



## Management of obsolete pesticides in the Republic of Moldova (2015-2022)



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MEDIULUI

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The Inventory was drafted based on data provided and verified by the Environmental Protection Inspectorate, National Food Safety Agency and the stocks reported by the international assistance projects that were active in the periods of 2019-2022. As reference materials were consulted guidance documents available at Stockholm convention (<http://toolkit.pops.int/>), and the Basel POPs waste general technical guidelines (UNEP, 2021) (<http://www.basel.int/Implementation/POPsWastes/TechnicalGuidelines/tabid/5052/Default.aspx>)

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## BACKGROUND

**Persistent organic pollutants (POPs)** represent a category of chemically very stable substances with toxic and bioaccumulative properties that pose an increased danger to human health and the environment. They have extremely pronounced harmful qualities, a high degree of resistance to degradation and accumulation properties in living organisms and the environment, they can be easily transported in the atmosphere over long distances and deposited far from the place of emission, they can affect health and the environment, both near and far from their sources. POPs comprise a range of organochlorine pesticides, polychlorinated biphenyls (PCBs) and some industrial pollutants, including dioxins and furans.

Although Moldova has never produced pesticides, including persistent organic pollutants (POPs), over 50 years of overuse of pesticides left a damaging legacy. According with statistical data, in the period 1950 -1990 an estimated total amount of 560,000 ton of pesticides were used in Moldova including 22,000 tons of organochlorinated POPs (OCPs). The pesticides use registered a peak during the period 1975 to 1985, but reduced significantly over the last 20 years .

Among the pesticides that have been used in Moldova in the past are organochlorinated pesticides listed in the Persistent Organic Pollutants Convention of Stockholm; these are thought to pose the highest health and environmental risks due to their toxicity, persistence and bioaccumulation potential. The Government of the Republic of Moldova acknowledged that elimination of obsolete pesticides (included POPs) would serve the long-term interests of public health, environment, and economic development of the country.

The Republic of Moldova adhered to the Stockholm Convention on April 7, 2004, and the Convention entered into force in July 2004. According to the above, the first National Implementation Plan was developed and presented to the SC Secretariat on August 25, 2005. The original national implementation plan was developed and approved by the Government of the Republic of Moldova (HG 1155/2004 for the approval of the National Strategy regarding the reduction and elimination of persistent organic pollutants and the National Implementation Plan of the Stockholm Convention on persistent organic pollutants) and included the twelve persistent organic pollutants, originally mentioned in the Convention.

## DATA ON OPS STOCKS MANAGEMENT

Back in 2000, the initial estimates of the POPs pesticides showed the presence of approximately 7000 tons of OPs over 1500 pesticide warehouses, and of more than 1000 grounds for preparation of pesticide solutions had been in use in Moldova. In addition several thousands of areas, which are potentially polluted and pose health and environmental risks, have been found in Moldova. Thanks to the adoption of the National Implementation Plan and the proactive work of environmental authorities, the country managed to repackage, export and destroy approximately all the quantities of the OPs.

**Table 1: POPs OPs eliminated**

<b>Year</b>	<b>Quantity, tons</b>
2009-2013	3500
2015-2016	400
2018	60
2019-2022	460,3
<b>Total</b>	<b>4420,3</b>

During the period of 2008-2013 – the total quantity of 3500 tons of obsolete persistent organic pollutants in several technical assistance projects (GEF, the World Bank, UNEP, NATO, the Czech Agency for International Cooperation).

In 2015 another 400 tons of POPS OPs were repackaged and transported for incineration as a part of a European Union-financed project, "Improved pesticides and chemicals management in the Former Soviet Union." Implemented by FAO, the project covers Moldova and nine other countries (Armenia, Azerbaijan, Belarus, Georgia, Kazakhstan, Kyrgyzstan, Tajikistan, Ukraine and Uzbekistan).

Additionally, during 2018, 60 tons of unusable pesticides were repackaged and exported for thermal destruction from the warehouse in the village of Gaidar, Ceadâr-Lunga district, UTA Găgăuzi, 179,913 tons of pesticides from the warehouse in the village of Alexăndreni, district Blood and 90 tons of pesticides left over from the Soviet era in the village of Zagarancea, Ungheni district (artillery division range). These actions were carried out with the support of NATO's "Partnership for Peace" program, implemented by the Ministry of Defense.

Another achievement is the fact, that the work on inventory, repackaging and transportation of the POPs containing OPs has started in transnistrian region. In 2019, the Environment Agency with the support of the OSCE/NATO project "Elimination and destruction of unusable pesticides from the Transnistrian region of the Republic of Moldova" carried out the inventory of unusable pesticide deposits in the Transnistrian region. According to experts' estimates, a quantity of approximately 600 tons of unusable pesticides is stored in 40 warehouses in the 5 administrative-territorial units on the left of the Dniester (Grigoriopol, Camenca, Dubăsari, Râbnița and Slobozia) and in 2 cities (Tiraspol and Bender). Thus, during the period of 2019-2022 a total amount of 460,3 tons of OPs have been repacked, removed and disposed from TN region under the OSCE mission to Moldova.

In 2021 the Environmental Protection Inspectorate jointly with the National Food Safety Agency has reevaluated the remaining quantities of the obsoleted / plant protection products and fertilizers present in the country. In the table below are reflected the quantities as per 31 December 2021.

It shall be mentioned, that about 50 tons of the OPS remain to be classified as unknown substances with high potential of POPs content.

**Table 2: Stocks of unusable or expired plant protection products and fertilizers on 31.12.2021**

Nr. d/o	Economic operator / Authorities	Location		Product feature			Type of packaging (metal, plastic, other)
		Locality	closed / open storage, with/without guard	The name (known/unknown)	The quantity of products stored, tons	State (solid or liquid)	
1	2	3	4	5	6	7	8
1	Primăria Tvardița	or. Tvardița	Open, unguarded	Unknown	2,0	solid	-
2	SRL Belevicanca	s. Beleaviniți r. Briceni	Open	Unknown	1,2	solid	metal
3	SA „Agrofirma Cimișlia”	s. Selemet, r. Cimișlia	Closed/ unguarded	amofos carbomid hlorict calii superfosfat	102,92	solid	bags
4	APL Rudi	s. Rudi, r. Soroca	Closed	Unknown	0,8	solid	-
5	CAP „Basarabia”	r. Anenii Noi s. Hîrbovăț	Closed/ unguarded	Unknown	4,0	solid	metal
6	ÎS Serele Moldovei	r. Anenii Noi s. Speia	Closed/ unguarded	dialen	1,724	liquid	metal
7	APL Geamăna	s. Geamăna	Closed/ unguarded	Bi58	0,600	liquid	metal
8	GȚ”Vasile Paladi,,	r.Cahul, s.lujnoe	Closed	fungicid	0,2	solid	plastic

9	SA „Porumb”	mun. Balți, str. Boris Glavan	Closed/sealed/ guard	beet seeds treated with unknown substances with germination period expired	27,885	solid	plastic
10	FPC „Bioprotect” SRL	mun. Chișinău, s.Stauceni, drum. M2, Km10,nr.9	Closed/ with guard	Erbicide  Fertilizanți  Fungicide  Insecticide și acaricide	1,3369  0,3000  0,3789  0,2096	solid-0,0379t liquid -1,2991t solid-0,121t liquid -0,179t solid-0,1587t liquid -0,2202t solid-0,0025t liquid -0,2072t	Plastic
11	P/f, „Plohoi Adrian”	s. Hlinaia, r. Edineț	Closed/ unguarded	Protrazin50%	0,45	solid	bags
				Tetral-75%	2,25	solid	bags
				Bitoxibacilin	0,7	solid	bags
				Keltan	0,5	solid	metal
				Efir butilic granulat-10%	1,4	solid	
				Unknown	0,45	solid	bags
12	SRL „Pan Clip”	s. Mărculești, r. Florești	Closed/ guarded	Preparat30	7,0	solid/ liquid	Metal, bags

13	SRL „Chip Agro”	s. Prodanești, r. Florești	Closed/ guarded	Unknown mixed with dust	3,0	solid	plastic
14	APL „Vărvăreuca”	s. Vărvăreuca, r. Florești	Deschis/pe sol	Unknown	5,5	solid	No packaging
15	APL „Ștefănești”	s. Ștefănești, r. Florești	încăpere fără acoperiș acoperit cu peliculă	Sulfură acidă de zinc	2,0	solid	No packaging
16	APL „Cunicea”	s. Cunicea, r. Florești	The territory of the former warehouse, on the ground,	Unknown covered with soil	3,0	solid	No packaging
17	Centrul de Sănătate Publică Florești”,	or. Florești, str. bd. Victoriei 64A	Closed/ guarded	Carbofos	1,200	solid	Paper bags
				Lizol	1,180	liquid	Plastic
				Metafos	0,020	liquid	Glass
				DDBF	0,100	solid	Plastic
				Hipoclorid de calciu	0,210	solid	Paper bags
Reopan	0,008	solid	plastic				
18	P/f, „Vartan Mircea”	s. Prăjila, r. Florești	Closed/ guarded	Furadorm	16,6	solid	Metal
				Royal-flor	5,46	Liquid	Plastic



				Unusable treated beet seed	10,0	Solid	Grain bags
				Tronox-	0,35	Solid	Paper bags
				Aqvagel	1,75	Solid	Bags
				Titanium dioxid	0,25	Solid	Paper bags
				Ti-lose	0,35	Solid	Paper bags
				Kaolin	0,525	Solid	Paper bags
				Unknown	2,0	Solid	Paper bags
				Lignicel	0,50	Solid	Grain bags
19	SA „Fertilitatea”	s. Hitrești, r. Fălești	Closed/ guarded	Unknown	1,100	solid	metal
<b>Total</b>					<b>211,4074</b>		
<b>Unknown</b>					<b>48.15 tons</b>		

## MEASURES TAKEN TO ISOLATE LANDFILLS WITH POPS CONTENT

Besides the repackaging of the OPs substances, the state has undertaken several measures to secure the safeguarding and reducing the risks from POPs waste and contaminated soil.

In Step-Soci commune, Orhei district, in 2009, the project "Repository (sarcophagus) for the isolation of waste and soil contaminated with persistent organic compounds" was implemented. The work was funded by the Canadian Foundation and implemented by the engineering and consulting company NIRAS (Denmark). On the perimeter of the sarcophagus grow noble acacia trees and perennial herbs.

After the evacuation of unusable pesticides from the warehouse in the village of Bujor, Hîncești district, the construction materials of the warehouse and the contaminated soil were buried in the sarcophagus with the surface of 100 m<sup>2</sup> near the former chemical warehouse. The land is not fenced, the condition of the sarcophagus is satisfactory.

The sarcophagus for the isolation of waste and POP-contaminated soil in the village of Tătărești, Strășeni district was built on an area of 0.25 ha according to the execution project, positively approved by the state ecological expert opinion no. 05-5-3833/ 164 of 12.01.2012. The design and construction works were financed from the National Ecological Fund in the amount of 194715.9 lei. At the moment, the land where the chemical warehouse was demolished is leveled, perennial plants are growing. The sarcophagus is partially enclosed, grassed.

The soil contaminated with toxic oils from the transformer station "Vulcănești 400 kV" was buried in 4 sarcophagi. The land of the sarcophagus is grassed on an area of 1600 m<sup>2</sup> acacia trees are planted and further cut and checked for POPs content. The land is fenced.

## OBSOLETE PESTICIDES BURIAL IN CIȘMICHIOI VILLAGE, VULCĂNEȘTI DISTRICT

Excessive use of pesticides and Soviet economy oriented towards formation of stocks has led in Moldova to the situation that over the period 1977-1987, more than 4,000 tons of pesticides waste (including 654.1 tons of DDT) collected from various locations in the country, was buried on site located next to Cismichioi village, Vulcanesti.

The pesticides landfill at the Cismichioi site is considered as one of the national priority sites and required urgent attention in order to eliminate acute risks. The site has the surface of 2.3 ha site contains 12 distinct burial mounds. The site is only a few km away from the Ukrainian and Romanian borders and close to watersheds discharging in the Prut River and the Lower Danube near to its estuary.

According to the project "Reducing the risks related to the Cișmichioi hazardous waste deposit", initiated by the Deconta Company on the basis of a contract signed with the Czech Development Agency, the Ministry of Agriculture, Regional Development and the Environment and the National Agency for Food Safety, during 2016-2017 a feasibility study was carried out at the pesticide range in the village of Cișmichioi in order to assess the ecological situation in the area, develop recommendations regarding the further management of this object, more accurately determine the quantities and categories of stored substances and estimate the costs for the works evacuation and destruction in the event of these measures being carried out. Following the investigations, it was found that the contamination in the perimeter of the polygon is concentrated inside the 14 sarcophagi in which the old pesticides are stored. Contamination in the surface layers is at a low level. No pesticide residues were detected in the soil outside the landfill and in the groundwater. Estimates regarding the amount of waste show a total volume of pesticides and contaminated soil of over 37 thousand m.c.

The project to remediate the location of the pesticide warehouse in Cișmichioi (carried out in 2019), implemented with the support of the Czech Development Agency, consisted in isolating the sarcophagi with waste and the contaminated soil with impermeable layers with the subsequent technical and biological recultivation of the land.

**Pictures of the insulation works from the summer of 2019:**



Currently the regular monitoring of the burial status is done by environmental authorities on this site.