Chlorpyrifos in Uruguay

Report Summary*

Chlorpyrifos is a broad-spectrum chlorinated organophosphate insecticide used both in agriculture and in urban areas. It is used on a variety of agricultural crops, as well as lawn and ornamental plants. It is also used to control pests in the public health setting, including treatments for mosquitoes, control of ants, cockroaches, and certain species of ticks that can carry disease.

It is a developmental neurotoxic pesticide, it works by inhibiting the enzyme acetylcholinesterase, causing poisoning by collapsing the insect's nervous system, and leading to death.

This enzyme is also present in the nerve cells of humans and other animals. This means that chlorpyrifos neurotoxicity is not limited to insects.

Human exposure to chlorpyrifos can cause various neurodevelopmental disorders. It was linked to decreased IQ, loss of working memory, autism, and Parkinson's disease. Children are at higher risk because their brains are still developing, and any alteration may cause serious damage.

Adverse effects or serious symptoms of poisoning appear within a few hours, if they enter the body through the skin or eyes, or if they are inhaled or ingested. They can even cause death.

Chlorpyrifos is classified as a Highly Hazardous Pesticide (HHP) as per the Pesticide Action Network List of HHPs, March 2021, due to its high toxicity in bees and reproductive toxicity, according to the Global Harmonized System (GHS). In addition, HHPs pose specific risks to neurological development in children.

The adverse toxic effects of chlorpyrifos on human and animal health and on the environment have been widely recognized as making it a Persistent Organic Pollutant (POP). Due to its persistence, bioaccumulation, and its great potential for long-distance transportation, not only does it contaminates the areas where it was applied, but it expands to the entire planet, which is why it is under review to be incorporated into the Stockholm Convention to be banned in the near future.

Countries in the region, such as Chile and Argentina, have issued resolutions betting on restrictions of use and date for its elimination. In August 2021, the United States' Environmental Protection Agency (EPA) banned it for food production. The European Union prohibited its use, and in 2021, proposed its inclusion in Annex A of the Stockholm Convention on Persistent Organic Pollutants.

Human Health and Environmental Impacts of Chlorpyrifos in Uruguay

According to the study "Poisoning by Agricultural and Veterinary Pesticides in Uruguay", published in 2019 and conducted by the Department of Toxicology of the School of Medicine of the Republican University (UDELAR) between January 2002 and December 2011, out the cases registered by the Centre for Toxicological Information and Advice (CIAT) and the Occupational and Environmental Toxicology

Unit (UTLA) of the Department of Toxicology of the Faculty of Medicine, chlorpyrifos is among the pesticides responsible for some of these poisonings. (1)

Chlorpyrifos was responsible for 126 cases, 17 of them moderate-severe and 2 fatal. Seven cases were identified in children during the studied period.

In the years after the study carried out by UDELAR, there have been other cases that were registered, but that have not yet been made public. And even during 2022, there were new cases of chlorpyrifos poisoning. (2)

In 2019, a report on "Contaminant Residues in Fish from the Uruguay River", the presence of chlorpyrifos was found on four species of fish. (3)

According to the Ministry of Agriculture, Livestock and Fisheries, in our country there have been several episodes of bee mortality for which chlorpyriphos was responsible. It was confirmed that the application of this poison caused the death of bees in thousands of hives. (4)

Import and Formulations of Chlorpyrifos

The active ingredient of chlorpyrifos is not produced in Uruguay, only some of the formulations found on the domestic market are prepared in the country. The major part of clorpyrifos and its formulations are imported.

In 2021, 295,204 kg and in 2020, 155,202 kg of active ingredient were imported, specifically for national formulations of insecticides. And in the year 2021, 130,658 kg/lt and in 2020, 74,497 kg/lts of formulations were imported. (5)

The import increased significantly in 2021 as compared to 2020. Furthermore, there was also an increase of national formulations and even in 2021, chlorpyrifos ethyl was imported.

It is important to mention that the imported amounts are used to formulate other substances of which the quantity is unknown.

Final Remarks

The chlorpyrifos insecticide is one of the most frequently used in our country, not only in agriculture, but also to combat household pests. Uruguay has restricted its use, and its sale is allowed under a professional authorization. On the other hand, the General Directorate of Agricultural Services announced its prohibition, but it has not happened yet.

Given that this insecticide causes such toxic adverse effects, it is a priority that its use and sale are banned as soon as possible, and strategies, technologies and agroecological practices that are more friendly to human health and the environment should be promoted.

Rapal, Uruguay

Notes:

(*) *English Summary of the publication "Clorpirifós en Uruguay", published by Rapal-Uruguay in December 2022. The complete publication in Spanish is available here: https://www.rapaluruguay.org/articulos-publicaciones/agrotoxicos-situacion-en-uruguay/clorpirifos-en-uruguay*

Sources:
1.- https://www.toxicologia.hc.edu.uy/images/stories/estadisticas/Intoxicacion-por-Plaguicidas-en-el-Uruguay.pdf
2.- Information given by a toxicology doctor.
3.- https://www.caru.org.uy/web/wp-content/uploads/2022/07/Info-Cont-Peces_CARU_2019.pdf
4.- https://parlamento.gub.uy/camarasycomisiones/representantes/comisiones/1171/comision-actuacion?RA_FechaDeReunion%5Bmin%5D%5Bdate%5D=15-02-2020&RA_FechaDeReunion%5Bmax%5D%5Bdate%5D=19-10-2022
5.- https://www.gub.uy/ministerio-ganaderia-agricultura-pesca/datos-y-estadisticas/datos/importaciones-productos-fitosanitarios-0

Formulated insecticide chlorpyrifos				
Year	US$ value / CIF	Kg. /Lts of formulated	kg of Active GT	US$ % of share
2021	1.344.534	295.204	130.658	13,52%
2020	697.341	155.202	74.497	7,9 %

Raw material for national formulations - Insecticides		
Year	For formulations based on:	Litres/kg formulated
2021	Chlorpyrifos Ethyl	14.340
	Chlorpyrifos Methyl	82.000
2020	Chlorpyrifos Methyl	40.000

Source: Prepared with data taken from MGAP

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