



COUNTRY SURVEY ON THE PRODUCTION AND USE OF HIGHLY HAZARDOUS PESTICIDES IN KAZAKHSTAN



Brief Summary

Agricultural development in the Republic of Kazakhstan increases the use of pesticides and their negative impact on the population and the environment. The agricultural sector takes one of the leading positions in the economy. Over the last 5 years, the cultivated area of agricultural crops has amounted to about 21 million hectares. Pesticides are used for cultivation of agricultural crops.

Current situation of pesticide use in Kazakhstan

In Kazakhstan, only those pesticides that are included in the List of Pesticides (agrochemicals) are allowed for use on the territory from 2013-2022. Additionally, the pesticides listed in Annexes № 1, № 2, № 3, № 4 and № 5 to the List, were approved by the order of the Chairman of the Committee of State Inspection in the agro-industrial complex of the Ministry of Agriculture of December 27, 2012 № 143. These pesticides are allowed for production and use in Kazakhstan.

For wide access, the Guidelines for Pesticides (Agrochemicals) approved for use are shown on the website of the Ministry of Agriculture (<https://moa.gov.kz/ru/documents/583>), which fully corresponds to the above order.

At present, about 1021 trade names of pesticides of various purposes are registered in Kazakhstan. Annually, the list of registered pesticides (agrochemicals) is supplemented with 15-20 new preparations. The overwhelming majority of applied pesticides are insecticides, fungicides and herbicides.

Table 1 – Registered pesticides in the Republic of Kazakhstan

№	Group	The number of registered pesticides
1.	Insecticides and acaricides	172
2.	Fungicides	125
3.	Pesticides for pre-sowing seed treatment	100
4.	Herbicides	520
5.	Rodenticides	3
6.	Defoliant and desiccants	27
7.	Pesticides against pests of stocks in the warehouses of agricultural products producers	18
8.	Nematicides	2

9.	Biologicals	19
10.	Plant growth regulators	20
11.	Pesticides against stock pests in enterprises in the bakery system	15

The main pesticide manufacturers registered in Kazakhstan are companies from Russia, Switzerland, Germany and China.

The range of pesticide applications is very diverse. In addition to agricultural purposes, pesticides are used for the treatment of warehouses, storages, barns, grain stores, and for the disinfection of large premises.

Table 2.3.1 presents data on the use of different groups of pesticides in Kazakhstan for the period of 2014-2018.

Table 2.3.1 Pesticide Use, 2014–2018

Indicators	Years				
	2014	2015	2016	2017	2018
Insecticides, tons	645,4	524,7	506,9	619,4	528,1
Herbicides and desiccants, tons	9 421,4	8 706,5	8 306,7	10 764,9	11 050,7
Fungicides and bactericides, tons	812,0	674,5	915,4	1 369,5	1 073,5
Plant Growth Regulators, tons	262,2	99,4	269,7	247,7	401,7
Rodenticides, tons	17,8	7,2	59,2	-	4,0
Other, tons	-	576,6	613,7	-	-
The total amount of pesticides applied, tons	11 158,8	10 588,9	10 671,6	13 001,5	13 058,0
The total area of agricultural land, ha	24 876,9	21 205,0	21 660,1	21 902,6	22 011,2
Pesticide application per unit area, kg/ha	0,449	0,499	0,493	0,594	0,593

Source: Statistics Committee

As can be seen, the use of pesticides in agriculture in Kazakhstan is constantly growing. In the last ten years, the use of pesticides per unit of agricultural land has almost tripled. Thus, in 2008 this indicator was 0.2 kg/ha, and in 2018 - 0.593 kg/ha.

At the same time, it should be noted that in Kazakhstan, the use of pesticides is low. For comparison, in the People's Republic of China this indicator was 13.7 kg/ha in 2008 and 14.7 kg/ha in 2014, in Ukraine - 1.6 kg/ha in 2008 and 2.3 kg/ha in 2014.

According to the official data of the Ministry of Agriculture of the Republic of Kazakhstan, 2,054 liters of pesticides were used for non-agricultural purposes (weed control on roadsides) in 2018 and 1,396 liters of pesticides in 2019, respectively. There are no data on the use of pesticides in public health and domestic sectors.

Highly hazardous pesticides in Kazakhstan

Among the pesticides registered and officially used in Kazakhstan, many products contain one or more active substances included in the list of highly hazardous pesticides of Pesticide Action Network (PAN-International).

Among insecticides and acaricides, 14 products are domestically produced; each of them contains HHPs listed in the PAN-International list: abamectin, diflubenzuron, bifenthrin, alpha-cypermethrin, imidacloprid, thiamethoxam, gamma cygalotrin, chlorpyrifos, and profenofos.

Among the fungicides, three domestic products contain HHPs listed in the PAN-International list: propiconazole, thiophanate-methyl, and cyproconazole. Of the products imported into the Republic of Kazakhstan, 57 contain chemicals from the international list of highly hazardous pesticides.

Of the preparations for pre-sowing treatment, one domestic pesticide contains Thiram, a contact pesticide listed in the PAN-International list.

Of the pesticides imported into Kazakhstan, 46 contain HHPs that contain: imidacloprid, cyproconazole, imazinyl, metalaxyl, thiram, thiamethoxam, mancozeb, clothianidin, beta-cyfluthrin, imazalil, tefluthrin.

Regarding herbicides, 13 preparations contain or consist entirely of HHPs, such as glyphosate, oxyfluorfen, bromoxynil, metribisin, pendimethalin, quizalofop-tefuryl.

From the rodenicites allowed for import and use in the territory of the Republic of Kazakhstan, two include brodifacoum, listed in the PAN-International HHPs list. Brodifacoum was classified by WHO as Class Ia- Extremely Hazardous, H330- GHS, fatal if inhaled, EU GHS (1A, 1B) - by classification and labeling of chemicals and mixtures, suspected as carcinogen.

Of the defoliant and desiccants: two domestic preparations contain diuron and thidiazuron, which are listed in the PAN-International list, two other preparations contain diquat, which is equated to diquat dibromide - a derivative of diquat, which is included into the PAN-International list. Another 13 pesticides imported into Kazakhstan contain HHPs such as ammonium glufosinate, glufosinate, glyphosate in the form of isopropylamine salt, glyphosate salt, and glyphosate in the form of potassium salt. 10 pesticides contain diquat in its composition.

16 pest control agents at agricultural producers' warehouses contain highly hazardous pesticides such as aluminum phosphide, pirimiphos methyl, magnesium phosphide, lambda-cygalotrin, phosphine, phenytrion, alpha-cypermethrin.

Two nematicide preparations imported from Belgium and Sweden contain fosthiazate and oxamil.

Of the 15 preparations approved for use against pests in the bakery system, 14 contain HHPs from the PAN-International list.

Biopreparations and preparations regulating plant growth, allowed for use in the territory of the Republic of Kazakhstan, do not contain active chemicals from the PAN-International HHPs list.

Analysis of data on active ingredients in the HHPs showed that, from the PAN-International list (as of March 2019), 74 active substances are used in Kazakhstan. Of these 25 pesticide active ingredients are banned in other countries but are used in Kazakhstan, which is 20% of the total number of HHP. Of the 1021 trade names of pesticides registered in Kazakhstan, 386 (or 38% of the total number of registered formulations) contain one or more active substances that are highly hazardous pesticides and are included in the PAN list.

Pesticide regulation in the country

The country has established a legislative framework for pesticide management: specific laws relating to agriculture, chemical safety, food safety, plant protection, plant quarantine and protected natural areas. Government agencies involved in pesticide management include: Ministry of Agriculture of Kazakhstan; Ministry of Ecology, Geology and Natural Resources of Kazakhstan; and the Ministry of Health of Kazakhstan. The country has accredited bodies to confirm the conformity of pesticides and test laboratories to test residual quantities of pesticides in products.

Kazakhstan actively participates in international regulation of chemical safety issues and has ratified three international legally binding agreements considering pesticides that can be classified as HHPs: The Stockholm Convention on Persistent Organic Pollutants (POPs), the Rotterdam Convention on the Prior Informed Consent (PIC) Procedure and the Montreal Protocol on Ozone Depleting Substances (ODS).

The impact of highly hazardous pesticides on human health and the environment in Kazakhstan

Currently, there are no nationwide epidemiological studies in Kazakhstan to identify the relationship between pesticide exposure and public health, including biomonitoring of human exposure.

At the same time, there are a number of studies confirming the negative impact of highly hazardous pesticides on human health and the environment.

In 2019, mass death of fish due to pesticide poisoning was recorded in one of the lakes in the North Kazakhstan region. In Lake Tulumbai (a reserve water body for local use) in the Zhambyl district of the North Kazakhstan region, 185 kg of fish died due to pesticide poisoning. Results of analyses have shown excess pesticides in water and salt elements two times over the recommended level.

In regions that use pesticides intensively, the general morbidity increases and the number of congenital defects of development increases. Pesticides may cause lymphoma, leukemia, brain cancer, breast cancer, prostate cancer, thyroid cancer, liver cancer, lung cancer, and colon cancer.

According to the data of toxicology laboratory of pesticides of LLP "KazNIIZIKR named after Zhiyembayev," analyses of vegetable and fruit samples from markets of cities of Kazakhstan show that in apples, pears, peaches, grapes, cucumbers, tomatoes, cabbage, eggplant, onions and dill there are residual amounts of various pesticides.

The substance dimetoate (organophosphorus pesticide) was found in chicken thighs. Hexachloran content in chicken eggs was detected by the Centre for the Implementation of New Environmentally Sound Technologies and the Czech NGO Arnika in 2014-2016. The laboratory of KazNIIZIKR detected residual amounts of dimetoate, bifentrin, alpha-cypermethrin (synthetic pyrethroid) in apples, chlorpyrifos (organophosphorus pesticide) and alpha-cypermethrin in carrots and potatoes. Residues of chlorpyrifos and profenophos have been found in salad leaves, cucumbers and tomatoes.

Organochlorine pesticides were found in rice, milk, meat, soil, water of such large reservoirs as the rivers Ili, Irtysh, Lake Balkhash and others.

Key challenges in phasing out highly hazardous pesticides

The main problems in the process of phasing out HHPs and reducing their negative impact on human health and the environment relate to several key aspects.

One of the main reasons is the lack of regulation of highly hazardous pesticides at the national level. The current legislative framework of the Republic of Kazakhstan does not imply a ban or restriction on the use of highly hazardous pesticides, with the exception of POPs pesticides and pesticides included in the Rotterdam Convention. In addition, issues related to the safe management of pesticide waste, including the disposal of pesticide containers, have not yet been fully addressed.

The other problem that needs urgent attention is the illegal import and use of pesticides in violation of national legislation. There are known cases when unregistered pesticides in Kazakhstan, under the guise of other products, made their way into the country and were used in agriculture. Weak control at the border and low level of awareness of border agencies require urgent measures to improve the situation.

The lack of reliable information on obsolete and unusable pesticides in agriculture also impedes campaigns for phasing out HHPs from trade.

According to the preliminary inventory of POPs in Kazakhstan under the UNDP/GEF project (initial assistance to the Republic of Kazakhstan to meet its obligations under the Stockholm Convention on POPs), 727 warehouses and 15 burial sites containing obsolete pesticides are located in the Republic of Kazakhstan.

However, the information provided does not provide a complete and reliable picture of the nature and level of pesticides pollution of all lands of Kazakhstan. This prevents the development and implementation of necessary measures aimed at the safe destruction of obsolete pesticides and their withdrawal from circulation.

Kazakhstan also has a low level of infrastructure for conducting laboratory tests to determine pesticide residue analysis, and pesticide efficacy test which complicates the quality control of imported pesticides.

Another issue of concern is the low level of awareness of government authorities, pesticide producers, farmers and the public about the harmful effects of highly hazardous pesticides on human health and the environment.

Recommendations on minimizing the negative impact of highly hazardous pesticides and their phased withdrawal

HHPs or active substances that are part of HHPs are currently used in the Republic of Kazakhstan. However, at the national level, a policy of reducing and eliminating their use is being introduced through the introduction of organic agriculture, agroecology, and the application of the ecosystem approach in agriculture.

To solve problems in the field of pesticide management and to support the phasing out of highly hazardous pesticides, a set of measures is required:

- 1) improvement of legal mechanisms for the safe handling of highly hazardous pesticides, including amendments and additions to the Environmental Code of the

- Republic of Kazakhstan on the prohibition of the use of especially highly hazardous pesticides listed at the international level, as well as improvement of mechanisms for the implementation of the Stockholm and Rotterdam Conventions in Kazakhstan;
- 2) changes in process of registering pesticides with the aim of mandatory verification of the active ingredients that are part of the registered pesticides with a list of highly hazardous pesticides listed at the international level;
 - 3) tightening control over the implementation of national and international legislation regarding the import and use of pesticides;
 - 4) increasing the capacity of government agencies (including customs), and enforcing regulations that are respected by manufacturers, suppliers, and farmers on responsible pesticide management;
 - 5) integrated pest management aimed at reducing dependence on pesticides and promoting agroecological approaches to agriculture;
 - 6) the expanded introduction of organic agriculture with a complete replacement of the HHPs with agro-ecological alternatives;
 - 7) an inventory of pesticides, including laboratory tests, and the creation of a complete register of obsolete and unusable pesticides, including pesticides with the characteristics of POPs, indicating storage location, storage conditions, volumes and other applicable information;
 - 8) the proper disposal of pesticides buried in repositories;
 - 9) cleaning up areas contaminated with obsolete pesticides; and
 - 10) disposal of obsolete pesticide containers.

The implementation of the proposed measures will help to improve the regulation of pesticides and reduce their negative impact.

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