

C.

Submitted papers

C.1.

Central Eastern

European and

Central Asia Countries

Management of obsolete pesticides in Lithuania

Arunas Cepele

Ministry of Environment of the Republic of Lithuania

A. Jaksto 4/9, Lt-2694 Vilnius, Lithuania

Phone: +370 2 611 370, Fax: +370 2 220 847, Email: a.cepele@aplinkuma.lt

The Republic of Lithuania is a small country at the Baltic Sea. It occupies an area of 65,600 km², with a population of 3.7 million, or 56 people per km². More than 50% of the total area is agricultural land. The administrative structure of Lithuania consists of 10 counties and 44 regions (3 to 6 regions in every county).

Usage of chemical plant protection products in Lithuania has been started before the World War II. Import and use of plant protection products started to increase from the beginning of seventies and was increasing till 1990 and then decreased significantly (Table 1). Due to specific features of Soviet planning, amounts of imported pesticides were significantly larger than the real needs of agriculture in Lithuania and it predetermined the accumulation of the pesticides waste.

Table 1. Amounts of the imported pesticides during the period 1961-1999.

Year	1961	1971	1981	1986-1990	1999
Amounts of imported pesticides (in tonnes)	1,937	3,975	5,912	10,000 - 11,000 (every year)	584

The problem of unwanted pesticides was identified in 1977. Geological investigations have been made and a place for underground disposal of forbidden, outdated and unknown pesticides has been selected in the Salcininkai region (south part of Lithuania) where an impermeable disposal site was constructed. At that site, 840 tonnes of unwanted pesticides have been disposed during the period of 1982-1989. Subsequent events showed that such method of pesticide disposal is not the best solution. Last monitoring data showed that the impermeable disposal site is unreliable as traces of some pesticides found their way to the groundwater. Today, there is only a very slight leakage and it does not pose significant environmental risk but we have to think about the possibilities to remove or improve pesticide disposal site in the future.

Problems of unwanted pesticides became complicated especially after the fall of collective farm system, when a great number of pesticides storehouses have been left without attendance. In 1992, the Government decided to charge municipalities to establish one central storehouse in every region and to collect all pesticides from former collective farms. The idea was not bad but, unfortunately, due to improper and very pressing implementation a lot of pesticides were mixed, became unknown and were put in store houses without any order, except in a very few regions. As a result, more than 30 cases of spontaneous fires have been recorded in such storehouses and even during transportation of the pesticides. Some municipalities have not fulfilled the decision of the Government and left all pesticides in the former collective farms storehouses.

In 1995, The Ministry of Environmental Protection took over the responsibility for solving of the pesticide problem. An inventory was made and it was estimated that in 954 storehouses about 4,500 tonnes of unwanted pesticides have been accumulated. Taking into account that there are no pesticides disposal facilities in Lithuania, it was decided to focus on:

- sorting, identification, repackaging and transportation of pesticides to central storehouses,
- decontamination of empty storehouses,
- using of outdated but still effective pesticides in agriculture as much as possible,
- and simultaneously finding possibilities for the establishment of hazardous waste incineration plant in Lithuania.

2.96 million LTL (1 USD = 4 LTL) have been used for managing (sorting, weighing, repackaging and transporting to central storehouses) of 3,279 tonnes of unwanted pesticides in 28 regions of Lithuania during 1995-1999 (Figure 1).

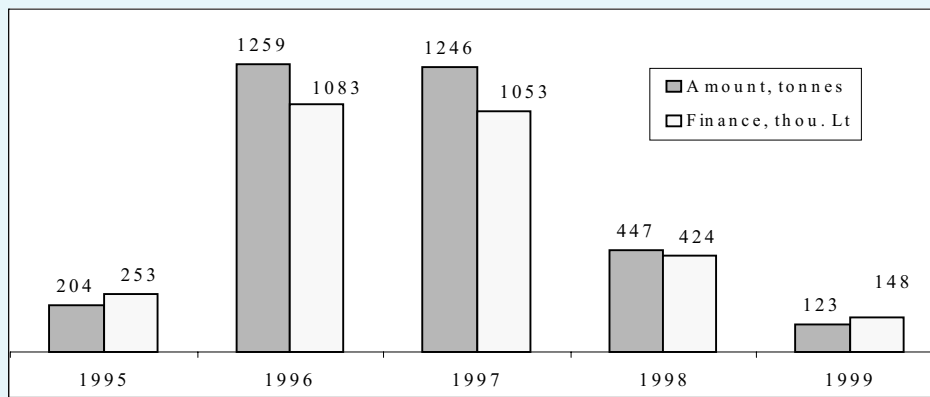


Figure 1. Management of unwanted pesticides. Amounts and financing

Identification of unknown chemical substances was started in the end of 1996. Identification of 26,040 samples from 18 regions has been performed and 2,148 thousands LTL were assigned for this purpose until 2000 (Figure 2). All the unknown pesticides have been identified in 14 regions of Lithuania.

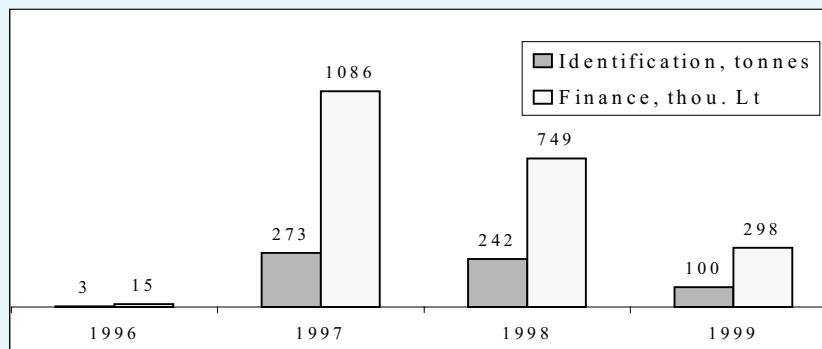


Figure 2. Identification of unknown pesticides. Amounts and financing

Decontamination of 216 storehouses (>50,000 m²) has been carried out in 16 regions and 142,000 LTL were assigned for this purpose during 1996-1998 (Figure 3).

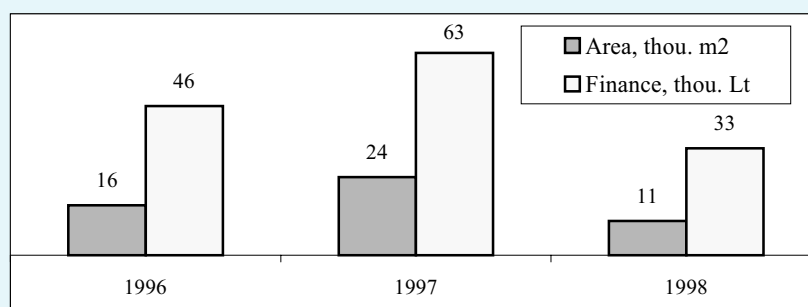


Figure 3. Decontamination of storehouses. Area and financing

After sorting and identification of the pesticides it was found out that a great part of the plant protection products are still effective and can be used in agriculture. Farmers got such pesticides free of charge and used 1,687 tonnes of the pesticides during 1997-1999 (Figure 4).

In addition municipalities organised equipment, management and control of central storehouses and provided 1.348 million LTL for these purposes (Figure 5).

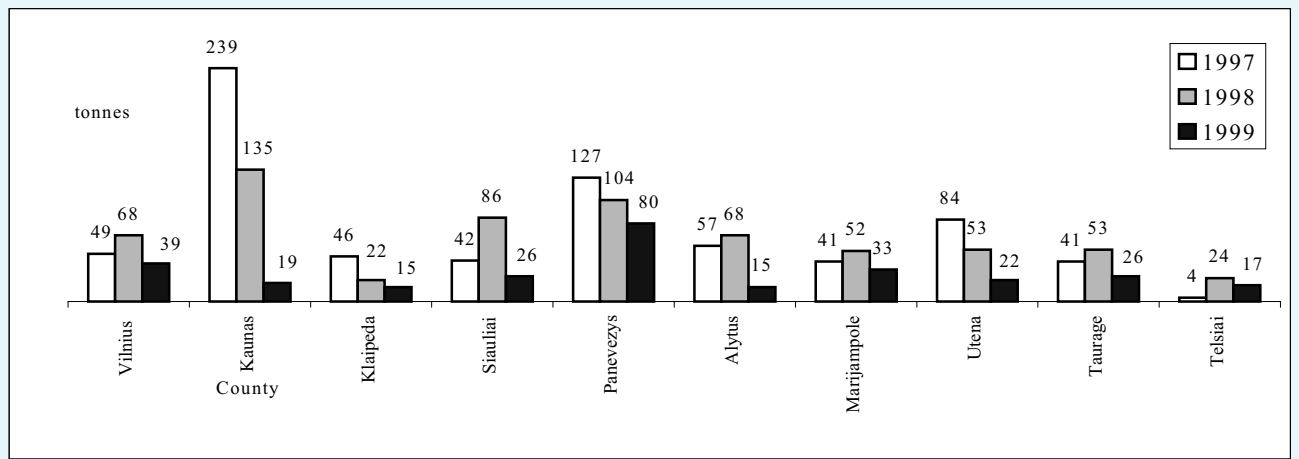


Figure 4. Use of pesticides during 1997-1999

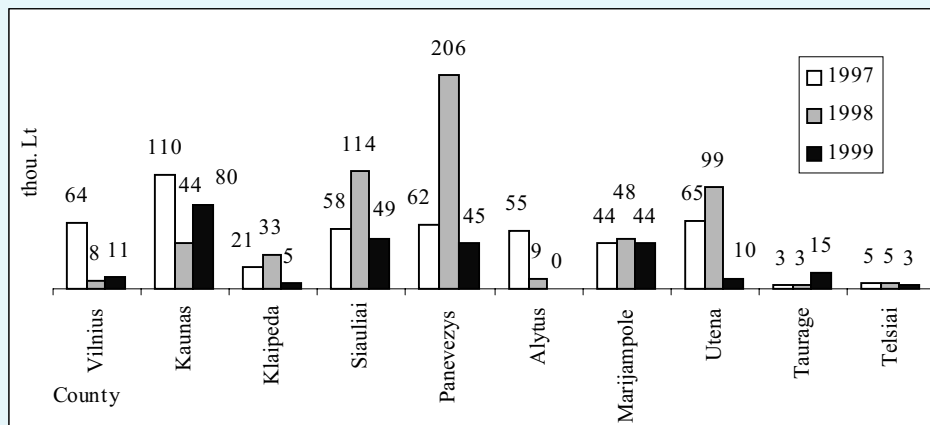


Figure 5. Finances provided by municipalities.

Overall, more than 6.5 million LTL, from the State and municipalities budgets, have been utilised for implementation of the unwanted pesticides management program. It was estimated that about 2,500 tonnes of the outdated pesticides are still left. About 1,100 tonnes of the pesticides in 16 regions have to be sorted, weighed and repacked and about 1,200 tonnes of unknown substances have to be identified in 30 regions. In addition the problem of polluted sites around former pesticides storehouses and fireplaces has to be solved.

In the beginning of 1997, the inventory of with pesticides polluted sites during fires was made. Information was collected for every pesticide fireplace. These data included:

1. Site address, map or scheme, amounts of polluted soil and polluted area. It was estimated that in 12 sites we have 4,340 m² of polluted area and 2,246 m³ of polluted soil. In two sites, the amount of polluted soil was not estimated. The smallest polluted area was 20 m² and the biggest was 1,940 m². The smallest amount of polluted soil was 6 m³ and the biggest was 1,200 m³. All these estimates were very rough because of lack of detailed investigation.
2. Data about pesticides and other substances that were stored before the fire. 335.57 tonnes of pesticides were stored in all 12 storehouses. The amount of pesticides in every storehouse differs from 0.07 to 102 tonnes. A big part of pesticides stored in all storehouses are unknown.
3. Information about fire fighting measures. This information such as the amounts of burnt pesticides, what measures were taken to prevent pollution of the environment after extinguishing the fire, and what substances were used for extinguishing the fire.
4. Present situation of polluted site. This information includes the amounts of all other materials mixed with the pesticides while extinguishing the fire, such like remainders of the building, oil products and other wastes. It was estimated that in 4 sites between 2 to 150 m³ remnants of the buildings were mixed with pesticides.

5. Risk for ground- and surface water pollution (including evaluation of soil texture).
6. Information on use of surrounding area.
7. Information on monitoring. In five polluted sites groundwater monitoring systems were established.

Final implementation of unwanted pesticides management program is impossible without hazardous waste incineration facilities and hazardous waste landfill construction in Lithuania. According to the Government Resolution No 761 On the Program on Hazardous Waste Management in the Republic of Lithuania, adopted on 9 June 1999, such facilities have to be introduced by the end of 2003. Some possibilities of export of unwanted pesticides for incineration have been investigated, but such solution seemed to be very complicated because of high costs and requirements of Basel Convention.

Introduction of hazardous waste disposal facilities as well as investigation and remediation of contaminated areas is complicated from the technical point of view and is very costly. That is why financial and technical assistance of other countries in solving the unwanted pesticides problem in Lithuania is highly desirable.