PI222

UF UNIVERSITY of FLORIDA
IFAS Extension

Pesticides and Prior Informed Consent[1]

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Introduction

The Prior Informed Consent (PIC) procedure is an international information exchange sponsored by the United Nations to assist countries throughout the world in decisions on whether to allow import of chemicals of concern. Some of these chemicals of concern include pesticides.

PIC maintains a listing of chemicals that have been banned or severely restricted in the participating countries because of unacceptable levels of risk to human health and/or the natural environment. At the original date of this publication, October 2009, the most current PIC list contained a total of 40 industrial and pesticidal chemicals, 29 of which are pesticide active ingredients. The PIC list is available at the following URL: http://www.pic.int/home.php?type=t&id=29&sid=30.

U.S. Pesticide Registration and Status

No pesticide may be lawfully sold in the United States until the U.S. Environmental Protection Agency (EPA) has reviewed the manufacturer's application for registration and determined that use of the product does not present an unreasonable risk to humans, wildlife, or the environment.

Pesticides banned in the United States are those that the EPA has determined pose an unacceptable risk. (See Figure 1.) For pesticides banned in the United States, the EPA has also determined that the unacceptable risks associated with the pesticide cannot be reduced by actions – such as label amendments – to alter use patterns. In most cases, when the EPA has banned use of a pesticide in the United States, the related active ingredients are voluntarily cancelled by the pesticide manufacturer. Table 1 contains a 1998 listing of pesticide active ingredients that have had all or most of their uses banned in the United States. (Table 1 also includes the criteria for the EPA's ban on each of these pesticide uses.) These pesticides, banned by the EPA, are included in the UN's PIC list.

Additionally, a small number of pesticides still used in the United States could be considered as banned for most practical purposes because the pesticides have only one or a few very specific lawful uses remaining. For example, the EPA has banned use of lindane for practically all of its former uses, except

1. This document is PI222, one of a series of the Agronomy Department, Florida Cooperative Extension Service, Institute of Food and Agricultural Sciences, University of Florida. Original publication date, Novmber 2009. Visit the EDIS Web site at http://edis.ifas.ufl.edu.
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for pharmaceutical use for treatment of lice and scabies. Other pesticides (not presented in Table 1) have never been registered by the EPA for use in the United States, but are in use elsewhere in the world and are included in the PIC list.

Several pesticides that have a full EPA registration are specifically regulated in Florida. (See Table 2.) Several EDIS publications address in greater detail each of the EPA-registered pesticides whose use is regulated in Florida by the Florida Department of Agricultural and Consumer Servies.

Export from the United States of Unregistered Pesticides

Pesticides that are not registered with the EPA may be lawfully manufactured in the United States and exported for use in other countries. The Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) requires that U.S. exporters of unregistered pesticides must–prior to exporting the pesticide–obtain a statement signed by the foreign purchaser indicating the purchaser's awareness that the product cannot be lawfully used in the United States. This FIFRA requirement is shipment-specific for a particular exporter, product and purchaser.

To ensure that foreign national officials responsible for the protection of health and the environment in their country are informed of such shipments, EPA transmits a copy of the statement to the Designated National Authority (DNA), a person designated in the receiving country as part of the United Nations˘ PIC program.

The EPA places the highest possible priority on timely notification of the DNA for two categories of exported pesticides:

- Pesticides on the international PIC list, most of which have also been banned in the United States or have severely limited permitted use in the United States.
- Other pesticides banned and having limited use in the United States for health or environmental reasons, but which are not included in the PIC list.

Additional Information

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Figure 1. In 1972, use of the pesticide DDT was banned in the United States. Credits: UF/IFAS PIO

Table 1. Pesticide Active Ingredients Banned by the EPA for Use in the United States and Maintained on the UN's PIC List.

Active Ingredient (Effective Date of EPA Ban.)*	**Use**	**Criteria for Ban**
2,4,5-T (1985)	Herbicide	The dioxin contaminant in 2,4,5-T -- TCDD -- has been found to be carcinogenic and to cause foetal abnormalities in laboratory mice. Additionally, 2,4,5-T may pose an unacceptable risk of reproductive effects for pesticide applicators.
Aldrin (1974)	Insecticide	High toxicity, persistence in the environment, especially in temperate areas, and bioaccumulation of residues in the food chain and in human tissues. Aldrin is variably toxic to microorganisms and highly toxic to fish, crustaceans, and many bird and animal species.
Captafol (1987)	Fungicide	Captafol was voluntarily withdrawn by the registrant. Captafol is oncogenic in rats and mice; highly toxic to fish; a skin sensitizer (Incidents of farm workers being disabled from its effects have been reported.); moderately to very highly toxic to freshwater invertebrates; found to have strong potential for reproductive effects in birds; and found to cause potential problems related to endangered species.
Chlordane (1978)	Insecticide	Chlordane's persistence and bioaccumulation in the environment poses potential adverse effects to humans and the environment because of continuing long-term exposure through water, food and other sources. Of particular concern is chlordanes demonstrated carcinogenic response in laboratory rodents, as well as chlordanes potential impact on human health from widespread environmental contamination in the food chain.
Chlordimeform (1988)	Insecticide/acaracide/ovicide	Chloridimeform and its principal metabolites are considered probable human carcinogens.
Chlorobenzilate (1988)	Acaracide	Animal studies indicated that exposure to chlorobenzilate could pose risks of cancer and adverse testicular effects to certain exposed groups.
DDT (1972)	Insecticide	The characteristics of DDT to persist, especially in temperate climates, and to biomagnify in the food chain led to significant reproductive effects in birds -- including the brown pelican, osprey and eagles -- due to eggshell thinning. These features -- combined with exposure and accumulation of residues in humans and the potential oncogenicity of DDT -- contributed to health concerns. In addition, there were concerns about general environmental contamination of a longlived nature and uncertainty about the eventual adverse impacts on humans and the environment because of continuing, long-term exposure through water, food and other sources. Finally, DDT is toxic to a number of organisms, including fish.
Dieldrin (1974)	Insecticide	High toxicity to humans, fish, and many animal and bird species, persistence in the environment, especially in temperate areas, and bioaccumulation in the food chain and in human tissues.
Dinoseb (1986)	Defoliant/ desiccant/ herbicide	Dinoseb and its salts have been banned because they have been found in animal studies to result in high risks of birth defects, male sterility, and high acute toxicity.

Table 1. Pesticide Active Ingredients Banned by the EPA for Use in the United States and Maintained on the UN's PIC List.

Active Ingredient (Effective Date of EPA Ban.)*	**Use**	**Criteria for Ban**
EDB (1984)	Insecticide/nematicide	EDB has been subject to control actions due to health concerns and the persistence of the chemical in groundwater. EDB has been associated with reproductive, carcinogenic and genotoxic effects in addition to high acute toxicity. Use as a soil fumigant has led to persistent contamination of groundwater aquifers.
Ethylene dichloride (1986)	Fumigant	Concern about the carcinogenic properties of ethylene dichloride on human health is reported as a primary reason for the control actions.
Fluoroacetamide (1980)	Rodenticide	Acute toxicity to humans, mammals, and birds.
HCH (1978)	Insecticide	Banned in the United States principally because of oncogenic effects detected in animal studies. When considered in combination with its persistence and bioaccumulation potential, the EPA determined dietary cancer risk from HCH was unacceptable. In addition, exposures to workers and other persons applying BHC was of concern. Other countries also noted persistence and bioaccumulation, high toxicity and environmental effects as reasons for control actions.
Heptachlor (1978)	Insecticide	Heptachlor's toxicity to humans, other mammals, birds, fish and other aquatic organisms, as well as a concern for bio-accumulation, persistence and environmental contamination. Of particular concern is Heptachlor's demonstrated carcinogenic response in laboratory rodents and its potential impact on human health from widespread environmental contamination in the food chain.
Hexachlorobenzene (1984)	Seed protectant	Probable human carcinogen. HCB is also extremely persistent in the environment. Residues have been found in aquatic and terrestrial species, including in mankind. Particularly high levels have been found in certain fish species. The EPA has also expressed concern over the possibility of HCB causing reproductive effects in wildlife exposed to frequent or continuous low levels of the compound. This concern is especially focused on carnivores and higher mammals.
Lindane (2002)	Acaracide/insecticide	Persistency in the environment, bioaccumulation in the food chain and toxicity to humans, aquatic and terrestrial species.
Mercury compounds (1976)	Many	Toxic to humans. In addition, various forms of mercury are toxic to aquatic organisms, and residues accumulate in the aquatic biota with the result that potentially dangerous residue levels are reached in aquatic foods consumed by humans.
Monocrotophos (1988)	Acaracide/insecticide/miticide	High mammalian toxicity.
Pentachlorophenol (2005)	Wood preservative	Negative effects on non-target organisms.
Toxaphene (1987)	Insecticide	Acute oral toxicity and carcinogenicity in humans, population reductions of non-target species, acute toxicology to aquatic organisms, and chronic and/or delayed effects to aquatic, avian, and mammalian species. In addition, toxaphene bioaccumulates.

*If at one time registered for use in the United States.

Table 2. Specifically Regulated Pesticides in Florida.

Active ingredient	Use	Criteria for regulation
Aldicarb	Acaracide/insecticide/nematicide	Acute toxicity and groundwater contamination concerns.
Bromacil	Herbicide	Potential groundwater contaminant due to high mobility in sandy, low-organic-matter soils.
Methyl bromide	Fumigant	High acute toxicity.
Organo-auxin herbicides	Herbicide	Potential off-target drift and subsequent damage to sensitive crops and other plants.
Organotin antifouling paints	Algaecide	Toxicity to nontarget aquatic organisms.