Agricultural Pesticides: The Urgent Need for Harmonization of International Regulation

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Comments

AGRICULTURAL PESTICIDES: THE URGENT NEED FOR HARMONIZATION OF INTERNATIONAL REGULATION

> The goal in regulating pesticides . . . , is to assure availability of effective products which can be used safely, without undue risk to the natural environment or to man.[1]

Agricultural pesticides[2] are accepted as an essential ingredient in all national and international agricultural programs.[3] Although historically a national responsibility, the regulation of pesticides

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1. Food and Agriculture Organization of the United Nations (FAO), FAO Panel of Experts on Pesticide Specifications, Registration Requirements and Application Standards, U.N. Doc. AGP:1977/M/4, at 5 (1977) [hereinafter cited as 1977 FAO Panel of Experts]; *see also* Maier, *World Food Needs Pesticides*, 138 FARM CHEMICALS 16, 18 (Sept. 1975), where Mr. Alan Maier stated that:

> If regulations were harmonized internationally, [pesticide] products could be registered and brought into use more quickly without the loss of appropriate safeguards. This would be another way of helping to increase food production.

2. The Federal Environmental Pesticide Control Act of 1972 defines an agricultural pesticide as:

> (1) any substance or mixture of substances intended for preventing, destroying, repelling, or mitigating any pest, and (2) any substance or mixture of substances intended for use as a plant regulator, defoliant, or desiccant.

7 U.S.C. § 136(u) (1976); *but see* World Health Organization (WHO), *Report of the 1975 Joint Meeting of the FAO Working Party of Experts on Pesticide Residues and the WHO Expert Committee on Pesticide Residues in Food*, WHO TECH. REP. SER. (No. 592) at 39 (Annex 3) (1976) [hereinafter cited as *1975 Joint Meeting on Pesticide Residues*], where a pesticide is defined as

> any substance or mixture of substances intended for preventing or controlling any unwanted species of plants or animals and also includes any substances or mixture of substances intended for use as a plant-growth regulator, defoliant or desiccant.

See generally 1977 FAO Panel of Experts, *supra* note 1, at Glossary (Annex 1), where a helpful explanatory note states:

> The term "pesticide" includes any substance used for the control of pests during the production, storage, transport, marketing or processing of food for man or animals or which may be administered to animals for the control of insects or arachnids [air breathing invertebrates including spiders, scorpions, mites and ticks] in or on their bodies. It does not apply to antibiotics or other chemicals administered to animals for other purposes, such as to stimulate their growth or to modify their reproductive behaviour; nor does it apply to fertilizers.

Id. at 11.

3. *See* WHO Expert Committee on Insecticides, *Chemistry and Specifications of Pesticides*, WHO TECH. REP. SER. (No. 465) at 5-6 (1971) [hereinafter cited as 1971 WHO Expert Committee on Insecticides], where the committee stated that "there is no efficient or economically acceptable alternative to using agricultural pesticides which [is] likely to become available in the forseeable future"; *see also* 1977 FAO Panel of Experts, *supra* note 1,

now demands international harmonization.[4] Over the past two decades the world has witnessed a dramatic increase in the production and use,[5] as well as in the continued noxious environmental effects, of agricultural pesticides.[6] Consequently, there is a present need for the United Nations to develop and adopt an active policy of international pesticide regulation.

The purpose of this comment is to make specific recommendations to the United Nations concerning the international regulation of agricultural pesticides. To this end, the comment will first analyze the efforts undertaken by certain international conferences,[7] international organizations,[8] and the United Nations to regulate agricultural pesticides. These efforts will then be compared to the

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at 1, where Dr. A.V. Adam of the United Nations Food and Agriculture Organization stated that "pesticides were an essential tool in food production, food protection and public health."

In a recent article, Douglas Starr quoted the United Nations Food and Agriculture Organization Annual Report as stating that "[b]ecause of their effectiveness and easy use, pesticides will remain essential . . . for the foreseeable future . . . ." Starr, *Pesticide poisoning "alarming," says FAO*, Christian Sci. Monitor, Feb. 1, 1978, at 25, col. 1.

4. *See* Editorial, *Untangling World Pesticide Regulations*, 139 FARM CHEMICALS 15 (Sept. 1976), where the author states that "world pesticide regulations must be untangled and a degree of harmonization achieved if agriculture is to continue to meet world food needs." *See* notes 32 and 47 *infra*, where the first use of the term harmonization in the context of pesticide regulation is cited. *See also* McCollister & Goring, *Can the Pesticide Industry Survive the Regulatory Onslaught?*, 141 FARM CHEMICALS 14-16 (Sept. 1978).

5. *See generally* 1971 WHO Expert Committee on Insecticides, *supra* note 3, at 5-6, where the committee noted that "the world-wide use of agricultural pesticides is increasing, both in amount and in diversity."

6. In 1962, Rachel Carson's book *Silent Spring* alerted the public to some of the present, potential, and unknown hazards of agricultural pesticides. *See also* ORGANIZATION FOR ECONOMIC COOPERATION AND DEVELOPMENT, THE PROBLEMS OF PERSISTENT CHEMICALS (1971); C. EDWARDS, ENVIRONMENTAL POLLUTION BY PESTICIDES (1973); K. MELLANBY, PESTICIDES AND POLLUTION (2d ed. 1970). For an excellent commentary on the recent criminal prosecution by the United States Government of Allied Chemical Corp. for the "grave environmental and public health damages caused by the firm's slipshod production of Kepone, a powerful pesticide" *see* Stone, *The Kepone Affair Reveals a Deadly Corporate Shell Game*, Los Angeles Times, Dec. 11, 1977, pt. VI, at 3, col. 1.

7. International Conferences discussed in this comment include: 1972 United Nations Conference on the Human Environment; 1974 World Food Conference; 1975 *Ad Hoc* Government Consultation on Pesticides in Agriculture and Public Health; 1977 Food and Agriculture Organization Panel of Experts on Pesticide Specifications, Registration Requirements and Application Standards; and the 1977 First *Ad Hoc* Government Consultation on International Standardization of Pesticide Registration Requirements.

8. International Organizations discussed in this comment include: the CODEX Alimentarius Commission, Committee on Pesticide Residues, which consists of an international body of nations that convene for the general purpose of establishing mutually agreed upon standards of identity, quality, and safety for agricultural commodities moving in international commerce; the *Groupement International des Associations Nationales de Fabricants de Pesticides*, which represents more than 650 agricultural chemical manufacturers in 16 nations; the United Nations Environment Programme; the United Nations Food and Agriculture Organization; and the World Health Organization.

United States approach to the regulation of pesticides. This comment will conclude by recommending that the United Nations Food and Agriculture Organization convene an *ad hoc* committee to draft an Action Plan for the coordinated international regulation of agricultural pesticides.

I. SCOPE OF THE PROBLEM

One of the gravest challenges facing the international community today is to reconcile the conflict between providing enough food for the world's population and preserving the international environment for future generations.[9] There has been a spiraling increase in the use of agricultural pesticides to meet the world's food demands since the end of World War II.[10] Although the use of pesticides has increased crop yields by decreasing the presence of pests,[11] environmental injury[12] from such pesticides continues unabated in the world today.[13]

The contradiction between agricultural benefits and environmental injury[14] is underscored by an examination of the several perplexing aspects of pollution caused by agricultural chemicals.[15] First, in contrast to most other agents which pollute the air, land,

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9. *See* 1977 FAO Panel of Experts, *supra* note 1, at 5-6, where the group on pesticide registration requirements stated:

> The need for increased food production to meet the requirements of an expanding world population has stimulated extensive research designed to control pests and diseases of plants and animals to increase yields to facilitate harvesting and storage and to enhance the nutritional value of food products. In elaborating regulations and test protocols for evaluating toxic substances such as pesticides, consideration must be given to the benefits that society can realize from such materials so that judgements on the utility of a pesticide can be balanced against undesirable consequences of commercial use.

10. WHO Expert Committee on Insecticides, *Ecology and Control of Vectors in Public Health*, WHO TECH. REP. SER. (No. 561) at 5-6 (1975) [hereinafter cited as 1975 Expert Committee on Insecticides].

11. The Federal Environmental Pesticide Control Act of 1972 defines a pest as:

> (1) any insect, rodent, nematode, fungus, weed, or (2) any other form of terrestrial or aquatic plant or animal life or virus, bacteria, or other micro-organism . . . which the Administrator [of the Federal Environmental Protection Agency] declares to be a pest . . . .

7 U.S.C. § 136(t) (1976).

12. *See generally* ORGANIZATION FOR ECONOMIC COOPERATION AND DEVELOPMENT, *supra* note 6.

13. *See* 30 U.N. Environment Programme (3d sess.) at 12, U.N. Doc. UNEP/GC/31 (1975), where the Executive Director of UNEP refers to the continuing "noxious environmental effects" of agricultural pesticides.

14. *See* 1977 FAO Panel of Experts, *supra* note 1, at 5-6.

15. *See* Note, *Environmental Law: Agricultural Pesticides*, 18 WASHBURN L.J. 53, 54 (1974). For excellent background material on the impact of pollution on international law, *see* J. BARROS & D. JOHNSTON, THE INTERNATIONAL LAW OF POLLUTION (1974). For fur-

and water, pesticides are intentionally introduced into the environment for a beneficial purpose.[16] Pesticides are used under the presumption that the benefits from their use far outweigh the risks to human health and environmental quality.[17]

A second problem is that pollution from pesticides is not confined to any one segment of the environment.[18] Aggravating this situation is the fact that pesticides are easily transported throughout the environment by streams, oceans, wind currents, and various life forms.[19]

Finally, the environmental problems caused by pesticides are heightened by the persistent nature of some agricultural chemicals.[20] For example, the beneficial as well as the toxic[21] side effects of the chlorinated hydrocarbons[22] linger in the environment for many years.[23] One authority argues that persistent agricultural

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ther discussion on the role of agricultural pesticides in environmental pollution, *see* MELLANBY, *supra* note 6; EDWARDS, *supra* note 6.

16. *See* Note, *supra* note 15, at 54.

17. WHO Expert Committee on Insecticides, *Ecology and Control of Vectors in Public Health*, WHO TECH. REP. SER. (No. 561) at 8 (1976). Specific examples of the injurious effects of agricultural pesticides are found in birds, shell fish, wildlife, and beneficial insects. COUNCIL ON ENVIRONMENTAL QUALITY, SECOND ANNUAL REP. 244 (1971).

18. COUNCIL ON ENVIRONMENTAL QUALITY, THIRD ANNUAL REP. 16 (1972). It should be noted that food is the primary conduit by which agricultural pesticides reach man. *See, e.g.*, NAT'L RESEARCH COUNCIL, REP. OF THE COMM'R ON PERSISTENT PESTICIDES, DIVISION OF BIOLOGY AND AGRICULTURE TO THE USDA (1969).

19. J. BRECHER & M. NESTLE, ENVIRONMENTAL LAW HANDBOOK § 7.10 (1970); 61 AM. JUR. 2d *Pollution Control* § 104 (1972).

20. *See* ORGANIZATION FOR ECONOMIC COOPERATION AND DEVELOPMENT, *supra* note 6, where the specific problems associated with persistent agricultural pesticides are discussed; *see also* Rodger, *The Persistent Problem of the Persistent Pesticides: A Lesson in Environmental Law*, 70 COLUM. L. REV. 567 (1970). It is significant to note that the persistent pesticides, including DDT, have a tendency to be stored and built up in organs high in fatty tissue, such as the liver, kidneys and thyroid. 61 AM. JUR. 2d *Pollution Control* § 104 (1972).

21. An example of the toxic effects of the persistent agricultural pesticides is skin contamination of those persons who apply the pesticides to agricultural crops. WHO, *Chemical and Biological Methodology for the Assessment of Hazards of Pesticides for Man*, WHO TECH. REP. SER. (No. 560) at 7 (1975) [hereinafter cited as 1975 *Assessment of Hazards of Pesticides*].

22. The chlorinated hydrocarbons include such persistent agricultural pesticides as DDT, aldrin, dieldrin, heptachlor and toxaphene. 61 AM. JUR. 2d *Pollution Control* § 104 (1972). The United States supply of chlorinated hydrocarbons dropped from a high of 244 million pounds in 1956 to 31 million pounds in 1970. It is important to note, however, that although the production of chlorinated hydrocarbons has declined, the substitution of far more toxic agricultural pesticides has occurred. Between 1956 and 1970, the production of parathions, a group of organophosphate chemicals used to replace the chlorinated hydrocarbons in the United States, increased from 7 million pounds to 57 million pounds. COUNCIL ON ENVIRONMENTAL QUALITY, THIRD ANNUAL REP. 17 (1972).

23. Nonpersistent pesticides have a life of several days to approximately 12 weeks,

pesticides pose the most serious long-range environmental threat to the world's oceans.[24] The agricultural benefit-environmental injury polemic will undoubtedly continue, yet few would argue that the use of pesticides does not result in injury to the environment. The associated environmental dangers are manifest—yet the issues associated with their regulation must be defined.

Agricultural pesticide development, production, distribution, and use have become so widespread[25] that national and international governmental bodies have enacted laws and adopted resolutions for their regulation. The developed nations generally have enacted strict legislation for the domestic regulation of agricultural pesticides,[26] although this legislation rarely applies to the export of pesticides.[27] Most developing nations,[28] on the other hand, have

whereas moderately persistent pesticides last from one to 18 months. The persistent or hard pesticides, represented by the chlorinated hydrocarbons, remain in the environment for many years. 61 AM. JUR. 2d *Pollution Control* § 104 (1972).

24. A. MCKNIGHT, ENVIRONMENTAL POLLUTION CONTROL—TECHNICAL, ECONOMIC AND LEGAL ASPECTS 167-68 (1974).

25. *See, e.g., A Look at World Pesticide Markets*, 141 FARM CHEMICALS 38 (Sept. 1977), where present and future pesticide consumption in the United States and World markets is estimated.

	UNITED STATES				WORLD			
Pesticide	1974	1980*	1984*	Projected Increase 1980-84	1974	1980*	1984*	Projected Increase 1980-84
Herbicides	1058	1729	2021	17%	2190	3819	4668	22%
Insecticides	491	710	833	17%	1822	2575	3190	24%
Fungicides	116	183	243	33%	961	1418	1761	24%
Soil Fumigants	20	50	64	28%	69	134	183	37%
Defoliants/ Desiccants	18	39	48	23%	19	49	68	39%
Growth Regulators	18	25	40	60%	40	50	80	60%
Pheremones/ Attractants/ Viruses	—	5	10	100%	—	8	11	38%
TOTAL	1721	2741	3259	19%	5101	8053	9961	24%
* Estimated	Figures in millions of United States Dollars [© Farm Chemicals]							

26. *See, e.g.*, United States: Federal Environmental Pesticide Control Act of 1972, 7 U.S.C. §§ 136-136y (1976) (amending 7 U.S.C. §§ 135-135(k) (1970)); Federal Republic of Germany: Plant Protection Law of May 10, 1969; Food Law of Jan. 19, 1936, *as amended*.

27. For example, see the Federal Environmental Pesticide Control Act of 1972 which provides that pesticides produced in the United States solely for export are exempted from the requirements of the Federal Environmental Pesticide Control Act. 7 U.S.C. § 136o(a) (1976).

28. For a concise discussion of the pesticide situation and developing countries, *see* Re-

faced the difficult choice of either using pesticides made available by the developed nations, many of which remain to be proven environmentally safe, or letting their nations starve.[29] Consequently, developing nations have opted for relatively lenient domestic legislation regulating the importation and use of these pesticides. The United Nations has pursued a passive policy of pesticide regulation,[30] and has concentrated its efforts primarily on their technical aspects.[31] The resultant conflict between the developed nations, the developing nations, and the United Nations in the regulation of agricultural pesticides has hindered reconciliation of the competing interests of providing enough food for the world's population and preserving the international environment for future generations.

The competing demands of the developed and developing nations, as well as the passive approach pursued by the United Nations, has led to a distinct lack of *harmonization*[32] of national and international regulation of agricultural pesticides. The disharmonious approach to pesticide regulation, and the concomitant need to achieve a greater degree of order, can be viewed best through an analysis of the present state of international regulation. This will be accomplished by examining the focus of international conferences, as well as the role of international organizations, and will

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port of the World Food Council, 30 U.N. GAOR 16, U.N. Doc. A/10019 (1975); *see also* Industrial Production and Formulation of Pesticides in Developing Countries, 27 U.N. Indus. Dev. Org. 1, U.N. Doc. ID/75/Vol. I (1972) [hereinafter cited as Industrial Production and Formulation of Pesticides], where Gunter Zweig discusses the importance of pesticides to developing nations.

29. This problem is addressed by Gunter Zweig in his discussion regarding the banning of the pesticide DDT. Mr. Zweig states that:

> [t]he banning of DDT seems to have grown out of an emotional reaction rather than an observed scientific observation. In countries where technological advances in agriculture have resulted in a level of productivity which permits the use of sophisticated control techniques, the banning of one insecticide may be acceptable. But, it is suggested that in the developing countries with 2 billion starving or nearly starving people, such an arbitrary action is a luxury beyond reason.

Industrial Production and Formulation of Pesticides, *supra* note 28, at 9.

30. *See* notes 78-83 *infra*, and accompanying text.

31. The technical aspects of agricultural pesticides include their effect on agricultural production, and the problem of pesticide residues and pesticide toxicology. *See* notes 78-81 *infra*, and accompanying text.

32. The first reference to "harmonizing" pesticide regulations among nations appeared in Resolution XII of the *Ad Hoc* Government Consultation on Pesticides in Agriculture and Public Health, which was held in Rome, April 7-11, 1975. This resolution appears in 1977 FAO Panel of Experts, *supra* note 1, at 2-3; *see also* note 47 *infra*, where Resolution XII has been quoted.

conclude with a criticism of current United Nations policy concerning international pesticide regulation.

II. INTERNATIONAL REGULATION OF AGRICULTURAL PESTICIDES

The international regulation of agricultural pesticides is a goal to be attained, rather than a functioning regulatory system that can be neatly diagramed on a line and block chart. The following discussion will define the present state of international pesticide regulation.

A. International Conferences

The several international conferences which have been directly or indirectly concerned with agricultural chemicals have thus far avoided the broad issue of international pesticide regulation. These conferences have focused, however, on two important sub-issues of pesticide regulation: first, environmental protection from the noxious effects of chemical pollutants;[33] and second, standardization of pesticide registration requirements among nations.[34]

1. *Environmental Protection*. The international community has demanded that the natural environment be protected from the injurious effects of chemical pollutants.[35] The practical concern with man's environment voiced at the 1972 United Nations Conference on the Human Environment (Stockholm Conference)[36] has

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33. *See* notes 35-42 *infra*, and accompanying text.

34. *See* notes 43-55 *infra*, and accompanying text.

35. *See generally* Report of the United Nations Conference on the Human Environment (21st plen. mtg.), U.N. Doc. A/CONF.48/14/Rev. 1 (1972) [hereinafter cited as 1972 Report of the Stockholm Conference]; *see also Principle 6* which states:

> The discharge of toxic substances or of other substances and the release of heat, in such quantities or concentrations as to exceed the capacity of the environment to render them harmless, must be halted in order to ensure that serious or irreversible damage is not inflicted on the ecosystems. The just struggle of the peoples of all countries against pollution should be supported.

Id. at 4.

Chemical pollutants are defined as:

> chemicals (and some biological agents) and physical factors . . . , whose distribution in the environment and accumulation in living organisms cause deleterious effects on the health and well-being of all living systems, including man.

Action Plan for the Human Environment: Program Development and Priorities, Report of the Executive Director, 1 U.N. Environment Programme 30, U.N. Doc. UNEP/GC/5 (1973).

36. *See* 1972 Report of the Stockholm Conference, *supra* note 35. The United Nations General Assembly officially recognized the significance of the United Nations Conference on the Human Environment in December, 1972. G.A. Res. 2994-2996, 27 U.N. GAOR, Supp.

stimulated activism in the field of international environmental protection. The guiding principle adopted by the Stockholm Conference was that man has a "fundamental right" to an environment that "permits a life of dignity and well being . . . ."[37]

Although general in scope, the principles adopted at the Stockholm Conference[38] form a comprehensive checklist for regulation of those activities and commodities that adversely affect man's environment.[39] Several of these principles bear directly on the issue of international pesticide regulation. First is the concept that the natural resources of the earth must be safeguarded through careful planning and management.[40] This principle goes directly to the problems associated with contamination of agricultural soils and the pollution of streams and rivers by pesticides. Second is the command that the discharge of toxic substances in quantities or concentrations that exceed the capacity of the environment to render them harmless cannot be tolerated.[41] Finally is the principle that although nations have the sovereign right to exploit their own resources pursuant to their own environmental policies, they must ensure that activities within their jurisdiction or control do not cause damage to the environment of other nations or to areas beyond the limits of national jurisdiction.[42] These principles have not only focused national and international attention on the environmental effects of agricultural pesticides, but they have also indirectly served as a catalyst for their international regulation.

2. *Standardization of Pesticide Registration Requirements*.[43]

(No. 30) 42-43, U.N. Doc. A/8730 (1972). In response, the United Nations General Assembly established the United Nations Environment Programme. G.A. Res. 2997, 27 U.N. GAOR, Supp. (No. 30) 43, U.N. Doc. A/8730 (1972).

37. 1972 Report of the Stockholm Conference, *supra* note 35, at 4.

38. *Id.* at 3-5.

39. *Id.*

40. *See id.* at 4, *Principle 2*.

41. *See id. Principle 6*; *see* note 35 *supra* where *Principle 6* has been quoted.

42. *See id.* at 5, *Principle 21*; *but see The Trail Smelter Case* (United States v. Canada) 3 R. Int'l Arb. Awards 1905, 1965 (1941), *reprinted in* 35 AM. J. INT'L L. 684, 716 (1941). For a brief statement of the facts and holding of the *Trail Smelter Case*, *see* note 135 *infra*.

43. For background material on efforts by the United Nations Food and Agriculture Organization (FAO) and the World Health Organization (WHO) concerning the issue of pesticide registration requirements, see WHO—FAO, GUIDELINES FOR LEGISLATION CONCERNING THE REGISTRATION FOR SALE AND MARKETING OF PESTICIDES, WHO Doc. OH/69.3, FAO Doc. PL:CP/21 (1969); FAO, MODEL SCHEME FOR THE ESTABLISHMENT OF NATIONAL ORGANIZATIONS FOR THE OFFICIAL CONTROL OF PESTICIDES, FAO Doc. AGP:CP/28 (1970); and WHO, CONTROL OF PESTICIDES: A SURVEY OF EXISTING LEGISLATION, WHO unnumbered Doc. (1970).

The World Food Conference of 1974[44] provided the first appeal to standardize pesticide registration requirements among nations.[45] This concern was precipitated by the extreme shortage of pesticide products in the developing countries in 1974.[46] Several international conferences were held between 1975 and 1977[47] to consider and make recommendations on how pesticide registration requirements can be standardized.

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44. *See* Report of the World Food Conference (16th plen. mtg.), U.N. Doc. E/CONF.65/20 (1974) [hereinafter cited as 1974 World Food Conference].

45. *See id.* at 11-12, Resolution X, which is set out in pertinent part as follows:

Resolution X *Pesticides*

The World Food Conference,

Recognizing that pesticides are in short supply . . . , and are important inputs for improving agriculture . . . ,

Recognizing the need for adequate measures to ensure the production and supply of appropriate pesticides and application equipment at reasonable prices and to increase the efficiency of pesticide use . . . ,

1. *Recommends* that international co-ordination be established to facilitate . . . , the supply of necessary pesticides and equipment and advice on their efficient and safe use . . . ;

2. *Recommends* a co-ordinated *programme* including the necessary elements of supply, information, training, research and quality control, to increase the efficiency of protection measures;

3. *Recommends* a strong continuing *programme* of research into the mechanism of resistance in both plants and pests . . . ;

4. *Calls on* the Food and Agriculture Organization of the United Nations . . . to convene on an urgent basis an *ad hoc* consultation, including member governments and industry, to recommend ways and means to give effect to the intentions of the present resolution, including . . . *the standardization of regulatory procedures* (emphasis added) and environmental rules and the examination of alternative methods of pest control . . . .

46. *Id.* at 11.

47. The international conferences held on pesticide registration requirements are: (1) The *Ad Hoc* Government Consultation on Pesticides in Agriculture and Public Health, held in Rome, April 7-11, 1975. *See generally* FAO, Report of the *Ad Hoc* Consultation on Pesticides in Agriculture and Public Health, U.N. Doc. 1975/M/3 (1975). The resolutions adopted by this conference that are relevant to this comment are set forth as follows:

Resolution XII

The *Ad Hoc* Government Consultation:

Having considered the importance of having laws or other arrangements requiring the registration of pesticides prior to sale,

Recognizing the divergence in requirements for registration between various countries, and that these divergencies appear to be increasing,

Recognizing that uniformity of some requirements should be possible, and

Recognizing that this divergence may increase the cost of new pesticides and inhibit the development or limit the availability of critically needed pest control materials,

1. *Recommends* that FAO in collaboration with WHO call on [*sic*] International Consultation to analyse and discuss the basis for harmonizing the requirements for registration of pesticides in different countries. Government officials, international organizations, scientific societies, representatives of the pesticide industry, and other interested parties should be encouraged to attend and participate.

Resolution XIII

The *Ad Hoc* Government Consultation:

Having considered the need for a continuing flow of suitable pesticides; also their development and registration for practical use in agriculture and public health,

Action on this issue culminated in October, 1977, when the United Nations Food and Agriculture Organization held the First *Ad Hoc* Government Consultation on the International Standardization of Pesticide Registration Requirements (Consultation).[48] The Consultation considered proposals from both the *Groupement International des Associations Nationales de Fabricants de Pesticides* (GIFAP)[49] and the United Nations Food and Agriculture Organization.[50] GIFAP proposed a comprehensive program calling for the standardization of basic pesticide registration criteria, protocols for testing agricultural pesticides, protection of confidential pesticide research information, and recommendation of a three-phase international registration program to permit the provisional clear-

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Being aware of the urgent need to find a solution for the problem of developing pesticides for minor uses, and

Having considered the need for target-specific pesticides and such other materials as may be required, and

Recognizing the many difficulties involved for the chemical industry to invest time, effort and money in the necessary research and development, and

Recognizing that both government and industry are working on these problems, and

Considering that the needs for an international *programme* to assist in the selection, development and registration of suitable products should be examined,

1. *Recommends* that GIFAP be asked to examine this question in close collaboration with the Pesticide Working Group of the Industry Co-operative *Programme* and FAO/WHO, and following this;

2. *Recommends* that an *ad hoc* meeting be organized to study the report of GIFAP and to explore the potential of establishing a workable and useful system.

Resolutions XII & XIII, *reprinted in* 1977 FAO Panel of Experts, *supra* note 1, at 2-3; (2) The FAO Panel of Experts on Pesticide Specifications, Registration Requirements and Application Standards, held in Rome, June 28-July 4, 1977. *See generally* 1977 FAO PANEL OF EXPERTS, *supra* note 1; and (3) The First *Ad Hoc* Government Consultation on International Standardization of Pesticides Registration Requirements, held in Rome, Oct. 24-28, 1977. *See generally* 1977 Report Draft No. 1, *infra* note 48.

48. *See* FAO, Report Draft No. 1 of the *Ad Hoc* Government Consultation on International Standardization of Pesticide Registration Requirements (Oct. 24-28, 1977), U.N. Doc. W/66265 (1977) [hereinafter cited as 1977 Report Draft No. 1].

49. (International Group of National Associations of Pesticide Manufacturers). *See Groupement International des Associations Nationales de Fabricants de Pesticides* (GIFAP), GIFAP SUBMISSION TO THE FAO FOR THE AD HOC GOVERNMENT CONSULTATION ON THE STANDARDIZATION OF REGISTRATION REQUIREMENTS, GIFAP Doc. 77.165 (1977) [hereinafter cited as 1977 GIFAP SUBMISSION], *reprinted in* GIFAP, AD HOC GOVERNMENT CONSULTATION ON INTERNATIONAL STANDARDIZATION OF PESTICIDES REGISTRATION REQUIREMENTS (1977). GIFAP prepared this proposal in response to Resolution XIII of the *Ad Hoc* Government Consultation on Pesticides in Agriculture and Public Health (1975). This resolution is set forth at note 47 *supra*.

50. *See* 1977 FAO Panel of Experts, *supra* note 1. For the working papers, *see* U.N. Doc. AGP/77/WP 8.1-8.6, 9.1 (1977), *reprinted in* GIFAP, AD HOC GOVERNMENT CONSULTATION ON INTERNATIONAL STANDARDIZATION OF PESTICIDES REGISTRATION REQUIREMENTS, § 2 (1977).

ance of pesticides after basic studies have been completed.[51] GIFAP concluded by suggesting that the principle that underlies the decision to register pesticides is a value judgment wherein the pesticide's potential benefits are weighed against the potential risks.[52] This principle applies to current national pesticide registration decisions,[53] and would presumably apply to any future international system of pesticide registration. GIFAP's proposal was supplemented by the report and working papers produced by the United Nations Food and Agriculture Organization at a June, 1977 meeting.[54] The significant outcome of this first Consultation is the agreement that national and international pesticide registration requirements must be standardized if a coordinated and cost efficient pesticide distribution and regulatory system is ever to be realized.[55]

The importance of these conferences lies not in their substantive results, but rather in the initiation of a meaningful dialogue concerning the basics of international pesticide regulation. The limited substantive impact of international conferences will now be contrasted with the increasing role of international organizations regarding the international regulation of agricultural pesticides.

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51. *See* 1977 GIFAP SUBMISSION, *supra* note 49, at 4-7.

GIFAP's proposed approach is summarized by Dr. Horst Metzger, managing director of the Crop Protection Division, *BASF Aktiengesellschaft* as:

> [1] The suitability of a pesticide should be judged on the basis of laboratory tests that are conducted uniformly throughout the world. [2] The protocols for tests to establish data should be determined and standardized by internationally-oriented scientists, including representatives of industry . . . . [3] Five basic criteria should be employed for the registration of pesticides: 1) chemical and physical properties; 2) toxicology; 3) residues; 4) effect on environment and wildlife; and 5) efficacy. [4] The registration should be conducted in phases, such as: *Trial Clearance* for the first year and limited use; *Provisional Clearance* for a defined period, after basic studies have been completed; and *Commercial Clearance*, on the basis of sufficient data and experience. [5] It is vital that the confidentiality of research information is respected. [6] The FAO/WHO Codex Alimentarius Commission [*see* note 8 *supra*] should continue to strive for internationally accepted tolerances for pesticide residues in agricultural commodities. [7] [A]n independent board will be needed to stimulate and implement the required coordination [between government and industry] and make the harmonization of registration requirements a practical reality. Such a board should be organized within the framework of an international agency. Its tasks will not only be to coordinate all efforts, but also to guide the procedures. Moreover, industry should participate in the decision making processes for registration requirements.

Metzger, *Will Harmonization Be Achieved in Rome?*, 141 FARM CHEMICALS 16 (Sept. 1977).

52. *See* 1977 GIFAP SUBMISSION, *supra* note 49, at 4; *see also* 1977 FAO Panel of Experts, *supra* note 1, at 5-6.

53. In a recent memorandum, the General Counsel for the United States Environmental Protection Agency (EPA) discusses the balancing (benefit-risk) analysis that the Administrator of the EPA employs in decisions to grant, deny, suspend, or cancel the registration of a particular pesticide. 43 Fed. Reg. 37,611 (1978).

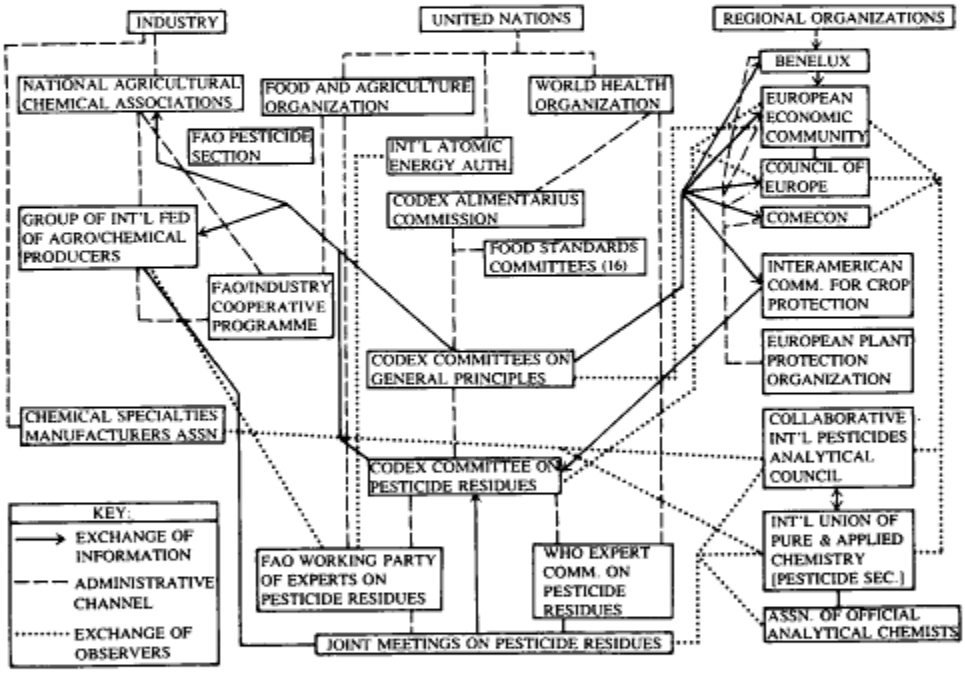
54. *See* note 50 *supra*.

55. *See generally* 1977 Report Draft No. 1, *supra* note 48.

B. International Organizations

Several international organizations and agencies have overlapping interests and responsibilities within the broad framework of international pesticide regulation.[56] No single regulatory organization or agency, however, has overall responsibility for the administration of an international pesticide regulatory system.[57] Rather than taking an active role in regulating the development, production, distribution, and use of agricultural pesticides, most international organizations and agencies have been content to concern

56. The following diagram by the National Agricultural Chemicals Association (U.S.) vividly illustrates the complexity of the international relationships in the scheme of international pesticide regulation and regulatory agencies. The diagram serves also to illustrate the lack of centralized management and regulation of agricultural pesticides in the international arena.



NATIONAL AGRICULTURAL CHEMICALS ASSOCIATION (U.S.), REPORT ON THE NATIONAL CONFERENCE ON THE CODEX ALIMENTARIUS INTERNATIONAL PESTICIDE RESIDUE LIMITS, at 25 (MAY 5, 1976) [hereinafter cited as 1976 CODEX REPORT].

57. The United States Environmental Protection Agency has stated that "we know of no international organization which regulates pesticides." Letter from T.E. Adamczyk, Acting Associate Director for the Special Projects Registration Division (WH-567), United States Environmental Protection Agency, to the author (Jan. 16, 1978) (copy on file with *California Western International Law Journal*).

themselves with the particular aspect of pesticides that specifically relates to their area of concern.

Although the United Nations has several agencies and committees that deal with agricultural pesticides,[58] only the United Nations Food and Agriculture Organization (FAO) has become actively involved with their international regulation.[59] FAO stated in June, 1977, that "the goal in regulating pesticides . . . , is to assure availability of effective products which can be used safely, without undue risk to the natural environment or to man."[60] While FAO is becoming increasingly active in international pesticide regulation, most agencies and committees within FAO still concern themselves primarily with the technical aspects of pesticides.[61] The environmental hazards posed by pesticides are also a

58. The principal United Nations organizations that deal with agricultural pesticides are: the United Nations Environment Programme; the United Nations Food and Agriculture Organization; the United Nations Industrial Development Organization; the United Nations International Childrens Education Fund; the United Nations Industry Cooperative Programme—Pesticides Working Group; and the World Health Organization. For a recent discussion of the Pesticides Working Group, *see* Solomon, *Industry Cooperative Programme of the Food and Agriculture Organization of the United Nations: A Catalytic Organization Bridging Multinational Agribusiness Corporations and Developing Nations*, 13 TEX. INT'L L.J. 69, 74-78 (1977).

59. The agency within FAO that coordinates all plant protection programs is the Plant Protection Service, which is a subdivision of the FAO Plant Production and Protection Division.

60. 1977 FAO Panel of Experts, *supra* note 1, at 5. To realize this goal, pesticides must be toxic to the target organism, while possessing a high degree of specificity so as not to present an undue hazard to non-target organisms. *Id.*

61. The primary focus of the United Nations Food and Agriculture Organization (FAO) and the World Health Organization (WHO) has been the effect of agricultural pesticides on agricultural production, and the problems associated with pesticide residues and pesticide toxicology. FAO and WHO have expert committees on pesticide residues which meet annually to establish internationally acceptable daily intakes and maximum residue limits for agricultural pesticides. *See* note 81 *infra* where the references for these standards are cited.

The CODEX Committee on Pesticide Residues of the CODEX Alimentarius Commission works with the FAO and WHO expert committees on pesticide residues to evaluate pesticide residues in food products. *See generally* 1976 CODEX REPORT, *supra* note 56. The CODEX Committee on Pesticide Residues forwards pesticide tolerance proposals to the CODEX Alimentarius Commission, with the recommendation that they be submitted to member nations for acceptance. The CODEX Alimentarius Commission utilizes a ten-step procedure for adopting a worldwide CODEX standard for pesticide residue tolerances. *Id.* at 63-64. Concerning this acceptance procedure, there are three types of acceptances.

> First, full acceptance— . . . [which] means that a country agrees to apply the CODEX tolerance to both imported and domestic foods. Second, limited acceptance—which allows a country to apply a CODEX tolerance to imports only, except that a country may not apply a more-stringent, lower tolerance to imports. And third, target acceptance—which allows a country to indicate its intention to give full acceptance or limited acceptance at some future date.

subject of interest to FAO; however, these hazards are increasingly becoming the responsibility of a second United Nations organization.

The United Nations Environment Programme (UNEP) was created by the General Assembly[62] "to promote international cooperation in the field of the environment . . . ."[63] The objectives of UNEP in agricultural pest control are: "to assess the environmental effects of agricultural chemicals"; and "to develop and implement environmentally sound pest management systems for controlling certain pests affecting health and agricultural production."[64] UNEP's principal accomplishment has been the development of a global training program concerning chemical pest control as a means of maintaining high levels of agricultural production while preserving the quality of the environment.[65] UNEP has also initiated a program for assisting developing countries in detecting and minimizing or avoiding environmental injury caused by the use of agricultural pesticides.[66]

FAO and UNEP provide the United Nations with a wealth of administrative and technical expertise to effect the coordinated international regulation of agricultural pesticides. This expertise, however, has never been effectively utilized, since neither organization has been granted such authority and jurisdiction to regulate the development, production, distribution, and use of pesticides between nations. The predictable result has been an uncoordinated approach by United Nations organizations and agencies to the problems posed by the worldwide use of agricultural pesticides.

Id. at 43.

In cooperation with FAO, the Industry Cooperative Programme, Pesticides Working Group published a pamphlet which discusses the impact of pesticides on the environment and the role of pesticides in developing countries. FAO, PESTICIDES IN THE MODERN WORLD (1972).

62. G.A. Res. 2997, 27 U.N. GAOR, Supp. (No. 30) 43-45, U.N. Doc. A/8730 (1972).

63. *Id.* at ¶ I 2.(a). For a statement of UNEP's general and priority objectives, *see* Report of the Governing Council, U.N. Environment Programme (1st sess.), 28 U.N. GAOR, Supp. (No. 25) 36, U.N. Doc. A/9025 (1973).

64. 30 U.N. Environment Programme (3d sess.) 13, U.N. Doc. UNEP/GC/31 (1975). The Executive Director of UNEP has urged that alternative methods of pest control be developed. *Id.* at 12. For a general discussion of alternative methods of pest control, *see* 1975 WHO Expert Committee on Insecticides, *supra* note 10. The four recognized alternative methods of pest control are: environmental control; chemical control (pesticides); genetic control; and biological control. *Id.* at 14-25.

65. *See* Report by the Executive Director, 29 U.N. Environment Programme (2d sess.) 29, U.N. Doc. UNEP/GC/14/Add.2 (1974).

66. *Id.*

The interests of national[67] pesticide manufacturers and associations on the issue of international pesticide regulation are represented by GIFAP.[68] GIFAP views the goal of international pesticide regulation as follows: "instead of striving for a guarantee of absolute absence of any risk [from agricultural pesticides], we ought to be satisfied with aiming at the avoidance of undue risk."[69] GIFAP argues that the pursuit of absolutes, such as absolute environmental safety, will result in a decline in the international availability of agricultural pesticides and that the ultimate result will be an increased risk of hunger and disease.[70]

Although the goals concerning international pesticide regulation expressed by FAO[71] and GIFAP[72] superficially appear strikingly similar, it is important to note the conflicting interests represented by each organization. FAO is primarily interested in increased worldwide agricultural production with minimum adverse effects on the environment,[73] while GIFAP represents the interests of pesticide manufacturers.[74] Recognizing the conflicting interests of FAO and GIFAP, it is essential for the future of international pesticide regulation that a healthy relationship be maintained.

The foregoing discussion of the limited substantive impact of international conferences and the increasing role of international organizations *vis-à-vis* the international regulation of agricultural pesticides must be given proper perspective by a critical analysis of current United Nations policy concerning such regulation.

C. Criticism of Current United Nations Policy

Although the United Nations has acknowledged the essential role of agricultural pesticides in the scheme of world food production[75] and the noxious environmental hazards posed by their unreg-

67. The term "national" is used to describe pesticide manufacturers and associations which are domiciled in the various nations of the world and includes multinational manufacturers and associations.

68. *See* 1976 CODEX REPORT, *supra* note 56, at 56.

69. *See* GIFAP, THE TWO LARGEST THREATS TO THE FUTURE FLOW OF PESTICIDES (Oct. 24, 1977), in GIFAP, AD HOC GOVERNMENT CONSULTATION ON INTERNATIONAL STANDARDIZATION OF PESTICIDES REGISTRATION REQUIREMENTS (1977).

70. *Id.*

71. *See* note 60 *supra*, and accompanying text.

72. *See* note 69 *supra*, and accompanying text.

73. *See* note 60 *supra*, and accompanying text.

74. *See* 1976 CODEX REPORT, *supra* note 56, at 56-62.

75. *See, e.g.*, Res. 1/63, 29 U.N. ESCOR (57th sess.) (Agenda Item 9) 4 (Annex), U.N.

ulated use,[76] it has failed to develop a coordinated, active policy for their international regulation.[77] There has been little effort on the part of the United Nations to directly regulate the development, production, distribution, and use of agricultural pesticides. Instead, the United Nations has developed a passive policy[78] limited generally to: (1) the recommendation of international standards for acceptable daily intakes[79] and maximum residue limits[80] for agricultural pesticides;[81] (2) conducting training seminars in developing countries on the safe techniques of pesticide use and application;[82] and (3) standardizing pesticide registration requirements among nations.[83]

Two fundamental deficiencies are inherent in the United Nations passive approach: first, no plan exists for the international regulation of agricultural pesticides;[84] and second, no organization or

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Doc. E/L.1069 (1974), where the Council drew attention to "the basic role of . . . pesticides in ensuring adequate food supplies for the peoples of the world . . . ."; *see also* note 3 *supra*.

76. 30 U.N. Environment Programme (3d sess.) 12, U.N. Doc. UNEP/GC/31 (1975).

77. *See generally* 1977 FAO Panel of Experts, *supra* note 1, at 4-5.

78. The term "passive" is used to characterize the general way in which the United Nations approaches the international regulation of agricultural pesticides. Until recently, the United Nations has relied almost exclusively on national pesticide regulation schemes. The interest of the United Nations in standardizing pesticide registration requirements among nations is evidence of a changing mood of the United Nations *vis-à-vis* international regulation of pesticides.

79. Acceptable Daily Intake (ADI) is defined as:

> [T]he daily intake which, during an entire lifetime, appears to be without appreciable risk on the basis of all the known facts at the time. It is expressed in milligrams of the chemical per kilogram of body weight.

1975 Joint Meeting on Pesticide Residues, *supra* note 2, at 40.

80. Maximum Residue Limit (MRL) is defined as:

> [T]he maximum concentration of a pesticide residue resulting from the use of a pesticide according to good agricultural practice directly or indirectly for the production and/or protection of the commodity for which the limit is recommended. The maximum residue limit should be legally recognized. It is expressed in milligrams of the residue per kilogram of the commodity.

Id. at 41.

81. For the international standards for ADIs and MRLs, *see* WHO, *Report of the 1972 Joint FAO/WHO Meeting on Pesticide Residues in Food*, WHO TECH. REP. SER. (No. 525) at 23-41 (Annex 1) (1973); WHO, *Report of the 1973 Joint FAO/WHO Meeting on Pesticide Residues in Food*, WHO TECH. REP. SER. (No. 545) at 28-33 (Annex 1) (1974); WHO, *Report of the 1974 Joint FAO/WHO Meeting on Pesticide Residues in Food*, WHO TECH. REP. SER. (No. 574) (Annex 1) (1975); and the *1975 Joint Meeting on Pesticide Residues*, *supra* note 2, at 25-29 (Annex 1).

82. *See* notes 65 and 66 *supra*, and accompanying text.

83. *See* notes 43-55 *supra*, and accompanying text.

84. The effect of having no plan for the international regulation of agricultural pesticides is that the United Nations reacts to, rather than plans for, problems relating to the widespread international use of pesticides. As problems from pesticides become more serious and complex, the ability of the United Nations to adequately react will necessarily de-

agency in the United Nations exists with authority for administering a coordinated program of international pesticide regulation.[85] This *laissez-faire* approach — which depends on national regulation and voluntariness — has failed to promote regulatory cooperation between nations.[86]

Although differences in regulation between nations may not pose an absolute barrier to the development, production, distribution, and use of pesticides, such differences have had the effect of increasing production costs and creating substantial barriers to international trade.[87] The United Nations rationale for continuing its *laissez-faire* approach is that only the affected nation can adopt agricultural pesticide regulations which adequately take into consideration the unique characteristics and needs of that nation.[88] This rationale overlooks the practical problem that more than one hundred nations of the world have adopted nearly as many different programs for the regulation of agricultural pesticides.[89]

The United Nations *laissez-faire* approach not only has caused an increase in the cost of development and production[90] of agricultural pesticides, but it has also promoted an inefficient distribution and utilization of available pesticide reserves.[91] Additional problems are that substantial barriers to the international trade of

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cline. An effective plan for international pesticide regulation, on the other hand, would give the United Nations the ability to plan for contingent problems with pesticides and thereby avoid, or at least anticipate, many problems before they arise.

85. A United Nations organization or agency must be authorized to administer a program of international pesticide regulation so there can be centralized management and control. The rationale for centralizing management and control in one organization or agency is to avoid the breakdown of communication between nations and the pesticide manufacturers that has occurred in the past and will likely occur in the future without such centralization.

86. *See generally* 1977 GIFAP SUBMISSION, *supra* note 49, at 4-7.

87. *See* Metzger, *Will Harmonization be Achieved in Rome?*, 141 FARM CHEMICALS 14, 15 (Sept. 1977); *see also* 1977 GIFAP SUBMISSION, *supra* note 49, at 3-7; *see generally* 1977 FAO Panel of Experts, *supra* note 1.

88. Metzger, *supra* note 87.

89. *Id.*

90. *See* Resolution XII of the *Ad Hoc* Government Consultation on Pesticides in Agriculture and Public Health (1975), *reprinted in* 1977 FAO Panel of Experts, *supra* note 1, at 2-3; *see* note 47 *supra*, where Resolution XII has been quoted; *see also Pesticides: Key to a Better Environment*, 138 FARM CHEMICALS 22, 24, 26 (Sept. 1975).

For a discussion of the costs of pesticide registration and the economic effects of failing to harmonize pesticide regulations, *see* GIFAP WORKING GROUP II, HARMONIZATION OF REGISTRATION REQUIREMENTS (Nov. 12, 1976).

91. *See Pesticides: Key to a Better Environment*, 138 FARM CHEMICALS 22, 24, 26 (Sept. 1975).

pesticides have continued,[92] that developing nations have failed to realize their potential for agricultural production,[93] and that there has been an increased risk of serious environmental injury caused by agricultural pesticides.[94]

As the preceding discussion has identified several serious weaknesses in the present system of international pesticide regulation, it is necessary to look at an alternative regulatory approach which can provide a framework for the solution of the problems that presently exist with the extensive international use of agricultural pesticides.

III. REGULATION UNDER UNITED STATES LAW: A RATIONAL MODEL FOR THE INTERNATIONAL REGULATION OF AGRICULTURAL PESTICIDES

The United States has adopted an active policy concerning the domestic regulation of agricultural pesticides.[95] This policy not only provides an interesting contrast to the United Nations passive policy approach, but serves also as a rational model for the interna-

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92. *See* Metzger, *supra* note 87. *See also* 1977 GIFAP SUBMISSION, *supra* note 49, at 3-7; *see generally* 1977 FAO Panel of Experts, *supra* note 1.

93. *See generally* 1974 World Food Conference, *supra* note 44, wherein the committee noted that

> high prices and widespread shortages of pesticides had become a severe obstacle to the rapid increase of agricultural production, particularly in developing countries, and many speakers stressed the need for increasing, wherever feasible, the production of pesticides in both developed and developing countries, and for mounting, as a matter of urgency, internationally co-ordinated programmes which would ensure the availability to developing countries at reasonable prices of pesticides and pest control equipment. Several speakers also called for the need to develop and promote methods of pest control which relied less on the use of pesticides.

Id. ¶ 190, at 43. *See also* Report of the World Food Council, 32 U.N. GAOR, Supp. (No. 19) 5, U.N. Doc. A/32/19 (1977), where it is suggested that to support the increased food production efforts of developing countries:

> (e) International agencies and donor countries should provide special financial and technical assistance to developing countries suffering from shortages of pesticides and weak plant protection services so as to enable such developing countries to meet their pesticide needs adequately in environmentally sound ways and to strengthen their plant protection services.

94. 30 U.N. Environment Programme (3d sess.) 12, U.N. Doc. UNEP/GC/31 (1975).

95. For discussion of the legal issues regarding the regulation of agricultural pesticides in the United States, *see generally* Comment, *Federal Environmental Pesticide Act of 1972*, 40 TENN. L. REV. 538 (1973); Megysey, *Government Authority to Regulate the Use and Application of Pesticides: State v. Federal*, 21 S.D. L. REV. 652 (1976); Note, *Pesticide Regulation: Risk Assessment and Burden of Proof*, 45 GEO. WASH. L. REV. 1066 (1977); Note, *Environmental Law: Agricultural Pesticides*, 18 WASHBURN L.J. 53 (1974); Reukauf, *Regulation of Agricultural Pesticides*, 62 IOWA L. REV. 909 (1977); Spector, *Regulation of Pesticides by the Environmental Protection Agency*, 5 ECOLOGY L.Q. 233 (1976).

tional regulation of agricultural pesticides.[96]

A. Federal Environmental Pesticide Control Act[97]

1. *Legislative History.* The United States has experienced a relatively short history of federal legislation dealing with the regulation of agricultural pesticides. The Insecticide Act of 1910 provided that the manufacture, sale, and interstate commerce of adulterated or misbranded insecticides and fungicides was expressly prohibited.[98] In 1947, Congress repealed the Insecticide Act of 1910 and enacted the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA).[99] FIFRA authorized the United States Department of Agriculture to regulate all pesticides in interstate commerce.[100] The primary problem encountered under FIFRA was that it failed to grant any federal regulatory authority over pesticides which were manufactured, transported, and used intrastate.[101]

The Federal Environmental Pesticide Control Act (FEPCA) was enacted in 1972[102] to amend FIFRA, and had the effect of broadening federal regulatory authority by making all agricultural pesticides, whether in interstate or intrastate commerce, subject to federal regulation.[103]

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96. The rationale for choosing the United States approach as a model is two-fold. First is the striking similarity between the administrative problems of regulation encountered in a federal system of 50 sovereign jurisdictions and those problems encountered by the United Nations in an international system of more than 100 sovereign national jurisdictions. Second is the fact that the United States possesses the most "sophisticated regulatory system" for agricultural pesticides in the world and is widely recognized as "being in a position of leadership in the area of pesticide regulations." 1976 CODEX REPORT, *supra* note 56, at 61.

97. 7 U.S.C. §§ 136-136y (1976) (amending 7 U.S.C. §§ 135-135k (1970)). For the regulations governing the enforcement of the Federal Environmental Pesticide Control Act (FEPCA), *see* Environmental Protection Agency (EPA) Pesticide Programs, 40 C.F.R. §§ 162.1-162.47 (1977). The Toxic Substances Control Act, 15 U.S.C. §§ 2601-2629 (1976) will not be discussed since pesticides are a specific exception to that Act. 15 U.S.C. § 2602(2)(B)(ii) (1976).

98. Pub. L. No. 61-152, ch. 191, 36 Stat. 331 (1910).

99. Pub. L. No. 80-104, ch. 125, 61 Stat. 163 (1947)(codified in 7 U.S.C. §§ 135-135k (1970), *as amended by* 7 U.S.C. §§ 136-136y (1976)) [hereinafter cited as FIFRA], repealing Pub. L. No. 61-152, ch. 191, 36 Stat. 331 (1910).

100. The United States Department of Agriculture's functions under FIFRA were transferred to the Federal Environmental Protection Agency in 1970. Reorg. Plan No. 3 of 1970, 3 C.F.R. 1072 (1966-1970 Compilation), *reprinted in* 5 U.S.C. app., at 611 (1970) and in 84 Stat. 2086 (1970).

101. *See generally* 7 U.S.C. §§ 135-135k (1970).

102. Pub. L. No. 92-516, 86 Stat. 973 (codified in 7 U.S.C. §§ 136-136y (1976)).

103. 7 U.S.C. § 136a(a) (1976). For a critical report on pesticide regulation in the United States, *see* STAFF REPORT TO THE SUBCOMM. ON ADMINISTRATIVE PRACTICE AND PROCE-

2. *The United States Approach under FEPCA.* Federal regulation of agricultural pesticides in the United States is administered by the Federal Environmental Protection Agency[104] under the statutory authority of FEPCA.[105] The United States employs a three-pronged approach to regulate the development, production, distribution, and use of pesticides.

Comprehensive pesticide registration forms the first prong of the United States approach.[106] All agricultural pesticides are required to be registered with the Administrator of the Federal Environmental Protection Agency before they may be sold or used.[107] Pesticides are registered if no "unreasonable adverse effects on the environment" would result from their use.[108] While primary re-

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DURE OF THE SENATE COMM. ON THE JUDICIARY, THE ENVIRONMENTAL PROTECTION AGENCY AND THE REGULATION OF PESTICIDES, 94th Cong., 2d Sess. (1976).

104. *See* 7 U.S.C. § 136w(a)(1) (1976); 7 U.S.C. § 136(b) (1976); *see also* note 100 *supra*.

The House Committee on Agriculture (House Committee) stated that FIFRA was changed in 1972 "from a labeling law into a comprehensive regulatory statute that will henceforth more carefully control the manufacture, distribution, and use of pesticides." HOUSE COMM. ON AGRICULTURE, H.R. REP. NO. 92-511, 92d Cong., 1st Sess. 4 (1971), *reprinted in* 43 Fed. Reg. 37,611 (1978). As the House Committee summarized in its Committee Report:

> The Committee found the greatest need for revision of existing laws to be in the areas of strengthening regulatory controls on the uses and users of pesticides, speeding up procedures for barring pesticides found to be undesirable; streamlining procedures for making valuable new control measures, procedures, and materials broadly available; strengthening enforcement procedures to protect against misuse of these biologically effective materials; and creating an administrative and legal framework under which continued research can produce more knowledge about better ways to use existing pesticides as well as developing alternative materials and methods of pest control.

Id.

105. *See* note 97 *supra*.

106. 7 U.S.C. § 136a (1976). For guidelines on registering pesticides and registration procedures, *see* EPA Pesticide Programs, 40 C.F.R. §§ 162.41-162.47 (1977).

107. FEPCA provides that:

> Except as otherwise provided by this subchapter no person in any State may distribute, sell, offer for sale, hold for sale, ship, deliver for shipment, or receive and (having so received) deliver or offer to deliver, to any person which is not registered with the Administrator.

7 U.S.C. § 136a(a) (1976).

Note that agricultural pesticides are classified by the Federal Environmental Protection Agency as either for "general use" or for "restricted use." 7 U.S.C. § 136a(d)(1)(A) (1976). A "general use" pesticide is one that "will not generally cause unreasonable adverse effects on the environment . . . ." *Id.* at § 136a(d)(1)(B). A "restricted use" pesticide, on the other hand, is one that "may generally cause . . . , unreasonable adverse effects on the environment, including injury to the applicator . . . ." *Id.* at § 136a(d)(1)(C).

108. 7 U.S.C. § 136a(c)(5) (1976). For the criteria governing determination of unreasonable adverse effects, *see* EPA Pesticide Programs, 40 C.F.R. § 162.11 (1977). *See* note 112 *infra* for a statement of the standard.

For an excellent discussion of what constitutes information regarding unreasonable adverse effects on the environment, *see* 43 Fed. Reg. 37,611, 37,612 (1978). In discussing pes-

sponsibility and authority for pesticide registration is vested in the federal government, states have retained their authority under FEPCA to continue limited intrastate registration of agricultural pesticides in order to "meet special local needs" as long as the state obtains approval from the Federal Environmental Protection Agency.[109] The two primary regulatory checks on pesticide registration are the Administrator's authority to institute a cancellation proceeding[110] or to suspend the registration of the pesticide.[111]

The most important discretionary power under FEPCA is the authority of the Administrator of the Federal Environmental Protection Agency to suspend the registration of a pesticide where he determines that an "imminent hazard" is posed by continued use.[112] Judicial interpretation of the "imminent hazard" standard

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ticide registrant reporting requirements imposed by 7 U.S.C. § 136d(a)(2) (1976), the Federal Environmental Protection Agency uses a "benefit-risk" analysis in its definition of what an "unreasonable adverse effect on the environment . . ." is. 43 Fed. Reg. at 37,612. In concluding that the basic test for pesticide registration is whether the pesticide causes "unreasonable adverse effects on the environment," the Federal Environmental Protection Agency states a useful corollary test — "whether use of the pesticide poses risks which are greater than its benefits." *Id.* at 37,613.

109. 7 U.S.C. § 136v(c) (1976). The proposed EPA standard for "special local need" is as follows:

> [A] pest problem (existing or likely to occur within a State) which cannot be effectively controlled because;
> (1) There is no pesticide product registered by EPA for such use; or,
> (2) There is no EPA-registered pesticide product which under the conditions of use within the State, would be as safe and-or as efficacious for such use within the terms and conditions of EPA registration; or,
> (3) An appropriate EPA-registered pesticide product is not available.

40 Fed. Reg. 40,543 (1975).

110. 7 U.S.C. § 136d(b)(1) or (2) (1976). The procedure for cancellation of pesticide registration is set forth in 7 U.S.C. § 136d(a)(1) & (2) (1976). Subsection (2) states that pesticide manufacturers have an affirmative duty to provide the Administrator of the Federal Environmental Protection Agency with "information regarding unreasonable adverse effects on the environment" at any time after the registration of a pesticide. *Id.* This affirmative duty of pesticide manufacturers to keep the Administrator informed of such information is crucial to the overall regulation of agricultural pesticides in the United States. The Code of Federal Regulations which interprets 7 U.S.C. § 136d(a)(2) (1976) has been recently revoked by the Federal Environmental Protection Agency. 43 Fed. Reg. 37,610 (1978). For the new interpretation of pesticide registrant reporting requirements imposed by 7 U.S.C. § 136d(a)(2) (1976), *see* 43 Fed. Reg. 37,611 (1978).

111. 7 U.S.C. § 136d(c) (1976). For the regulations covering the conduct of the cancellation proceeding and suspension of pesticide registration, *see* EPA Pesticide Programs, 40 C.F.R. §§ 164.1-164.133 (1977).

112. 7 U.S.C. § 136d(c)(1) (1976). An "imminent hazard" exists where continued use would be likely to result in "unreasonable adverse effects on the environment . . . ." 7 U.S.C. § 136(l) (1976). The phrase "unreasonable adverse effects on the environment" is defined as "any unreasonable risk to man or the environment, taking into account the economic, social, and environmental costs and benefits of the use of any pesticide." 7 U.S.C. § 136(bb) (1976).

has broadened the Administrator's discretionary power under FEPCA.[113]

The United States Court of Appeals for the District of Columbia stated in *Environmental Defense Fund, Inc. v. Environmental Protection Agency*[114] that the "imminent hazard" standard for suspension of pesticide registration is not limited to a "concept of crisis," but is satisfied where there is a " '*substantial likelihood*' " that serious environmental injury will occur.[115] This case involved an appeal from an order by the Administrator of the Federal Environmental Protection Agency suspending the registration of the pesticides heptachlor and chloradane.[116] The court explained that the Administrator has " 'broad discretion' . . . [to] . . . find facts and 'to set policy in the public interest.' "[117] This broad discretion is based on the implicit assumption that it may be necessary to take interim action to protect against the risk of harm to the environment while a factual record is developed in the cancellation proceeding.[118] Commenting on the function of the Administrator's suspension decision, the court emphasized that the decision is designed to make a " 'preliminary assessment of evidence, and probabilities,' " and is " 'not an ultimate resolution' " of the issue.[119] The court concluded by declaring that the Administrator's order suspending the registration of the pesticides "shall be sustained if it is supported by substantial evidence when considered on the record as a whole."[120]

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113. Because FEPCA itself gives little insight into the policies behind this broad discretionary power to suspend the registration of pesticides, it is necessary to examine judicial interpretation of the "imminent hazard standard."

114. 548 F.2d 998 (D.C. Cir. 1976), *cert. denied*, 431 U.S. 925 (1977).

115. *Id.* at 1005, *citing* Environmental Defense Fund, Inc. v. EPA, 510 F.2d 1292, 1297 (D.C. Cir. 1975), and Environmental Defense Fund, Inc. v. EPA, 465 F.2d 528, 540 (D.C. Cir. 1972).

116. 548 F.2d 998 (D.C. Cir. 1976), *cert. denied*, 431 U.S. 925 (1977).

117. *Id.* at 1005, *citing* Wellford v. Ruckelshaus, 439 F.2d 598, 601 (D.C. Cir. 1971).

118. *Id.*

119. *Id.* at 1004, *citing* Environmental Defense Fund, Inc. v. EPA, 510 F.2d 1292, 1298 (D.C. Cir. 1975), and Environmental Defense Fund, Inc. v. EPA, 465 F.2d 528, 537 (D.C. Cir. 1972).

120. *Id.* at 1003, *citing* 7 U.S.C. § 136n(b) (1976). The court went on to define the standard of "substantial evidence" to be:

> [S]omething less than the weight of the evidence . . . . [T]he possibility of drawing two inconsistent conclusions from the evidence does not prevent an administrative agency's finding from being supported by substantial evidence.

Id. citing Consolo v. Fed. Maritime Comm'n, 383 U.S. 607, 620 (1966). Compare the standard formulated by the Circuit Court of Appeals for the Fifth Circuit: substantial evidence means " 'such relevant evidence as a reasonable mind might accept as adequate to support a conclusion.' " Gulf Oil Corp. v. EPA, 548 F.2d 1228, 1230 (5th Cir. 1977).

The second prong derives from the requirement that pesticides be clearly labeled.[121] Information contained on the label must be readable and comprehendable by the ordinary individual under customary conditions of purchase and use.[122] The label must include instructions that are sufficient to enable the user to accomplish the purpose for which the pesticide is designed.[123] The warning on the pesticide must adequately provide for the protection of human health and environmental quality.[124] Finally, the highly toxic pesticides must be labeled with a skull and crossbones, an antidote statement, and the word *poison* displayed prominently in red.[125]

Regulation of pesticide application forms the third and final prong of the United States approach.[126] Pesticides presenting an unreasonable risk of injury to the applicator or the environment may only be used by or under the direct supervision of a certified pesticide applicator.[127] This regulation of pesticide application and hence pesticide use serves to extend pesticide regulation to the *field*, rather than limiting pesticide regulation to a mere bureaucratic paper shuffle.

This three-pronged approach provides adequate regulation of agricultural pesticides by striking a balance between the competing policy interests of efficient agricultural production and effective environmental protection. In addition to these three general prongs, there are three specific aspects of the United States approach that are particularly adaptable to an international system of pesticide regulation.

IV. INTERNATIONAL APPLICATION OF THE UNITED STATES APPROACH

Several aspects of the United States approach to the regulation of agricultural pesticides would, if incorporated by the United Nations, facilitate coordinated international pesticide regulation.

121. 7 U.S.C. § 136(p) & (q) (1976); 7 U.S.C. § 136a(c)(5)(B) (1976). For the specific labeling requirements, *see* EPA Pesticide Programs, 40 C.F.R. § 162.10 (1977).

122. 7 U.S.C. § 136(q)(1)(E) (1976).

123. 7 U.S.C. § 136(q)(1)(F) (1976).

124. 7 U.S.C. § 136(q)(1)(F) & (G) (1976).

125. 7 U.S.C. § 136(q)(2)(D) (1976).

126. 7 U.S.C. § 136(e) (1976); 7 U.S.C. § 136a(d)(1)(C)(i) (1976); and 7 U.S.C. § 136b (1976). For the regulations concerning the certification of pesticide applicators, *see* EPA Pesticide Programs, 40 C.F.R. §§ 171.1-171.10 (1977).

127. 7 U.S.C. § 136(e)(1) (1976).

First, the international registration of pesticides should be a *condition precedent* to their distribution and use. The requirement that agricultural pesticides be registered with the Federal Environmental Protection Agency before they can be sold or used[128] has had the beneficial effect of standardizing the quality of agricultural pesticides within the United States.[129] Because registration of pesticides is a condition precedent to their sale and use, pesticide manufacturers in the United States have had great practical and legal incentive to comply with federal regulations and the Federal Environmental Protection Agencies' standards. This kind of incentive is lacking in the international arena.[130] The effect of having no legal incentive to comply with international regulations and standards is that the regulation, quality, toxicity, and persistent nature of pesticides vary widely throughout the world.[131] An example is the use of the persistent agricultural pesticide DDT,[132] which has been completely banned in some countries[133] while other countries use DDT freely.[134] This situation is not unique and gives rise to potential international disputes should a country's use of agricultural pesticides cause environmental injury in a neighboring country.[135]

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128. *See* note 107 *supra*.

129. The quality of pesticides has been standardized by requiring all pesticides to conform to tolerances established by the Federal Environmental Protection Agency. For the tolerances and exemptions from tolerances for pesticides in or on raw agricultural commodities, *see* EPA Pesticide Programs, 40 C.F.R. §§ 180.1-180.1035 (1977).

130. Even though the FAO and WHO expert committees on pesticides publish an annual table of international acceptable daily intakes and maximum residue limits for agricultural pesticides, it only has the authority of a recommendation and is not binding and enforceable against member nations. *See* notes 61 and 81 *supra*.

131. *See generally* 1977 FAO Panel of Experts, *supra* note 1; 1977 GIFAP SUBMISSION, *supra* note 49; 1977 REPORT DRAFT NO. 1, *supra* note 48.

132. Dichloro-diphenyl-trichloroethane: a colorless, odorless, water-insoluable crystalline insecticide. WEBSTER'S THIRD NEW INTERNATIONAL DICTIONARY 579 (1971 ed.).

133. *See, e.g.*, Environmental Defense Fund, Inc. v. EPA, 489 F.2d 1247 (D.C. Cir. 1972), where the court upheld the EPA's order banning the use of the pesticide DDT in the United States. For a commentary on the regulation of pesticides since the banning of DDT in 1969, *see* Steinhart, *Despite Everything, The Pesticide Monster Still Stalks*, Los Angeles Times, Nov. 13, 1977, pt. VI, at 3, col. 1.

134. *See generally* 1975 Expert Committee on Insecticides, *supra* note 10.

135. *See The Trail Smelter Case* (United States v. Canada) 3 R. Int'l Arb. Awards 1905, 1965 (1941), *reprinted in* 35 AM. J. INT'L L. 684, 716 (1941), where sulpher dioxide fumes from the smelting plant of a private corporation located in Trail, British Columbia, were causing damage to privately owned agricultural and forested land in the state of Washington. The Commission held for the United States, thus imposing liability on Canada for the environmental injury caused by transnational pollution. The rule stated by the Commission was that

> [u]nder the principles of international law, as well as the law of the United States,

Second, the United States approach provides a "safety valve" which allows individual states to register pesticides for sale and use "to meet special local needs."[136] This "safety valve" provides necessary flexibility for unforeseen problems which are inevitable in any multi-jurisdictional program of regulation. If such an approach is incorporated into a coordinated international program for the regulation of pesticides, the unique characteristics and needs of all nations would be provided for, and thus the United Nations rationale for continuing its *laissez-faire* policy of pesticide regulation would no longer exist.[137]

Finally, the Administrator of the Federal Environmental Protection Agency has broad discretion to suspend registration,[138] and hence the sale and use of all agricultural pesticides within the United States.[139] This broad discretion serves to protect the public and the environment from the hazardous effects of certain agricultural chemicals.[140] Without this kind of discretionary power vested in some organization or agency of the United Nations, a viable program of international pesticide regulation will never be realized.[141] If adopted, the discretionary power to suspend the registration of agricultural pesticides would provide an effective check on their sale for use in national and international agricultural programs.[142]

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no State has the right to use or permit the use of its territory in such a manner as to cause injury by fumes in or to the territory of another or the properties of persons therein, when the case is of serious consequence and the injury is established by clear and convincing evidence.

Id. A recent United Nations publication, LEVIN, PROTECTING THE HUMAN ENVIRONMENT: PROCEDURES AND PRINCIPLES FOR PREVENTING AND RESOLVING INTERNATIONAL CONTROVERSIES (1977), analyzes the avoidance and resolution of international controversies regarding the protection of the environment, and provides an excellent overview of the problems stemming from transnational environmental injury. For a discussion of transnational environmental injury, *see generally* Nanda, *The Establishment of International Standards for Transnational Environmental Injury*, 60 IOWA L. REV. 1089 (1975). *See also* Kutner, *The Control and Prevention of Transnational Pollution: A Case for World Habeas Ecologicus*, 9 LAW. AM. 257 (1977); Springer, *Towards a Meaningful Concept of Pollution in International Law*, INT'L & COMP. L.Q. 531 (1977).

136. *See* note 109 *supra*.

137. *See* text accompanying note 88 *supra*.

138. *See* notes 113-120 *supra*, and accompanying text.

139. *See* note 107 *supra*.

140. *See* text accompanying note 118 *supra*.

141. For international regulation of agricultural pesticides to be effective there must exist the power to enforce international pesticide registration requirements. *See generally* 1977 GIFAP SUBMISSION, *supra* note 49; 1977 FAO Panel of Experts, *supra* note 1; and 1977 REPORT DRAFT NO. 1, *supra* note 48. For a good overview of this issue, see Metzger, *supra* note 87, at 14-16.

142. There is presently only national regulation of pesticide registration. With the cur-

These three aspects of the United States approach — first, the registration of agricultural pesticides as a condition precedent to their sale and use;[143] second, the "safety valve" of allowing states to register pesticides for sale and use "to meet special local needs";[144] and third, the discretionary power to suspend the registration and hence the sale and use of agricultural pesticides[145]— are essential ingredients for an effective, coordinated, and responsive United Nations program for the international regulation of pesticides. These ingredients should thus serve as the foundational basis for any United Nations Action Plan for the international regulation of agricultural pesticides.

V. PROPOSED UNITED NATIONS ACTION PLAN

Regulation of agricultural pesticides has heretofore been viewed as a purely national responsibility. Although justified in the past, this policy is no longer viable since the unregulated international use of pesticides has caused severe economic[146] and environmental problems[147] throughout the world. This conclusion dictates the recommendation that FAO convene an *ad hoc* committee[148] to draft a proposed Action Plan for the international regula-

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rent trend towards the international standardization of pesticide registration requirements, there arises the need for international enforcement of such international pesticide registration. *See* 1977 GIFAP SUBMISSION, *supra* note 49, at 3-7; 1977 FAO Panel of Experts, *supra* note 1, at 1-10. The most effective means by which international pesticide registration requirements can be enforced is by vesting the discretionary power to suspend such pesticide registration in a United Nations organization or agency. Once a pesticide's registration is suspended, its application would be prohibited in United Nations sponsored agricultural programs. This prohibition on application would extend to member nations of the United Nations.

143. *See* notes 128-135 *supra*, and accompanying text.

144. *See* notes 136 and 137 *supra*, and accompanying text.

145. *See* notes 138-142 *supra*, and accompanying text.

146. As recently as 1972 it was estimated that the total annual loss from insects, weeds, and diseases which could be controlled by agricultural pesticides was at least 70 billion dollars and probably closer to 90 billion dollars. Industrial Production and Formulation of Pesticides, *supra* note 28, at 6.

147. *See generally* 1975 Expert Committee on Insecticides, *supra* note 10, at 8-9; 1975 *Assessment of Hazards of Pesticides*, *supra* note 21, at 5-8.

148. The *ad hoc* committee should be composed of representatives from the: CODEX Committee on Pesticide Residues; Collaborative International Pesticide Analytical Council; Commission of European Communities; Council of Europe; East African Pesticides Control Organization; European and Mediterranean Plant Protection Organization; *Groupement International des Associations Nationales de Fabricants de Pesticides*; Inter-American Committee for Crop Protection; United Nations Environment Programme; United Nations Food and Agriculture Organization; World Health Organization; member and non-member nations; and selected national agricultural chemical associations.

tion of agricultural pesticides.

The purpose of the Action Plan must be to provide a rational means for achievement of the desired goal of harmonizing international pesticide regulation. To this end, two principles should guide the *ad hoc* committee in its efforts. First, the *ad hoc* committee must seek to prevent "the proliferation of unnecessarily diverse and possibly ineffective official pesticide control schemes."[149] Accommodation of this principle requires balancing the interests of the pesticide manufacturers with the agricultural and environmental needs of the international community. Second, the *ad hoc* committee must ensure that the Action Plan assures the availability of effective agricultural pesticides which can be used safely, without *undue risk* to the natural environment or to man.[150] This concept of requiring avoidance of *undue risk* from pesticide use rather than requiring a guarantee of absolute absence of "any risk" is essential if international pesticide regulation is to be acceptable to both the pesticide manufacturers and the international community.[151]

The foundational basis for the proposed Action Plan must include provisions for: (1) the international registration of agricultural pesticides as a condition precedent to their distribution and use;[152] (2) the "safety valve" of allowing nations to register certain agricultural pesticides "to meet special local needs";[153] and (3) the discretionary power vested in some organization of the United Nations to suspend the registration and hence the distribution and use of certain agricultural pesticides where continued use would pose an "imminent hazard" to the international environment.[154] These three principles would thus form the substantive core of the pro-

149. 1977 FAO Panel of Experts, *supra* note 1, at 1.

150. *Id.* at 5.

151. *Id.*; *see also* GIFAP, THE TWO LARGEST THREATS TO THE FUTURE FLOW OF PESTICIDES (Oct. 24, 1977), in GIFAP, AD HOC GOVERNMENT CONSULTATION ON INTERNATIONAL STANDARDIZATION OF PESTICIDES REGISTRATION REQUIREMENTS (1977).

152. Although the *Ad Hoc* Government Consultation on the International Standardization of Pesticide Registration Requirements, held in October 1977, has provided valuable input regarding development of an international system of pesticide registration, *see* notes 48, 49 & 50 *supra*, their recommendations fall far short of requiring international registration of agricultural pesticides as a *condition precedent* to their distribution and use. The Food and Agriculture Organization *Ad Hoc* Committee, when convened, should analyze the United States regulations governing pesticide registration, reregistration, and classification procedures. *See* EPA Pesticide Programs, 40 C.F.R. §§ 162.1-162.47 (1977); *see also* text accompanying notes 128-135 *supra*.

153. *See* notes 136 and 137 *supra*, and accompanying text.

154. *See* notes 138-142 *supra*, and accompanying text.

posed United Nations Action Plan for the coordinated international regulation of agricultural pesticides.

Provisional implementation of this proposed Action Plan should be by United Nations General Assembly resolution. Final implementation to give binding effect to the Action Plan should be by United Nations treaty ratified by member nations.[155]

VI. CONCLUSION

Harmonization of the international regulation of agricultural pesticides is a necessity because of their essential role in the scheme of world food production,[156] public health programs,[157] as well as the noxious environmental hazards[158] posed by their unregulated international use. Continuation of the current United Nations *laissez-faire* regulatory approach will not only cause an increase in the cost of development and production[159] of agricultural pesticides, but will also foster an inefficient distribution and utilization of available pesticide reserves.[160] Additional problems will be the continuation of substantial barriers to the international trade of pesticides,[161] developing nations will fail to realize their potential for agricultural production,[162] and there will be an increased risk of serious environmental injury caused by agricultural pesticides.[163]

For the above reasons, this comment has proposed development of a United Nations Action Plan for the coordinated international regulation of agricultural pesticides. Adoption of such an Action Plan will not only lead to increased international agricultural production, but will also lessen the environmental dangers posed by the extensive international use of agricultural pesticides.

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155. The reason for ratifying this Action Plan by United Nations treaty is to give binding effect to the standards and regulations contained therein. The rationale for employing this method of implementation is to give both legitimacy and legal effect to a United Nations program of international pesticide regulation.

156. *See* note 3 *supra*.

157. Pesticides are used in public health programs for: house spraying and dusting; insect control for river and irrigation systems; gallery forest spraying; human body and animal dusting; indoor/outdoor space spraying; and poison baits. 1971 WHO Expert Committee on Insecticides, *supra* note 3, at 7.

158. *See* note 6 *supra*.

159. *See* note 90 *supra*.

160. *See* note 91 *supra*.

161. *See* note 92 *supra*.

162. *See generally* 1974 World Food Conference, *supra* note 44.

163. *See* note 94 *supra*.