

Uruguay's organochlorine pesticides regulation in relation to international laws

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Introduction

Organochlorine pesticides (OCPs) are persistent organic pollutants (POPs) characterized by high toxicity, persistence, and bioaccumulation [4][5]. Until 1970s, they have been used worldwide in agriculture; after that time several developed countries, such as Uruguay, started to ban and restrict their use in agriculture because of their negative effects on the environment and human health[1]. Nonetheless, because of the growth of the agricultural sector, Uruguay's import of pesticides (not only OCPs) passed from 4440 tons in 1999 to 9566 tons in 2005[10].

The objective of this paper is to see how the legislation on the OCPs has changed over time according to the development of a more sustainable agriculture. In this case, I would use Uruguay as an example. In the next sections, I will show the changes made by Uruguay in the national legislation on the matter. My analysis will also be related to the promulgation of international laws; in this way, I will underline the influence that international initiatives has on the policies' developed by Uruguay.

Environmental impact of the OCPs

Pesticides have side impacts on non-target organisms and on soil and water resources[7]. Especially not biodegradable OCPs, or OCPs degraded very slowly, affect the soil microflora. Soil microorganisms are not only responsible for soil fertility (then crop production) but also for the biodegradation of the pesticides themselves[6]. Wildlife is also affected by acute or chronic exposure to OCPs, which can negatively impact entire habitats[8]. Watercourses and groundwater can be poisoned during the application of the pesticides to the fields or through water percolation[9]. To move the agriculture toward the use of more sustainable pesticides, which in this case means to ban the OCPs, would preserve the natural resources and the flora and fauna biodiversity.

National policies

OCPs have been regulated in Uruguay since 1968, because of the raised knowledge on their properties. The principal steps in the national legislation are reported in table 1[2].

| Year | Decision(s) | Notes |
|------|--|--|
| 1977 | Ban of hexachlorocyclohexane importation, manufacture, formulation and sale | - For agricultural and veterinary uses - Exception: lindane |
| 1979 | Ban of chlorinated insecticides | Treatment of grain for human or animal consumption or manufacture |
| 1988 | Revoke of registration and sale authorization of endrin | - Exception: parakeet control (Myiopsitta monachus, Aves Psittaciformes) - Official authorization required for the sale (no more 20 liters containers) |
| 1989 | - Revoke of all the organochlorates pesticides used in seed treatment - Revoke of registration and sale authorization of chlorate insecticides | - Exception chlorate insecticides: use permitted for ant control (active concentration less than 2.5% p/p or p/v, colorless in red, more than 1 liter or 1 kg) |
| 1991 | Modification of paraquat herbicides | To comply with certain specifications |
| 1997 | Ban on registration and sale of ALL organochlorine pesticides for agricultural use | Exceptions: endosulfan & dodecachlor |
| 2008 | - Ban of: dieldrin, endrin, heptachlor, hexachlorobenzene (HCB), mirex, toxaphene (camphechlor) - Several restriction in the use of paraquat dichlorine | After the ratification of the Rotterdam and of the Stockholm Conventions |

Table 1. Uruguayan principal Regulations on the organochlorine pesticides[2]

Uruguayan position at the international level

The Rotterdam Convention and the Stockholm Convention, both in force since 2004, are the most important international initiatives against the use and production of pesticides and industrial chemicals dangerous for the environment and the human health. The Stockholm Convention is

focused on the POPs, while the Rotterdam Convention aims to promote the cooperation among the Parties and to spread information on the matter. Uruguay ratified the Rotterdam Convention in 2003 and the Stockholm Convention in 2004[3][4]. According to these two Conventions, the actual position of the country on organochlorine pesticides is reported in table 2.

Uruguayan position on the OCPs according to the Rotterdam & Stockholm Conventions

| Chemical | Rotterdam Convention | | Stockholm Convention | | | Chemical proposed for listing (2011) | Notes |
|---------------------|----------------------|-----------|----------------------|---|---|--------------------------------------|--------------------------------------|
| | Decision | | A | B | C | | |
| | Import | No import | | | | | |
| Alachlor | | | | | | | No decision for the import |
| Aldrin | | | | | | | |
| Chlordane | | | | | | | |
| Chlordimeform | | | | | | | |
| Chlorobenzilate | | | | | | | |
| DDT | | | | | | | |
| Dieldrin | | | | | | | Banned since 12/12/2008 |
| Endosulfan | | | | | | | No decision taken for the import |
| Endrin | | | | | | | Banned since 12/12/2008 |
| Heptachlor | | | | | | | Banned since 12/12/2008 |
| Hexachlorobenzene | | | | | | | Banned since 12/12/2008 |
| Lindane | | | | | | | Inter decision for the import |
| Mirex | | | | | | | Banned since 12/12/2008 |
| Paraquat dichlorine | | | | | | | Severely restricted since 12/12/2008 |
| Pentachlorophenol | | | | | | | Inter decision for the import |
| Toxaphene | | | | | | | Banned since 12/12/2008 |

Table 2. Position of Uruguay on the OCPs according to the Rotterdam & Stockholm Conventions[3][4]

Discussion & Conclusions

As shown in table 1, Uruguay started to promote laws against the use of OCPs in agriculture almost 30 years earlier the promulgation of international regulations. Nonetheless, the country is not completely in line with the international policies yet. Still to this day, Uruguay allows the use of endosulfan and dodecachlor in agriculture, which have been banned at the international level (table 2). Uruguay claims that endosulfan is not persistent in the environment and does not accumulate in animals' fat tissues. On the other hand dodecachlor is preferred by farmers for the use of ant control. Even though these two substances are still used in agriculture and there is not an efficient legislation (and mechanism of control) on the safe use of the pesticides allowed by law and on their residues, Uruguay is working on the regulation of the import and registration of agricultural pesticides[2]. They are also doing it according to international laws.

Uruguay's awareness on the consequences of OCPs on soil and water resources, human and animal health and on the biodiversity, is leading the national government toward the promotion of a "sustainable agriculture", which do not involve the use of organochlorine pesticides. Nevertheless, farmers claims on the use of some OCP (e.g. dodecachlor) slow down this process of change. More cooperation between the government and the farmers, together with the development of new pesticides, would help Uruguay to totally ban OCPs in agriculture and to respect the international conventions.

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