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The term "Circle of Poison" (COP) refers to the link between U.S. export of pesticides and the subsequent import of food containing above tolerance residues of those pesticides. Of particular concern are pesticides which are produced and legally exported by U.S. manufacturers, but not registered in the United States and, therefore, not available to U.S. food producers. These pesticides may be used on food products consumed in foreign countries or destined for consumption in the United States. The "circle" is complete when residues of these products appear on food imported into the United States. These residues are, of course, illegal.

The circle causes anxiety to U.S. consumers and U.S. producers alike. On the one hand, the residues on imported food may go undetected because of budgetary and technological constraints. At the same time many U.S. producers consider themselves at a disadvantage since they cannot use these pesticides, even though they are available for production in other countries.

One response to the "Circle of Poison" is the Circle of Poison Prevention Act, introduced by Senator Leahy and Representative Synar in April 1991. The act would ban the export of all pesticide products that are not registered for use in the U.S. unless the Environmental Protection Agency (EPA) had specified a tolerance level below which residues from these chemicals can legally appear on imported foods.

Increased Concerns

Concerns over the unintended or "external" consequences of pesticide use were first articulated in the 1960s and have intensified throughout the 1970s and 1980s. These concerns include accidental human poisonings, pest resistance, pesticide residues on food, and adverse environmental consequences.

Current U.S. exports are approximately one-fifth of total world exports of pesticides. The COP proposal is concerned with a subset of pesticide exports; namely, those exports which are not registered for use in the United States. Many U.S. unregistered pesticides have never been registered in the United States, while some were used at one time but since have been canceled and/or suspended, and still fewer are used in research and development.

Available Evidence

Proponents of the COP Prevention Act argue that unregistered pesticides exported from the U.S. are often used in the production of raw and processed foods that are later imported into the United States. For these pesticides to present an unacceptable risk to U.S. consumers, food imports must contain residues in excess of EPA tolerances or contain residues of products for which no EPA tolerance exists. One claim linking the safety of our food imports with pesticide exports is that both food imports, particularly fruits and vegetables, and pesticide exports have grown over the last several years. Food imports are 40 percent above levels of the early 1980s. In contrast, total U.S. pesticide exports, which includes both registered and unregistered products, have shown only a modest increase over the same period. They now run about 5 percent over the quantities in the early 1980s; however, from 1985 to 1987 and again in 1990 pesticide exports were actually below those of 1984.

Instances of the COP are rare. One exception, was the one time discovery of residues of chlordane and heptachlor on imported beef. The sole producer and exporter of these two pesticides is located in the United States.

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CIRCLE OF POISON LEGISLATION

by Stan Daberkow
and E. Douglas Beach

➤ Countries commonly use import restrictions to enhance the safety of their food and to protect their farmers from competition. In contrast, Circle of Poison legislation emphasizes export controls to accomplish these goals. The notion is that prohibition of U.S. exports of certain pesticides—those not registered and approved for use in the United States—would break the circle whereby such pesticides are used in other countries to produce food exported to the United States.

However, a unilateral export ban will likely have limited success in achieving its goal unless adequate resources are devoted to pesticide residue detection and technology development. In addition, there are other policy alternatives available, including import and export tariffs to fund increased residue testing, prior informed consent to insure that importing countries know the possible side effects of using certain unregistered pesticides, and even legal recourse in the event that the use of U.S. unregistered pesticides exported from the United States prove hazardous to the health of pesticide users in importing countries.

The pesticide residue sampling program used by the Food and Drug Administration (FDA) to inspect imported fruits and vegetables and the program used by the United States Department of Agriculture (USDA) to inspect imported meats have generally found that residues fall within EPA tolerances. For example, in 1990 the FDA gathered a total of 10,267 samples from imported fruits and vegetables: 64 percent had no detectable residues, less than 1 percent had residues greater than tolerances, and 4 percent had residues of pesticides for which there were no tolerances for the particular pesticide-commodity combination. However, in the case of fruits and vegetables, less than 2 percent of all shipments

imported into the U.S. are sampled.

Government Accounting Office and Office of Technology Assessment reports point out the technological and budgetary limitations of the current pesticide residue testing program. While many pesticides are detectable by the most commonly used residue testing techniques, other pesticides are detectable only by techniques which are specialized, time-consuming, and expensive. Methods routinely used by the FDA can only detect 163 out of 316

pesticides with established tolerances, plus some pesticides with temporary tolerances and some with no tolerances.

Border Inspections

There are circumstances which may minimize violative pesticide residues in food destined for U.S. markets. First, since 1986 the FDA uses a commercial agrichemical data base which estimates pesticide use in various countries. Though incomplete, the data base helps the Agency determine which product/pesticide combination should be targeted for residue testing. When a food shipment is found to contain illegal pesticide residues, FDA can invoke automatic detention of future shipments of that product from the exporting country for an indefinite period of time.

Under automatic detention, U.S. importers are responsible for having each shipment of the commodity in question analyzed and certified by a private lab. Shipments within tolerance levels are allowed through customs. Shipments above tolerance levels are

denied access to U.S. markets. Under automatic detention, over 3500 shipments were detained in fiscal year 1988, and over 5400 shipments were detained in fiscal year 1989.

Costs associated with these procedures can be considerable. For example, a routine multiple residue test costs between \$200 to \$300 per shipment. These costs can escalate if the FDA suspects residues from pesticides that are not detected by conventional tests. Furthermore, a given food market can virtually "dry-up" overnight if

there is public awareness of even a small threat of potentially dangerous chemical residues; as the case of cyanide residues in Chilean grapes illustrated.

The COP Debate

The effectiveness of the COP Prevention Act depends heavily upon two assumptions:

- That foreign production of U.S. unregistered pesticides is small and will not increase if the U.S. bans exports of these pesticides; and
- That unregistered pesticides produced in the United States are used to produce fruits and vegetables exported from those countries to the United States.

From an economic viewpoint, if sufficient demand for U.S. unregistered pesticides exists and if production is profitable, private firms or governments outside the United States will likely produce these pesticides. If this argument is correct, a U.S. export

Unregistered Pesticides: What Are They?

For a pesticide to be legally used in the U.S., it must be registered with EPA. The registration process is designed to assure the public that the prescribed use of a pesticide does not result in unreasonable adverse environmental or human health effects. Pesticides unregistered in the U.S. fall into two broad categories:

(1) canceled and/or suspended, and (2) never registered.

The first category includes those pesticides which at one time were registered for use in the United States, but were subsequently determined by EPA to involve environmental or human risks that outweigh the benefits from continuing their use. DDT, chlordane, aldrin, heptachlor, DBCP, and toxaphene have been canceled or suspended for all uses, or at least all food uses. Nevertheless, some of these pesticides continue to be exported from the U.S.

Three groups of never registered pesticides can be identified: 1) products in research and development (R & D), 2) products "similar in use and composition" to products currently registered, and 3) products produced in commercial quantities whose active ingredient have never been registered in any formulation in the U.S.

R&D pesticide products represent the initial testing phase of a new product. While only preliminary environmental or human health effects may be known at this stage of development, only very small quantities are typically produced (and/or exported). Hence, these compounds present few risks if appropriate precautions are taken by the research organizations in the U.S. and abroad.

Since EPA registers products not active ingredients, several

products (known as formulations) can contain the same active ingredients but in different proportions or with different carrier material. Hence, the term "similar in composition and use" is used to describe such products. Not every product containing any one active ingredient is necessarily registered for use in the U.S. In fact, since the majority of these pesticides have one or more food tolerances already established, the COP legislation would permit the export of these pesticides. Consequently, it is unlikely that "similar in composition and use" pesticides pose a threat to a foreign environment or to our imported food supply provided they are used as recommended and re-enter the country within residue tolerances.

The last group of never registered pesticides are those exported from the U.S. in commercial quantities but never registered in the United States. Generally, little is known by EPA about these products since pesticides intended solely for export are exempt from the registration requirements of the Federal Insecticide Fungicide and Rodenticide Act (FIFRA). Many different products may be developed because climate, soil, crop, and pest conditions in foreign countries can be significantly different from those in the U.S. Since these products are not used in the U.S. little incentive exists to register such products in this country even though the production facilities are located here. While some pesticides never registered in the United States are registered for use in developed countries and are subjected to a registration process similar to that in the U.S., many developing countries have few, if any, resources devoted to pesticide registration and enforcement.

ban would have little if any effect on foreign fruit and vegetable production and, in turn, little effect on pesticide residues found on U.S. food imports.

Although, precise pesticide production information is often proprietary, pesticide trade publications do provide limited information on one subclass of unregistered pesticides; specifically, those pesticides canceled and/or suspended for use in the United States. Of the 42 pesticides EPA has canceled and/or suspended for all or nearly all uses, information on the production sites of 23 of those chemicals was available. Out of these 23 chemicals, 3 were produced solely in the U.S., 16 were produced solely outside the U.S., and 4 were produced both in the U.S. and in foreign countries. The fact that many U.S. canceled and/or suspended pesticides are still produced undermines the effectiveness of a unilateral export ban by the United States, or by any other country, on worldwide pesticide production and use.

With regard to the second assumption, the concern about unregistered pesticides being used on food commodities that are later imported into the U.S. would once again depend on the adequacy of the pesticide residue monitoring system. Generally, U.S. canceled and/or suspended pesticides can be easily detected since residue testing technology is well developed for these products. In comparison, the monitoring system currently used in the United States has more difficulty detecting residues of pesticides never registered here.

As mentioned above, U.S. farmers have also entered the COP debate. U.S. farm groups argue that the export of U.S. unregistered pesticides produced in this country and used abroad, but prohibited for use in the United States, gives foreign producers an "unfair advantage." In 1989 over 70 percent of total U.S. fruit and vegetable imports came from South America and Mexico. Mexico supplied the largest share of the total with approximately 25 percent. A cost comparison between fruit and vegetable producers in Mexico and the United States reveals that relatively low labor costs and favorable climatic conditions, not access to U.S. unregistered pesticides, likely account for any competitive advantage.

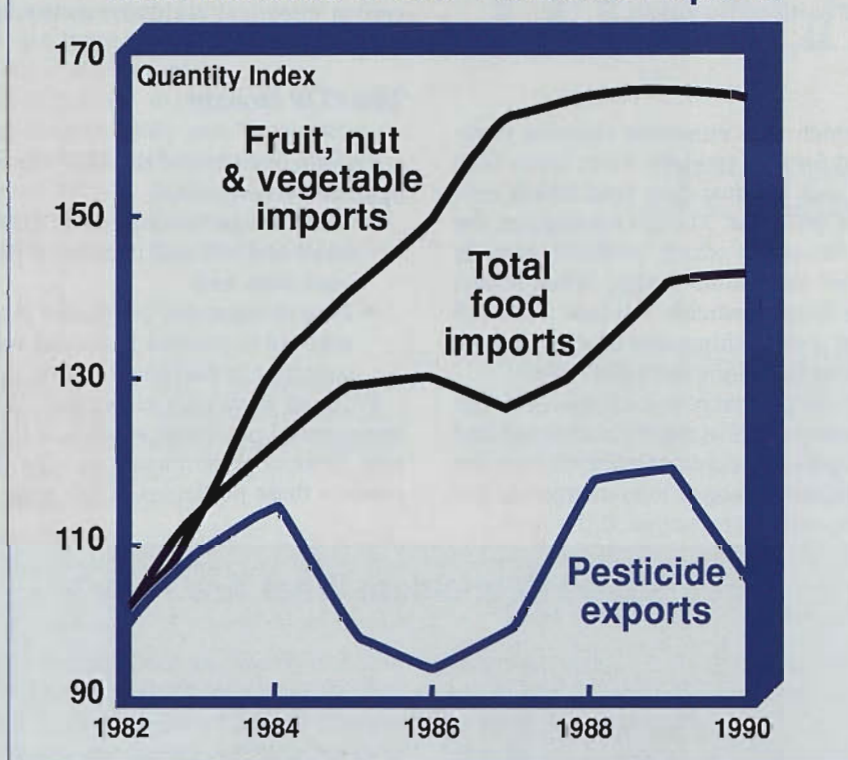
Proponents of an export ban also argue that the United States has a moral obligation to warn and, when possible, protect foreign farm workers and foreign food consumers from potentially dangerous pesticides. For example, DBCP is a soil fumigant which is easy to apply and very effective against nematodes. It was found to cause sterility in male workers involved in its manufacture. For that reason, DBCP was removed from the market and all U.S. registrations were canceled. The tragedy in Costa Rica, where as many as 2,000 banana workers may have been sterilized from exposure to DBCP, is an example where a U.S. export ban may have protected foreign farm workers.

Policy Options

Increased Reporting Requirements. The COP issue is not new. Prior to 1986, pharmaceutical manufacturers were not permitted to export drugs which were not approved for use in the United States. This changed in 1986 when the U.S. government authorized U.S. companies to export new human drugs, animal drugs, and biologics without customary FDA approval. These regulations permit the export of new animal drugs to any OECD country (except Turkey and Greece) provided the manufacturer is seeking marketing approval in the U.S., or to any tropical country for the treatment of tropical diseases.

Under each provision, the manufacturer must demonstrate that export of the drug does not endanger U.S. public health and safety, and does not violate environmental standards in the importing country. Furthermore, FDA may require the manufacturer to develop a testing method for residues on imported meats. The law does not stipulate the "practicality" of the testing method. Consequently, FDA export permits for new animal drugs do not take into account any technological or budgetary limitations of residue testing programs. Nevertheless, a precedent exists for closely monitoring and, if necessary, preventing the export of products

Figure 1: Increase in U.S. Food Imports Greater Than Increase in U.S. Pesticide Exports



which may present health risks to Americans and environmental risks in other countries.

Funding Residue Testing. A basic issue in the United States, for both registered and unregistered pesticides, is whether regulatory agencies or the private sector should bear the costs of testing for violative residues of pesticides in imported foods. Currently, regulatory agencies (i.e. taxpayers) bear the cost. But, budgets for these agencies are extremely limited. As a result, in some cases, residue testing has been limited to routine techniques which are unable to detect some U.S. unregistered pesticides.

In comparison, the USDA uses a different approach with respect to possible violative residues in tobacco imports. The law requires importers to pay for pesticide inspections, with the understanding that any shipment that does not meet residue requirements will be denied entry. Similar inspection requirements are imposed on U.S. grown tobacco processed in the United States. It is possible that a similar inspection policy for food imports would meet with GATT approval.

Taxing Exports. The COP is unique in that a potentially toxic substance is produced in the United States and later imported as a residue in our food. A per unit tax placed on U.S. unregistered pesticides produced in this country, before they are exported, could fund increased import inspections for pesticide residues. If the ultimate goal is to provide increased testing for residues with-

out driving production of the chemicals abroad, then an export tax could be set at a level to take advantage of the start-up costs associated with relocating production outside the U.S., thus discouraging production elsewhere.

Prior Informed Consent. The international community has attempted to control the trade of mutually recognized hazardous agrichemicals on a global basis. A 1989 international agreement, known as Prior Informed Consent (PIC), requires prior approval by an importing country before a "banned or severely restricted pesticide" can be exported. If a country should deny entry for a pesticide, then it is expected:

- Not to import that pesticide from any other country, and
- Not to manufacture that pesticide domestically.

This procedure allows each country to assess the risks associated with the pesticide based on local public health, economic, environmental, and administrative conditions. However, insufficient resources, especially in developing economies, and the lack of consensus on what constitutes a "hazardous" pesticide may hamper the effectiveness of the PIC program.

Legal Recourse in State Courts. The legal system in several U.S. states may offer another option to deal with the external costs associated with pesticide use. A product liability case was suc-

cessfully filed against the producers of DBCP alleging a link between its use and the sterility of 82 Costa Rican banana workers. While the legality of foreigners using U.S. courts to seek damages against U.S. manufacturers is in question, the Texas case illustrates another mechanism which might be used to discourage the distribution of products with potentially adverse health or environmental consequences.

In summary, a unilateral export ban will likely have limited success in controlling pesticide residues in imported foods until adequate resources are devoted to pesticide residue detection and technology development. Furthermore, a U.S. ban on the

export of U.S. unregistered pesticides will be ineffective in protecting foreign workers and their environment, if alternative production sites outside the United States replace production currently located in the United States.

Even though policy alternatives are available, the Circle of Poison debate is likely to continue due to the dearth of information on the global distribution of pesticide production and consumption; the controversy over what constitutes a safe food supply; the potential effect of U.S. environmental and health regulations on international trade; and, the use of ethical, rather than economic, arguments to justify pesticide export controls. **C**

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