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TRADE IN DISSERVICES:

ENVIRONMENTAL REGULATION AND AGRICULTURAL TRADE COMPETITIVENESS

by

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On January 1, 1989, the European Community (EC) announced a ban on all beef imports from the United States containing hormones used to help increase cattle growth. Citing health risks, the EC action touched off a cycle of retaliation that has affected the world trading system. This apparently isolated example of health regulations acting as trade barriers is part of an emerging pattern of environmental and health issues with major consequences for the world economy. These consequences are especially important to trade between developed and developing nations. Consider these other developments.

- During 1988, the American Soybean Association conducted a campaign emphasizing the health risks of palm oil, which competes directly with soybean oil in the processed food market. Palm oil is produced almost entirely in developing countries, notably Malaysia and coastal Africa.

- In 1988, a major controversy broke out over Italy's shipment of tons of hazardous wastes to Nigeria. The wastes, expensive and difficult to dispose of in the EC, were shipped for disposal where regulations are considerably less stringent. After the action provoked an international incident, they were returned.

- In 1987, the Sandoz chemical plant in Basel, Switzerland was the site of an environmental calamity, when tons of fertilizers and chemicals spilled into the Rhine River, killing fish and aquatic life along hundreds of miles. Largely lost amidst the public uproar was the fact that the majority of the toxic products spilled, while manufactured in Switzerland, were destined for markets in developing countries.

- In February, 1989, the Natural Resources Defense Council released a report citing significant health risks from the use of Alar, a growth retardant, on U.S. apples. While U.S. regulatory agencies may ultimately ban its use, no controls are in force over continued applications outside the U.S. The Alar episode coincided with a scare over Chilean fruit (a major source of U.S. winter supplies) that resulted in a temporary ban on these fruit imports.

These examples are part of an emerging problem: environmental and health risks are increasingly traded among nations along with goods and services. These risks are the opposite of services--they are environmental and health disservices traded across national borders. These problems arise directly from the transfer of agricultural technology, and will increasingly affect international investment flows, trade and development, and the relative competitiveness of U.S. agriculture.

This pattern of trade arises from three sources. The first is the increasing role of chemicals and fertilizers promoting agricultural productivity. These production inputs have been responsible for dramatic increases in yields, and have made agriculture an important meeting point for environmental, health, and trade issues. Food and human health are intimately connected; agriculture is increasingly dependent on chemical and fertilizer inputs; it also is a major trade sector in developed and developing countries. This links environmental and health concerns to agricultural trade policy as never before.

The second source of the problem is the emergence of a two-tiered international structure of environmental regulation. Increasingly stringent rules and regulations in developed countries result from a rising concern with environmental quality and human health. In most developing countries, however, food production and agricultural development remain the primary focus of concern. This creates incentives to export restricted agricultural and industrial chemicals--or whole production processes--from North to South.

Third, when products carrying risks are imported into developed country markets, competing producers may demand protection, converting environmental and health concerns into non-tariff trade barriers. As international trade increases, the linkages from environmental and health concerns to agriculture take on significance for organizations such as the General Agreement on Tariffs and Trade (GATT), which has made them a focus of the agricultural trade negotiations.

In developed countries, increased costs of production resulting from stricter regulations put producers in a less competitive cost-price squeeze, adding to their incentives to fight imports through environmental or health restrictions. In developing countries, meanwhile, heavy use of pesticides, herbicides and fertilizers marketed without regulation is leading to major health and environmental impacts.

In this paper, I consider these issues from an economic and political perspective. I conclude with some suggestions for policy reform at both domestic and international levels.

Growing Chemical and Fertilizer Use

U.S. pesticide, herbicide and fungicide sales grew at an average of 6 percent per year between 1965 and 1974, fluctuated throughout the 1970s, and fell along with farm financial conditions and acreage cut-backs in the 1980s (Tables 1-3). Like other inputs to agriculture, the demand for these products is largely derived from the demand for grain and oilseeds, which are heavily export-dependent (Runge, Houck and Halbach, 1988). Corn, a major United States export crop, receives the largest levels of pesticide treatments. Application rates increased from 1.2 lbs/acre in 1966 to 3.1 lbs/acre in 1982. In 1985, Atrazine was applied on over 60 percent of surveyed acreage, and Alachlor on 40 percent (Swanson and Dahl, 1989, p. 21). Table 4 shows herbicide and insecticide use by crop.

Given the derived demand from row crops to input uses, margins in the pesticide business fell during the market declines of the 1980s. From the perspective of the U.S. chemical industry, softening domestic demand for farm inputs stimulated a search for foreign marketing opportunities. By 1986, the U.S. pesticide industry exported 34 percent of its total sales value ($1.4 billion) compared with 26 percent in 1965 (Swanson and Dahl, 1989).

Part of the incentive to increase foreign sales arises from the substantial fixed costs of bringing new products to market in the face of internal research and development expenses and U.S. Environmental Protection Agency (EPA) registration requirements. Research and

Table 1.

Pesticides (Total)--Synthetic Organics

Year	U.S. Sales Quantity (mill lb)	U.S. Sales Value (mill $)	U.S. Sales Value/lb ($/lb)	Exports Value (mill $)	Exports Quantity (mill lb)	Imports Value (mill $)	Imports Quantity (mill lb)	U.S. Usage Value (mill $)
1965	763	497	.65	131	299	9.7	5.5	376
1966	822	584	.71	168	348	14.6	9.1	431
1967	897	787	.88	194	N/A	16.2	15.4	609
1968	960	849	.88	239	465	19.1	16.8	629
1969	929	851	.92	197	395	15.2	10.9	669
1970	881	870	.99	217	394	17.1	17.6	670
1971	946	979	1.03	248	413	26.7	23.9	758
1972	1022	1092	1.07	226	381	35.1	27.2	901
1973	1199	1344	1.12	362	590	43.2	32.1	1025
1974	1365	1815	1.33	563	668	51.3	32.2	1303
1975	1317	2359	1.79	664	592	108	55.1	1803
1976	1193	2410	2.02	615	558	134	65.7	1929
1977	1263	2808	2.22	767	595	108	52.4	2149
1978	1300	3041	2.34	935	660	216	114	2322
1979	1369	3631	2.65	1113	650	236	110	2754
1980	1406	4078	2.90	1210	650	308	115	3176
1981	1291	4652	3.60	1204	526	338	N/A	3786
1982	1147	4432	3.86	1257	531	320	167	3495
1983	1017	4054	3.99	1280	496	303	143	3077
1984	1108	4730	4.27	1497	615	375	197	3608
1985	1022	4437	4.34	1363	N/A	449	N/A	3523
1986	940	4234	4.50	1424	N/A	423	N/A	3233

Sources: International Trade Commission (ITC), Synthetic Organic Chemical, 1978-1986, USDA-ASCS, The Pesticide Review, 1965-1978. U.S. Bureau of the Census Report No. FT210, FT410, FT610 for select years from 1965-1986. USDA-ERS, Agricultural Resources, August 1987.

1/ Total sales of synthetic organic pesticides by U.S. manufacturers.

2/ Quantity sales of active ingredients (a.i.) for U.S. sales. Quantity of total ingredients (active plus inert) for exports and imports.

3/ Imports include synthetic organics plus nonorganics.

4/ U.S. sales minus exports plus imports.

(Reproduced from Swanson and Dahl, 1989, p. 57.)

N/A - Not Available.

Table 2.

Herbicides--Synthetic Organics

	U.S. Sales			Exports	
Year	Quantity (mill lbs)	Value (mill $)	Value/lb ($/lb)	Quantity (mill lbs)	Value (mill $)
1965	184	211	1.15	39	29
1966	222	258	1.16	44	37
1967	288	430	1.50	N/A	45
1968	319	483	1.52	71	65
1969	311	496	1.59	67	58
1970	308	498	1.62	76	62
1971	317	563	1.78	83	66
1972	354	629	1.78	88	68
1973	447	764	1.71	140	104
1974	529	1048	1.98	190	179
1975	645	1452	2.25	200	250
1976	558	1450	2.60	198	245
1977	585	1621	2.77	210	288
1978	640	1783	2.78	231	348
1979	703	2166	3.08	256	430
1980	768	2558	3.33	256	486
1981	724	2909	4.02	222	500
1982	663	2866	4.32	219	509
1983	604	2676	4.43	221	593
1984	684	3131	4.58	289	707
1985	636	2884	4.54	N/A	622
1986	579	2527	4.36	N/A	625

Sources: International Trade Commission (ITC), Synthetic Organic Chemical, 1978-1986, USDA-ASCS, The Pesticide Review, 1965-1978. U.S. Bureau of the Census Report Nos. FT210, FT410, FT610 for select years from 1965-1986. USDA-ERS, Agricultural Resources, August 1987.

1/ Total sales of synthetic organic pesticides by U.S. manufacturers.

2/ Quantity sales of active ingredients (a.i.) for U.S. sales. Quantity of total ingredients (active plus inert) for exports and imports.

N/A - Not Available.

(Reproduced from Swanson and Dahl, 1989, p. 58.)

Table 3.

Insecticides--Synthetic Organics

	U.S. Sales			Exports	
Year	Quantity (mill lbs)	Value (mill $)	Value/lb ($/lb)	Value (mill $)	Quantity (mill lbs)
1965	473	237	.50	86	230
1966	482	273	.57	108	265
1967	489	301	.61	122	N/A
1968	511	304	.59	148	349
1969	493	294	.60	118	286
1970	444	307	.69	128	272
1971	497	343	.69	147	283
1972	540	381	.71	127	247
1973	605	471	.78	198	384
1974	692	645	.93	296	406
1975	546	765	1.40	323	323
1976	502	808	1.61	272	287
1977	545	1000	1.84	355	313
1978	509	1038	2.04	390	312
1979	522	1212	2.32	475	299
1980	492	1230	2.50	485	289
1981	423	1380	3.27	472	216
1982	374	1265	3.38	490	214
1983	307	1082	3.53	475	191
1984	312	1308	4.19	545	216
1985	292	1291	4.42	519	N/A
1986	272	1423	5.23	534	N/A

Sources: International Trade Commission (ITC), Synthetic Organic Chemical, 1978-1986, USDA-ASCS, The Pesticide Review, 1965-1978. U.S. Bureau of the Census Report Nos. FT210, FT410, FT610 for select years from 1965-1986. USDA-ERS, Agricultural Resources, August 1987.

1/ Total sales of synthetic organic pesticides by U.S. manufacturers.

2/ Quantity sales of active ingredients (a.i.) for U.S. sales. Quantity of total ingredients (active plus inert) for exports and imports.

N/A - Not Available.

(Reproduced from Swanson and Dahl, 1989, p. 59.)

Table 4. Farm Herbicide and Insecticide Use by Crop.

Crop	Herbicide Quantity					Insecticide Quantity				
	1966	1971	1976	1982	1987 4/	1966	1971	1976	1982	1987 4/
	million pounds (a.i.)									
Row Crops:										
Corn	46.0	101.1	207.1	243.4	196	23.6	25.5	32.0	30.1	24.3
Soybeans	10.4	36.5	81.1	125.2	104	3.2	5.6	7.9	10.9	9.1
Cotton	6.5	19.6	18.3	17.3	16	64.9	73.4	64.1	16.9	15.5
Grain Sorghum	4.0	11.5	15.7	15.3	11	0.8	5.7	4.6	2.5	1.8
Peanuts	2.9	4.4	3.4	4.9	6	5.5	6.0	2.4	1.0	1.2
Tobacco	N/A	0.2	1.2	1.5	1	3.8	4.0	3.3	3.5	2.3
Total	69.8	173.3	326.8	407.6	334	101.8	120.2	114.3	64.9	54.2
Small Grain Crops:										
Rice	2.8	8.0	8.5	13.9	10	0.3	0.9	0.5	0.6	0.4
Wheat	8.2	11.6	21.9	18.0	14	0.9	1.7	7.2	2.4	1.8
Other 1/	4.9	5.4	5.5	5.9	7	0.3	0.8	1.8	0.2	0.2
Total	15.9	25.0	35.9	37.8	31	1.5	3.4	9.5	3.2	2.4
Forage Crops:					N/A					N/A
Alfalfa	1.3	0.6	1.6	0.3		3.6	2.5	6.4	2.5	
Other Hay	2/	2/	2/	0.7		0.1	2/	2/	0.1	
Pasture and Range	10.5	8.3	9.6	5.0		0.3	0.2	0.1	3/	
Total	11.8	8.9	11.2	6.0		4.0	2.7	6.5	2.6	
Total	97.6	207.2	373.9	451.4		107.4	126.3	130.3	70.7	

Source: ERS-USDA, Pesticide Use Surveys, 1966, 1971, 1976, 1982; Inputs, October 1983; Agricultural Resources, February 1986.

1/ Includes barley, oats, rye, and other mixed grains in 1966; barley, oats and rye in 1971 and 1976; and barley and oats in 1982 and 1987.

2/ Included in the alfalfa figure.

3/ Less than 50,000 pounds (a.i.).

4/ Estimated.

N/A - Not Available.

(Reproduced from Swanson and Dahl, 1989, p. 22.)

development in the industry is a major expenditure due to specialized personnel, manufacturing specifications, and tight government controls. Large quantities of chemicals must now be screened to find those that target specific markets and conform to environmental regulations.

In 1986, according to Swanson and Dahl (1989, p. 43), pesticide researchers screened 13,500 compounds for every one registered by EPA, compared with 5,500 compounds screened per registration in 1967. The time lag between product discovery and marketing likewise rose from an estimated 5 years in 1967 to 10 years in 1986. These fixed costs create powerful incentives, once a chemical is registered and in use, to build long-term markets. If domestic markets tighten due to market or regulatory factors, foreign markets are all the more crucial in spreading these fixed costs over sufficient sales volume. Finally, this process is likely to make entry into the pesticide industry by smaller firms more difficult, concentrating industry activity in larger firms with international marketing strategies.

Despite current criticism of their use in agriculture, chemicals and fertilizers promoting agricultural productivity have been responsible for much of the global increase in agricultural output, without which billions of people would be both poorer and more hungry than they are today. In the post-war period, agricultural productivity gains throughout the developed and developing world have been powered by significantly increased applications of these inputs.

According to the International Fertilizer Development Center, agricultural production increased from 1961-63 to 1983-85 at an annual rate of 2 percent in the developed countries and 3.2 percent in developing countries. About two-thirds of these increases were due to increases in yields, as distinct from increases in area planted (Baanante, et al., 1989, p. 2). Fertilizer use, which increased tenfold in developing countries and doubled in developed market economics from 1961-63 to 1983-85, is "possibly the most potent single factor in raising productivity" (Food and Agriculture Organization, 1987a). Table 5 shows per hectare fertilizer use in kilograms of nutrient in 1985. Table 6 shows the contribution of fertilizer in 1985 to agricultural production expressed in cereal equivalents.

In Indonesia, for example, rice production grew at an average rate of five percent per year from 1968 to 1984. By 1985 the country was an exporter rather than an importer of rice. Roughly half of this increase is attributed to massive subsidies for fertilizers and chemicals. The trade-off is that these benefits were not without external costs. Robert Repetto, of the World Resources Institute, documents the substantial ecological damages of such policies, including water pollution, destruction of breeding habitat for coastal fish populations, and the elimination of natural predators. This has led in turn to insect infestations and subsequent overapplications of pesticides, at levels which have actually harmed crop harvests (Repetto, 1985).

In sum, increasing production and consumption of chemicals and fertilizers over the last forty years has created a major and beneficial flow of trade. But this trend has been accompanied by significant disservices. The point is not to end the use of these chemicals, but to use them responsibly and knowledgeably. Modern chemical inputs require substantially more information to use safely and effectively. Among traditional farmers, this knowledge is often lacking. Especially in LDC's,

Table 5. Per Hectare Fertilizer Use in Kilograms of Nutrient, 1985.

By Regions	kh/ha
World	87.1
Developed Market Economies	115.5
North America	85.1
Western Europe	226.1
Oceania	32.3
Others	164.6
Developing Market Economies	41.6
Africa	11.8
Near East	52.3
Far East	55.8
Latin America	41.4
Central Planned Economies	138.0
Europe	129.6
Asia	158.4

In Selected Developed Market Economies	
North America	
Canada	49.8
U.S.A.	93.7
Western Europe	
Denmark	241.8
France	300.9
Germany F.R.	427.3
Netherlands	783.3
Switzerland	436.2
U.K.	355.5
Oceania	
Australia	23.5
New Zealand	892.2
Others	
Japan	430.4
Israel	220.3
South Africa	66.7

In Selected Centrally Planned Countries	
Czechoslovakia	336.5
Hungary	252.7
Romania	146.0
U.S.S.R.	109.3
China	167.3

In Selected Developing Market Economies	kh/ha
Africa	
Angola	5.8
Burkina Faso	3.9
Cameroon	8.1
Ethiopia	4.7
Ghana	4.4
Cote d'Ivoire	11.8
Kenya	42.1
Malawi	11.4
Nigeria	10.8
Senegal	5.5
Sudan	7.5
Tanzania	7.6
Zambia	15.5
Latin America	
Brazil	42.5
Mexico	69.3
Colombia	64.3
Peru	20.1
Near East	
Turkey	53.8
Iran	60.9
Syria	40.5
Jordan	36.9
Far East	
Pakistan	73.7
Bangladesh	59.2
Indonesia	94.7
India	50.3
Philippines	35.8
Malaysia	116.5

Source: FAO Fertilizer Yearbook, 1986, reprinted in Baanante, et al., "The Benefits of Fertilizer Use in Developing Countries," International Fertilizer Development Center, Muscle Shoals, Alabama, 1989.

Table 6. Contribution of Fertilizer to Agricultural Production in Cereal Production Equivalents, 1985.

	Total Nutrient ($N+P_2O_5+K_2O$) Consumption	Increased Production per Unit of Nutrient	Increased Production Due to Fertilizer, in Cereal Equivalents
	(million mt)		(million mt)
Africa	3.44	5	17.2
Asia	40.69	10	406.9
Latin America	7.38	7	51.6
Total	51.51		475.7

Source: Derived from data in FAO Production and Fertilizer Yearbooks. Printed in Baanante, et al., "The Benefits of Fertilizer Use in Developing Countries," International Fertilizer Development Center, Muscle Shoals, Alabama, 1989.

while the inputs themselves are aggressively marketed and subsidized, farm-level education (including basic literacy necessary to read package instructions) is seldom given comparable attention. High levels of human poisoning in LDC's due to overapplication of pesticides are common. For example, per capita pesticide poisonings in the seven countries of Central America are 1,800 times higher than in the United States (Leonard, 1989, p. 4).

Responsible use of powerful chemical agents also requires attention to land-use patterns. Where crops are heavily irrigated, surface and groundwater pollution is likely unless runoff and drainage are carefully controlled. On hilly or deforested lands, where soil fertility is most likely to be low, heavy applications of these chemicals flow rapidly into rivers and streams. Regulating which lands are appropriate for using these chemicals is an important step which is just now beginning in North America and Western Europe. In Minnesota, for example, a land-targeting scheme is part of the Reinvest-in-Minnesota program, which promises to reduce erosion and improve groundwater quality by guiding land use toward high-productivity, low-vulnerability terrain (see Larson, et al., 1988).

Structure of Environmental Regulation

Unfortunately, land use restrictions of this kind, rare in the United States, are essentially non-existent in developing countries. Patterns of land use in LDC's give greatest priority to shorter-term food production goals at the expense of environmental quality considerations.

These differences in priorities require some analysis, since they are not without cause. In the developed countries of North America and Western Europe, the "food problem" is solved. The farm problem arises not from too little food and land in production, but generally too much. As predicted by Engels' Law, the incomes of developed countries have increased, and the share of this income spent on food has fallen in proportion to other goods and services. In contrast, environmental quality and health concerns have grown in importance with increasing income levels. They are "superior goods," in the sense that they play a larger role in the national budget as national incomes increase (Runge, 1987).

In low-income developing countries, the share of national resources devoted to food and agriculture remains large, creating substantial markets for yield-increasing chemicals and fertilizers. Environmental quality and occupational health risks are widely perceived as less pressing concerns than economic development. Even if environmental and health risks are acknowledged, the income levels of most developing countries do not permit a structure of environmental regulation comparable to that in the North.

This difference in priorities creates a two-tiered structure of international environmental regulation. Stricter regulatory regimes in developed countries, when paired with lax or non-existent regulations in developing countries, increase the North-South flow of environmental risks. A kind of "environmental arbitrage" results, in which profits are gained by exploiting the differential in regulations (Nolan and Runge, 1989, p. 6). In the United States, for example, the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA), the Safe Drinking Water Act (SDWA) and the 1990 Farm Bill are all likely to be amended in ways that effectively constrain land use choices (Batie, 1988; Benbrook, 1988). These are but several examples which may lead firms to expand in markets where regulatory oversight is less constraining.

This environmental arbitrage results from conscious policy choices that reveal differences in the value attached to environmental quality by rich and poor countries. As these paths of institutional innovation increasingly diverge, so will the differential impact of environmental constraints on producers in North America and, say, Argentina and Brazil. The competitiveness implications of these trends are not lost on U.S. producers. They and others in developed countries have been quick to see the trade relevance of environmental and health standards. Growing consumer concerns with the health and environmental impacts of agriculture create a natural (and much larger) constituency for nontariff barriers to trade, justified in the name of health and safety. It is doubtful, for example, that beef-offal merchants in the European Community could have blocked competitive U.S. imports solely in the name of superior French or German beef kidneys. But the hormones question created a large, vocal, and committed constituency for denying U.S. access to this market.

Regulation as Protectionism

U.S. consumers are made increasingly aware of environmental and health risks posed by imported agricultural products produced with chemicals that are restricted in domestic markets. In the Caribbean Basin, an important example is fruit and vegetable production. While Caribbean farmers are encouraged to use pesticides, herbicides and fertilizers, regulations against some of these products in North America are rapidly becoming barriers to market access. The beef hormone dispute between the U.S. and EC is another example showing the difficulty of separating regulatory from trade issues in an open world economy.

Unfortunately, despite recent attempts to deal with these issues in forums such as GATT, international responses have been inadequate, in part because the problem itself has not been clearly recognized. The Food and Agriculture Organization of the United Nations (FAO) has worked to develop comprehensive rules affecting food and agricultural health and safety (Food and Agriculture Organization, 1987b). These rules are called the "Codex Alimentarius." Unfortunately, there are no agreed-upon standards for health and sanitary regulations except for a few items, and none are regarded as binding in law. This work has not been given the force and backing of international institutions. The World Bank/IMF system, while recently acknowledging the importance and severity of ecological factors in project development and planning, has not confronted the broader trade and development implications of environmental and health issues.

A continuum of reactions to this issue exists. It stretches from those who insist that U.S. environmental and health standards ought to be those of the world (presumably including Western Europe, where these are no doubt those who feel similarly self-righteous). At the other extreme are those who contend that each country (and perhaps state) should be sovereign to interpret health and environmental standards as they see fit.

In view of differences in levels of economic development and national priorities, however, it is clear that neither extreme can prevail. Jeffrey James (1982) has suggested that despite valid arguments for improved health and environmental regulations in LDC's, "it does not follow from this that countries of the Third World should adopt either the same <u>number</u> or the same <u>level</u> of standards as developed countries" (1982, p. 260). James suggests what may be called <u>intermediate</u> standards, "in the same sense and for the same basic reason as that which underlies the widespread advocacy of intermediate technology in the Third World." This does not necessarily imply only a "downgrading" of U.S. regulations, but an "upgrading" of LDC norms.

If GATT remains an important forum for discussion of these issues, these distinctions may prove useful in developing a basis for "Special and Differential Treatment" of LDC's under GATT law. While "S&D" often creates serious longrun distortions, the terms under which it is granted, as James emphasizes, may actually reduce current regulatory differentials by raising LDC norms.

Research and Policy Needs

The global consequences of failure to confront these problems are increasingly clear, in both environmental and trade terms. The Brundtland Commission Report (World Commission on Environment and Development, 1987), undertaken by the United Nations and the World Commission on Environment and Development, has underscored the need for international action on a wide range of environmental issues. Despite such calls to action, little has yet been done to move effectively to reduce environmental and health hazards at the international level.

Beyond ecological considerations are shorter term problems of trade distortion and market access. These distortions threaten more liberal international trade in ways that are damaging to both developed and developing country interests. U.S. and European farmers are placed at competitive disadvantages by the two-tiered structure of regulation. LDC farmers, meanwhile, are not only likely to be denied access to developed country markets, but technological choices in the South may become biased, making farmers more dependent on purchased chemical inputs at the same time that markets for their products are foreclosed. In periods when rapid growth in trade is one of the only avenues out of debt and deficits, these distortions cannot be dismissed as unimportant.

How can the complex relationship between national environmental and trade policies be addressed? One response, sometimes heard in the U.S., is to loosen the environmental regulatory constraints affecting U.S. producers. This is bad policy, because it is inconsistent with the importance attached to the environment and health both at home and abroad. However, it is important to recognize that tight regulatory constraints do have cost and competitiveness implications, and that the perception that foreign competition does not face similar constraints breeds animosity and protectionism. If American agricultural interests do not help to define the environmental constraints of the 1990s in ways that are least likely to harm global competitiveness, these constraints may very well reduce our comparative advantage as low-cost producers of many agricultural products. Yet the agricultural establishment faces a credibility gap with many environmental groups. It is vital that the agricultural community grasp the economic and political point that it is soil, water, and the general quality of the environment on which continued competitiveness ultimately depends.

Second, because of the many national interests involved, the trade side of these problems requires strengthened multilateral institutions, which rationalize domestic regulations in the interest of environmental quality and health and safety. The key is to recognize the inherently international character of environmental quality and health--issues which are similar in nature to human rights. Only the force of international standards defining the duties of nations, corporations and individuals, can hope to resolve these difficult issues. This does not, as I have emphasized, suggest that these standards cannot be different, depending on national levels of development and micro-level differences such as land use patterns. Attention should also be given to the important role of subnational governmental jurisdictions, such as states and regions.

To begin this process, the U.S. must take the lead in urging existing multilateral institutions to coordinate their efforts. These include the agencies of the United Nations (notably the United Nations Environment Program, the World Health Organization and the F.A.O.), the GATT, and the World Bank-IMF consortium. A broad-based effort from these groups, which already have considerable expertise and experience, is a first condition for success. Some of this coordination is underway. The GATT, IMF and World Bank, for example, have agreed to work more closely on issues of trade, aid and development. The use of environmental and health regulations as trade barriers would provide an especially appropriate focal point for these efforts.

In addition, an international accord on environmental and health regulations would be appropriate, similar in nature to the 1988 Montreal Protocol agreed to by 40 nations to reduce emissions shown harmful to the ozone layer. Its purpose would be primarily invocational -- to call for the rights, duties, and liabilities that define national regulations on environment and health -- which can then be brought more nearly into accord. In the absence of such an agreement, groups within nations will continue to advocate the use of regulations as disguised protectionism, or loosening standards of environmental quality in the name of greater competitiveness.

In the GATT, a long and complex process is underway to harmonize health, safety and environmental regulations under the heading of "sanitary and phytosanitary" measures. These efforts are highly significant, but have been given less national and international attention than they deserve. By drawing attention to the broader policy problems of which they are a part, GATT can help to prevent protectionism from masquerading as health and safety standards.

Finally, much greater sophistication is needed in gathering data on chemical agents in use and their health effects, together with policy-driven research into the design of mechanisms to reduce the problems outlined above. However, one should not wait for this data to begin the design process. Failure to act promptly, will result in continuing environmental beggar-thy-neighbor policies. An historic opportunity exists to define the future in a way consistent both with enhanced trade and an improved global environment.

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