

English summary

REPORT ON CHLORPYRIFOS: SITUATION IN KAZAKHSTAN

Chlorpyrifos, also known as Chlorpyrifos ethyl, is an organophosphate pesticide that has been used on crops, animals, and buildings, and in other settings, to kill a number of pests, including insects and worms. It acts on the nervous systems of insects by inhibiting the acetylcholinesterase enzyme.

Kazakhstan uses chlorpyrifos for pest management, against locust, for the following crops (*according to the official response of the State Inspection Committee in Agro-Industrial Complex of the Ministry of Agriculture of the Republic of Kazakhstan provided to the request sent by Greenwomen*):

- rapeseed;
- potato;
- apple and peach trees;
- cabbage;
- gourd family;
- corn;
- sunflower;
- cotton
- sugar beet;
- safflower;
- alfalfa,
- and hops.

Kazakhstan doesn't produce chlorpyrifos but buys it as an active ingredient to make the local pesticide products. Greenwomen found information proving that Astana Nan, the largest pesticide production plant in the Republic of Kazakhstan, purchases chlorpyrifos as an ingredient from China to use for manufacturing the local pesticide products. There are also a number of small local enterprises in Kazakhstan that manufacture the ready-made pesticide products that contain chlorpyrifos.

Local companies that manufacture the pesticide products put them on the market under different brands (none of the brands names contain 'chlorpyrifos' as the name of the product), however almost all the pesticide products contain chlorpyrifos as an active ingredient.

Greenwomen in its inquiry to the Ministry of Agriculture asked if Kazakhstan imports the pesticides containing chlorpyrifos; what quantities Kazakhstan received, and which companies are importing these products to Kazakhstan.

The State Inspection Committee for Agro-Industrial Complex of the Ministry of Agriculture of the Republic of Kazakhstan provided the following information:

- Insecticide "Chlorcyrin" 55% e.c. (emulsifiable concentrate)
(contains chlorpyrifos, 500 g/l and cypermethrin, 50 g/l) - 1,055,489.52 kg,
supplier country – Belgium;
- NUKER PRO, e.c. (contains chlorpyrifos, 500 g/l and cypermethrin, 50 g/l) -
22,344 kg, supplier country – China;
- Acaricide "Cardinal", e.c. (contains chlorpyrifos 500 g/l and cypermethrin 50 g/l)
– 5040 kg, supplier country – China.

Committee informs that ‘16 products containing chlorpyrifos are registered in the list of pesticides allowed for manufacturing (formulation), import, storage, transportation, sale and use on the territory of the Republic of Kazakhstan’.

It looks like that the agriculture sector in Kazakhstan will continue to use chlorpyrifos. The companies that work in agriculture sector of Kazakhstan have to obtain the official certificate of registration from the Committee regarding the pesticides they use.

The list provided by the Committee shows that the companies intend to use in Kazakhstan the products containing chlorpyrifos until 2029-2030. Chinese company *Shaanxi Hengtian Biological Agriculture Co., Ltd.*, for example, obtain the official certificate of registration for *Valsarel* (contains chlorpyrifos, 480 g/l and cypermethrin, 50 g/l) manufactured by Stockton Chemical, USA; the expiration date for this certificate is January 10, 2029. Another example is the company *Dow AgroScience LLC*, which obtained the certificate of registration for *Dursban* (contains chlorpyrifos, 480 g/l); the expiration date for this certificate is March 16, 2030.¹

Kazakhstan so far didn't prepare any national reports on how chlorpyrifos affects health of people. There are only reports of research institutes on study of level of pesticides (including chlorpyrifos) in agricultural products that sold at farmers markets in Kazakhstan.

Studies of pesticide residues in tomatoes and cucumbers from Kazakhstan and the associated health risk were implemented in 2012-2014 by scientists from Laboratory of Pesticide Residues, Plant Protection Institute - National Research Institute, Poland (Bozena Lozowicka & Piotr Kaczynski), Kazakh National Agrarian University (Elmira

¹ According to the official reply that Greenwomen received from the State Inspection Committee for Agro-Industrial Complex of the Ministry of Agriculture of the Republic of Kazakhstan on June 24, 2022.

Abzeitova), Kazakh Research Institute for Plant Protection and Quarantine (Abai Sagitov & Kazbek Toleubayev), and Kostanay State University (Alina Li).

In this study, 82 sampled vegetables of greenhouse origin were collected in 2012–2014 (April, November and December) (44 tomato and 38 cucumber samples) in Almaty. In studies, the researchers investigated over 180 active substances: insecticides, fungicides, herbicides and acaricides. Analyses were carried out in a Polish scientific laboratory.²

The concentration of all detected pesticide residues found in 48 samples (58.5 %) was compared with the maximum residue levels set by the European Commission ([EC 2005](#)) EU-MRLs and Custom Union (Russia, Belorussia and Kazakhstan) ([CU 2010](#)).

The residue levels of chlorpyrifos were found in every fourth sample, in concentrations exceeding MRL.

Another study that was carried out in 2015-2018 by the Laboratory of Toxicology of Pesticides of Kazakh Research Institute for Plant Protection and Quarantine named after Zh. Zhiembaev proved the fact that chlorpyrifos is still actively used in agriculture. The researchers analyzed the samples of vegetables and fruits obtained from the farmer's markets in Almaty.

Gulnisam Rvaidarova, PhD in Biology, in her interview to mass media, reported that the results of study showed that the level of chlorpyrifos in young potatoes, lettuce and carrots is significantly exceed MRL. The residue levels of chlorpyrifos have also been found in cucumbers and tomatoes.

According to the degree of impact on the body, harmful substances are divided into 4 hazard classes: 1st class - extremely high hazardous substances; 2nd - high hazardous substances; 3rd - moderately hazardous substances; 4th - low-hazard substances.

Government tries to minimize usage of hazardous substances, including chlorpyrifos. On February 20, 2020 N. Sadvakasov, Deputy Chief of State Sanitary Doctor of the Republic of Kazakhstan, signed The Decree "On the implementation of sanitary and preventive measures" N 6-ПГБp imposing a ban on sale of harmful substances of 1st, 2nd, and 3rd hazard classes that are used for disinfection and deratization. It is forbidden for small enterprises and legal entities sell them to the general public in the retail chains and markets. This ban was imposed following 11 cases of poisoning by toxic substances – including 2 fatal cases in Mangystau region and in Shymkent – after people implemented the treatments of residential premises from domestic insects by themselves.

² Lozowicka, B., Abzeitova, E., Sagitov, A. *et al.* Studies of pesticide residues in tomatoes and cucumbers from Kazakhstan and the associated health risks. *Environ Monit Assess* **187**, 609 (2015). <https://doi.org/10.1007/s10661-015-4818-6> (access date 02.07.2022)

Ministry of Healthcare of Republic of Kazakhstan are also concerned by the fact that services on disinfestation and deratization are not subject to licensing, and there are no clear qualification requirements for organizations providing such services.

Greenwomen prepared an overview of the situation on chlorpyrifos in Russian, a summary in English, and leaflets in Kazakh and Russian. In the near future, we plan to prepare a press release and distribute it on Facebook and social networks.

www.greenwomen.kz; <https://www.facebook.com/groups/chemsafety/>

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