If a pesticide "may reasonably be expected to result, directly or indirectly, in residues of the pesticide becoming a component of food," EPA regulations preclude the registration of a pesticide under FIFRA until the FDA issues appropriate tolerances for residues

225. *Id.*
226. Janet Raloff, *The Pesticide Shuffle*, 149(11) SCIENCE NEWS 1 (Mar. 16, 1996).
227. *See* 7 U.S.C. § 136 (1988 & Supp. V. 1993).
228. *See id.* § 136a(a).
229. *See id.* § 136a(c).
230. *See id.* § 136a(c)(5).
231. *See id.* § 136a(c)(2)(A).
232. *See id.* § 136(bb).

under the Federal Food, Drug, and Cosmetic Act (FFDCA).[233] This requirement prevents the registration of a pesticide for food crop use under FIFRA unless the EPA determines that pesticide residue on the crop will not exceed a safe level.[234]

FIFRA represents one of the earliest domestic efforts in the U.S. to control the exchange of chemicals in international commerce. The statute requires manufacturers to label their products in English as well as the language of the importing country.[235] Section 17(a) of FIFRA requires a manufacturer exporting a pesticide to obtain a statement from the foreign purchaser acknowledging that the pesticide is unregistered and cannot be sold in the U.S.[236] The foreign purchaser forwards the statement to the EPA and section 17(a) directs the EPA to send a copy of the statement to the U.S. embassy in that foreign country. The U.S. embassy then provides a copy to the regulating office of the importing country.[237] Additionally, section 17(b) requires the EPA to notify a foreign importer whenever a U.S. pesticide registration is canceled or suspended.[238] Any unregistered, canceled or suspended chemicals in the U.S. can legally be exported with a signed acknowledgment that the chemical is not subject to restriction in the U.S.[239] FIFRA's section 17 methods of notification provide foreign governments with critical information on unregistered pesticides.

The EPA revised its FIFRA regulations to clarify this area of the statute. For example, the EPA now permits exporters to add information onto the label of the pesticide explaining why a product is not registered, the status of the registration, or its use classification.[240] In addition, exporters are required to use English on the label, as well as the language of the importing country and the language of the country of final destination when it is reasonably ascertainable.[241]

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233. Federal Food, Drug and Cosmetic Act, Pub. L. No. 75-717, 52 Stat. 1040 (1938), *amended by* 21 U.S.C. §§ 301-393 (1988); *see* 40 C.F.R. §§ 152.112, 152.113, 152.114 (1991).

234. *See Regulation of Pesticides in Food: Addressing the Delaney Paradox Policy Statement*, 53 Fed. Reg. 41,104, 41,105 (1988).

235. *See* 7 U.S.C. § 136(p)-(q); *see also* 45 Fed. Reg. 50,274 (1980).

236. *See* 7 U.S.C. § 136o. FIFRA § 17(a)(1) states that an exported pesticide is mislabeled if there is no registration number, misrepresentation of the identity of the pesticide, absence of warning statements or absence of ingredients, weight and use restrictions. *See id.* § 136o(a)(1).

237. *See id.* § 136o.

238. *See id.* § 136o(b).

239. *See id.*

240. *See* 40 C.F.R. § 168.75(b)(3) (1996).

241. *See* 40 C.F.R. § 168.65(b)(4) (1997).

The EPA also permits exporters to use supplemental labeling.[242] Section 17(a)(1) labeling requirements are met by placing supplemental labeling on shipping containers instead of on the product container.[243] The requirement applies to pesticides that are being "shipped or held for shipment in the United States."[244]

The EPA has made significant progress in resolving language used in labeling pesticides. The EPA now requires that pesticides are labeled in the "appropriate foreign languages."[245] Although a large amount of information is required to be labeled in English, multilingual labeling is limited to: (1) a warning and caution statement; (2) the statement "Not Registered for Use in the United States of America," when required; (3) the ingredients of the pesticide; and (4) the word "Poison" and practical treatment, when required.[246] The regulations do not require instructions on proper method of application (amount, etc.), occupational safety, and alternatives to the pesticide. This information is most useful because the incidence of pesticide exposure is highest among agricultural workers. Further, the regulation suggests an exporter has the option to label the "immediate product," the shipping container of the pesticide, or a combination of the two.[247]

To prevent exposure or misuse of pesticides, full disclosure should be made on both the immediate product and the shipping container. Finally, supplemental labeling requirements apply only to those pesticides being "shipped or held for shipment."[248] There are apparently no provisions to prevent exporters from repackaging the pesticide without FIFRA labeling after the product leaves the U.S.[249]

Food safety also remains a concern under FIFRA.[250] In 1986, GAO noted that FDA sampled less than one percent of the imported

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242. *See id.* § 168.65(c).

243. *See id.*

244. *Id.* § 168.65(c)(2).

245. *Id.* § 168.65(a).

246. *See id.* § 168.65(b)(4)(i).

247. *Compare* 40 C.F.R. § 168.65(a) *with* 40 C.F.R. § 168.65(c).

248. 40 C.F.R. §168.65(c).

249. *See* James H. Colopy, *Poisoning the Developing World: The Exportation of Unregistered and Severely Restricted Pesticides from the United States*, 13 J. ENVTL. L. 167, 191 (1995).

250. *See* U.S. GAO, *Pesticides: Better Sampling and Enforcement Needed on Imported Food* , 12-14, GAO/RCED-86-219 (Sept. 16, 1986) [hereinafter *1986 GAO Report*]. Chlordane and Heptachlor, manufactured by Velsicol Chemical Corp. in Memphis, TN, are two examples of chemicals suspected to be carcinogenic. *See* Michael Satchell, *A Vicious 'Circle of Poison'*, U.S. NEWS & WORLD REP., June 10, 1991, at 32. Although 48 countries, including the United States, have restricted or banned agricultural use of the chemicals, Velsicol exports between 1.5 to 2.0 million pounds a year. *See id.* In 1990, the two pesticides were detected on fish imported into the United States from Canada, Argentina and Norway, rice from Pakistan, mushrooms from France, squash from Mexico and chilies from Thailand. *See id.* Americans annually consume approximately 135 billion pounds of produce, over 25% of which is imported. *See id.* The FDA

foods shipped into the U.S. for compliance with pesticide residue levels under FIFRA.[251] GAO criticized the one percent sample rate because it comprises a "very small percentage of imported food shipments, and the selection of which foods and shipments to sample were left to the individual judgment of FDA inspectors."[252] The FDA monitored 33,687 samples between 1979 and 1985 and found that 6.1% contained illegal residue contamination.[253] GAO stated that "foods from many of the importing countries were not sampled even though they are imported year after year."[254] Although the GAO released the report ten years ago, more recent GAO studies confirmed that the problem still existed in 1992 when the last review of the program was published.[255]

> While the federal government has made some progress in dealing with the very difficult problem of balancing the risks and benefits of pesticides, limitations remain. Thus, some of the same concerns raised by . . . GAO over the last 24 years are unresolved today. They include:
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> 1. limited progress in reviewing older pesticides in light of current scientific knowledge and standards,
> 2. difficulties in removing pesticides that are a cause for concern from the marketplace,
> 3. holes in the safety net designed to provide an early warning of pesticide dangers,
> 4. groundwater supplies becoming contaminated by pesticides,
> 5. shortcomings in the monitoring of pesticide residues on food,
> 6. deficiencies in notifying foreign governments about exports of pesticides that are banned or unregistered in the United States and are being sold abroad,
> 7. inadequate safety protection for farmworkers, and
> 8. the lack of a coordinated federal strategy to manage key pesticide data.[256]

Some of the problems associated with FIFRA are administrative in nature and do not suggest a lack of concern by the U.S. Although

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says that one percent of imported products are tested even though five percent are admittedly contaminated. *See id.*

251. *See 1986 GAO Report, supra* note 250, at 1.

252. *See id.* at 2.

253. *See id.* at 3.

254. *See id.* at 22.

255. *See Pesticides: 30 Years Since Silent Spring—Many Long-standing Concerns Remain* (GAO/T-RCED-92-77) (July 23, 1992).

256. *Id.* at 1-2.

importing countries have frequently failed to receive timely notification of pesticide imports,[257] when the notifications do arrive, there is generally no assurance that the receiving official will forward the data to the user of the chemical.[258] If the user of the chemical does not receive this data, FIFRA's reporting procedure has failed its purpose. Additionally, many chemicals lack efficacy data to include in the notifications because these domestically manufactured chemicals are not registered for domestic use.[259]

B. The Federal Food, Drug, and Cosmetic Act

The Federal Food, Drug, and Cosmetic Act (FFDCA) is the national food-standards program for pesticide residues in the U.S.[260] Under the FFDCA, the EPA must establish tolerance levels for pesticide residues that will remain on raw agricultural commodities.[261] If a pesticide is one that "concentrates," or becomes increasingly potent as the raw agricultural commodity is processed into food, the EPA must base tolerances on the processed food.[262] The EPA considers several factors when setting food tolerances.[263] First, the pesticide must be generally recognized among experts as "safe for use."[264] In evaluating the safety of the pesticide, the EPA considers "the necessity for the production of an adequate, wholesome, and economical food supply," and "other ways in which the consumer may be affected by the same pesticide chemical or by other related substances that are poisonous or deleterious."[265] A processed-food tolerance must be set at "zero" if the pesticide would "induce cancer when ingested by man or animal."[266]

In its evaluation of a pesticide for the establishment of a tolerance, the EPA requires that an applicant submit a petition stating the name of the chemical, composition and test results, as well as the amount, frequency and time of application to crops.[267]

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257. *See Highlights*, 7 INT'L ENVT. REP. (BNA) 296 (July 13, 1983) (citing testimony of Don Clay, Acting Assistant Administrator for EPA's Office of Pesticides and Toxic Substances, Before the House Agric. Subcomm. on Dept. Operations, Research, and Foreign Agric. (June 9, 1983)).

258. *See id.*

259. *See id.*

260. *See* 21 U.S.C. §§ 301-94 (1997).

261. *See* 21 U.S.C. § 346a (1994).

262. *See id.* § 301 (1994).

263. *See id.*

264. *See id.*

265. *Id.* § 346a(b).

266. *Id.* § 348(c)(3)(A). This provision is known as the "Delaney Clause."

267. *See Petitions Proposing Tolerances or Exemptions for Pesticide Residues in or on Raw Agricultural Commodities*, 40 C.F.R. §180.7 (1990).

FFDCA's tolerance setting procedure differs in a number of respects from MRL setting procedures of Codex. The important differences are substantive rather than procedural. The EPA takes a more conservative approach in cancer classification decisions, especially with substances that Codex finds to be non-genotoxic. Similarly, there are differences in residue chemistry analysis, with Codex using more liberal indicator compounds.

C. Food Quality Protection Act of 1996

In April 1994, the Clinton Administration proposed a bill that would revise FIFRA and FFDCA, as well as forbid the export of U.S.-made pesticides that have been banned for health reasons in the U.S.[268] The bill also proposed to prohibit the export of pesticides with registrations that were canceled, suspended, denied, withdrawn or canceled voluntarily.[269] The bill proposed the ban of all pesticides that had tolerances revoked under the FFDCA.[270] Pesticides could be exported if a tolerance was established or if three countries using internationally acceptable standards approved export of the pesticide.[271] The proposal received significant criticism from both industry and environmental groups.[272]

The final result would come in the form of the Food Quality Protection Act of 1996 (FQPA).[273] The Act states that pesticides exported from the U.S. must be prepared or packaged according to the specifications or directions of the foreign purchaser.[274] If a pesticide is not registered, then the exporter must obtain a signed statement from the importer acknowledging that the pesticide is not registered for use and cannot be sold in the U.S.[275] If a pesticide registration is canceled or suspended, the EPA is required to transmit notice of the action through the State Department for distribution to

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268. *See Long-Awaited Reform Bills Released*, Daily Rep. for Executives (BNA), Apr. 28, 1994, at A80.

269. *See id.*

270. *See id.*

271. *See id.*

272. *See* John H. Cushman, *Clinton Proposes Revising Pesticide Regulations*, N.Y. TIMES, April 27, 1994, at A12. After opposition from virtually all sides of the issue, the Clinton administration modified the bill to permit shipment of an unregistered pesticide if it was registered in at least three OECD countries and to provide $4 million to promote product stewardship in developing countries. The funding would have been provided from a tax on exported pesticides at the rate of one cent per pound. One day before hearings began, the stewardship program was eliminated and unregistered pesticides could be exported if any three countries with "credible pesticide regulatory programs" registered it. *Pesticides: Food Safety Reform Top Priority*, BNA Daily Rep., Jan. 25, 1994.

273. *See* Food Quality Protection Act of 1996, Pub. L. No. 104-170, 110 Stat. 1489 (1996).

274. *See* 7 U.S.C. § 136o(a) (1994).

275. *See id.*

foreign countries and international organizations.[276] Upon request, the EPA will disclose all information related to the cancellation or suspension.[277] The EPA promulgated regulations to the FQPA, specifying that manufacturers of pesticides for export maintain copies of all labels and PIC statements for a period of only two years.[278] The manufacturer is not required to maintain records of the important information like quantity, type, active ingredients or dangers unless required by the importing country.[279] Manufacturers should be required to maintain this information so that the EPA and importing countries alike can more accurately monitor the volume and types of pesticides in trade.

Like FIFRA and FFDCA, the Food Quality Protection Act is a statute focused on domestic problems. The statute does not address the issues that many developing countries struggle with in regulating their pesticide imports. Although there is a specific standard for labeling and packaging of exported pesticides, the information needs of the importing country are not considered. The responsibility to obtain information is left to the importing country requesting it from the manufacturer. One method to promote developing countries' access to information is for their governments to simply require that all pesticides imported into their countries comply with domestic packaging and labeling requirements of the U.S.

D. The Toxic Substances Control Act

Under the Toxic Substances Control Act (TSCA), the EPA may restrict the export of a pesticide pursuant to Section 12(a) if found to pose an "unreasonable risk" to human health or the environment in the U.S.[280] An exporter is required to notify the EPA of any exports so the Agency can inform the importing country of the shipment.[281] TSCA is domestically protective but offers little assistance to developing countries in regulating pesticide imports. The weakness of TSCA occurs when an exporter labels the product "intended for export," resulting in shipment of the product without notice because it is not intended for use in the U.S.[282] If the pesticide is found to pose an "unreasonable risk" to human health or the environment in

276. *See id.* § 1360(b).
277. *See id.*
278. *See* 40 C.F.R. § 169.2(h) (1997).
279. *See id.*
280. *See* 15 U.S.C. § 2611(a)(2) (1997).
281. *See id.* § 2611(b)(1).
282. *See id.* § 2611(a)(1)(B).

the U.S.,[283] TSCA has no prior informed consent provision similar to FIFRA. Instead, the EPA is required to forward a notice of the shipment within seven days of contract execution or by the date of export, whichever is sooner.[284] TSCA's notification system is not designed with the developing nation in mind because it only provides notification to other nations of restrictions placed on U.S. imports. Further there is no requirement for what information is required in the notification. Without a firm PIC procedure and specific information requirements, importing countries are unable to make informed decisions regarding the rejection or acceptance of pesticide imports.

VIII. A HISTORY OF NEGLECT IN PROTECTING U.S. CONSUMERS

Prior to 1993, GAO described the FDA's efforts to protect American consumers from potentially harmful pesticide residues in imported food as "clearly inadequate."[285] GAO cited the FDA's "lack of knowledge regarding foreign pesticide use and the inability of its commonly used multi-residue analyses to detect 178 pesticides having U.S. tolerances and over ninety others permitted to be used in foreign countries which could not be identified as having U.S. tolerances."[286]

GAO also criticized the FDA for not acquiring adequate knowledge of foreign chemicals used on commodities imported into the U.S.[287] Further, GAO found that the FDA did not prevent the marketing of most foods found to contain illegal pesticide residues.[288] GAO considered the FDA ineffective in monitoring pesticide residues on food and cited deficiencies in notification procedures to alert foreign governments about exports of banned and unregistered pesticides from the U.S.[289]

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283. *Id.* § 2611(a)(2). The EPA Administrator has discretionary authority to test and determine which chemicals pose an "unreasonable risk" to human health or the environment. *See id.*

284. *See id.*

285. *See Comptroller General of the United States, Report to the Congress: Better Regulation of Pesticide, Exports and Pesticide Residues in Imported Food is Essential*, 1, 11-12 GAO/CED-79-43 (June 22, 1979).

286. *See id.*

287. *See generally U.S. GAO Report, Pesticides: Better Sampling and Enforcement Needed on Imported Food*, 32 GAO/RCED-86-219 (Sept. 1986).

288. *See* Resources, Community and Economic Development Division, U.S. GAO, *Pesticides: Need to Enhance FDA's Ability to Protect the Public from Illegal Residues*, 2 GAO/RCED-87-7 (Oct. 1986).

289. *See Pesticides: 30 Years Since Silent Spring—Many Long-standing Concerns Remain*, Testimony Before the Subcomm. on Envt. & Nat. Resources, 1(6) GAO/T-RCED-92-77) (July 23, 1992) (Statement of Peter Guerraro, Assoc. Dir., Envt'l Protection Issues, Resources, Community, and Econ. Dev. Div., U.S. GAO).

Finally in 1993, GAO reported that in the U.S. "people and the environment are exposed to many pesticides that have not been fully evaluated for their potential to cause cancer, reproductive disorders, birth defects, and environmental damage."[290] GAO attributed the problem in part to the EPA's inability to reregister pesticides.[291] According to the EPA, the program may not be completed until 2006.[292] Meanwhile, most of these products may continue to be sold and distributed even though knowledge of their health and environmental effects is unknown.[293]

The FDA released a residue monitoring report that found residues above EPA tolerance levels in approximately fifty-seven of the products tested.[294] Further, another fifty-seven products contained residues of pesticides for which the EPA had not established tolerance levels.[295] The report revealed that sixty-four imported products contained residue levels over EPA tolerances and 194 products contained residues of pesticides that had no tolerance.[296]

The last report released by GAO was in late 1994.[297] In that report, GAO recognized that the issues that GAO and other federal agencies had raised in approximately ninety previous reports were still a concern.[298] In summary, GAO found that U.S. reliance on foreign nations' inspection systems to ensure the food safety of U.S. imports does not provide assurance the food is safe for consumption.[299] Chemicals that have been canceled in the U.S. continue to be sold and used for food exports in these countries even after GAO presented it as a problem.[300] Because of the increase in the volume of U.S. food imports and lack of FDA resources to inspect imports, only about one percent of the imports are tested.[301] GAO also identified a significant problem in the use of reliable and accurate data to estimate human dietary exposure to chemicals.[302] In order for an accurate exposure assessment to be made, accurate consumption

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290. *See* Resources, Community & Econ. Dev. Div., U.S. GAO, *Pesticide Reregistration May Not be Completed*, 2 GAO/RCED-93-94 (May 21, 1993).

291. *See id.*

292. *See id.*

293. *See id.*

294. *See* Pesticide Program, FDA, *Residue Monitoring—1993*, 4 (1994).

295. *See id.*

296. *See id.*

297. *Food Safety: Changes Needed to Minimize Unsafe Chemicals in Food*, GAO/RCED-94-192 (Sept. 1994) [hereinafter *1994 GAO Report*].

298. *See id.* at 19.

299. *See id.* at 49.

300. *See id.*

301. *See id.* at 50.

302. *See id.* at 23.

data for the U.S. populace is needed in conjunction with data on contaminant residue levels in food.[303] GAO reported that the USDA's 1987-88 survey was so flawed that EPA and FDA officials considered it useless.[304] As a result, exposure assessments are being based on data from a 1977-78 survey that does not accurately illustrate U.S. food consumption patterns.[305] The ongoing history of problems in monitoring pesticide imports and exports reflects a complex and tenuous problem for the U.S. Caught between the debate of economic value of exported pesticides and the safety of imported food is confusion and neglect of an overwhelmed U.S. regulatory program.

IX. CONCLUSION

The current unregulated practice of exporting chemicals to developing countries has yielded unfortunate consequences. Although the developed world feels the effects of pesticide trade, a majority of the detrimental impacts on human health and the environment afflict the developing world. Unfortunately, developing countries generally lack the resources, information and expertise to protect their people from dangerous chemical exports that are banned or severely restricted in developed countries. The incidence of pesticide exposure worldwide suggests that a major public health problem is not receiving the attention it deserves. New methods for estimating the true incidence of pesticide poisoning must be explored. The fact that exposure is almost exclusively in developing countries, even when pesticide consumption is so low in comparison to developed countries, would suggest research needs to be conducted to develop exposure intervention programs.

There is also a critical shortage of information on pesticide exposure, resulting in an inability to evaluate the true environmental and human health impacts of pesticides. Little is known about the effects of long term exposure to pesticide residues in food. Further, the lack of exposure data internationally makes the problem difficult to evaluate. As this article illustrates, exposure data is outdated and available only through special interest groups or from international organizations that currently suffer from budget shortfalls. For example, the most recent comprehensive exposure study was conducted by the World Health Organization in 1988. That report conservatively estimated over one million exposures occur

303. *See* 1994 GAO Report, *supra* note 297, at 23.
304. *See id.* at 24.
305. *See id.*

annually.[306] Many developing countries do not keep track of exposure data, and those that do often fail to report the data to central organizations like the United Nations. There are indications of a worldwide pesticide exposure crisis, but there is little data to confirm or deny the conclusion. The situation can be associated with a patient who would rather not be examined for fear of hearing the news of a costly diagnosis. If reliable exposure data were available, perhaps there would be more interest in the problem leading to firm and decisive regulation.

One approach certain to bring responsibility to pesticide trade is to outlaw or severely restrict the export of those pesticides the U.S. has banned, withdrawn registration or severely restricted. Furthermore, pesticides that have no registration could also be included among those outlawed for export. This is probably the most unlikely resolution because the U.S. has a significant share of the global pesticide industry. Chemical lobbies and politicians alike have long recognized that foreign pesticide manufacturers would be more than satisfied to obtain the U.S. share of pesticide exports.[307]

Although domestic and international efforts are moving toward full disclosure of the dangers and proper use of pesticides, no single set of rules can ensure the safe use of pesticides under every condition. Instruction and restriction apply to specific pesticides, formulations, application methods and commodities. In an effort to help resolve this problem, governments and industry alike should follow strict PIC procedures. Demanding good conduct on the part of industry in exchanging toxicological information between states, and having rules on trading, labeling, packaging, storage and disposal will have a beneficial impact. The current trend in the pesticide industry involves more training time for agricultural workers and greater company efforts to monitor pesticide use.

Current initiatives to curb pesticide trade problems offer little assistance in resolving exposure problems without a firm commitment by the world's key chemical exporting countries. The voluntary nature of international "soft law" schemes render them virtually unenforceable in today's lucrative international chemical market. Moreover, until the international market reflects a level economic playing field, powerful domestic lobbies will likely defeat U.S. initiatives on a legislative level. Incentives greater than money must exist before key chemical producing countries would submit to

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306. *See* Gary Gardner, *IPM and the War on Pests*, 9(2) WORLD WATCH 36 (Mar. 13, 1996).

307. *See* Testimony of William D. Gullickson, Chairman Chemical Producers & Distributors Ass'n, House Agric. Dept. Operations and Nutrition Pesticides and FIFRA, Before the Subcomm. on Dept. Operations and Nutrition, June 15, 1994.

a convention mandating responsible trade. Perhaps proponents should stress the potential loss of life and the danger of domestic food safety, in hopes that ethical and moral motivations will prevail.