

HAZARDOUS WASTE MANAGEMENT PROBLEMS IN LATVIA

Dagnija Lauceniece

*Share-holding company "BAO"
Latvia*

ABSTRACT

This paper describes the current and historical situation and hazardous waste kinds in Latvia. Present-day the main problems of hazardous waste management are - incineration, establishment of secure landfill, stabilisation of inorganic waste, necessity for the guide-lines for pollution assessment and remediation of storage sites of hazardous waste.

The collection and disposal of unwanted pesticides is defined as first priority in the implementation of National Hazardous Waste Management Strategy.

INTRODUCTION

Solution of hazardous waste problem is one of the main priorities in the area of the environmental protection. At present no formalised system exists for the proper management of hazardous waste on national level in Latvia. It means that there does not exist a system of collection, storage and treatment of hazardous waste. In addition to that - there is no suitable storage place for hazardous waste. For that reason hazardous waste accumulate in the territories of enterprises. Large amount of hazardous waste is kept in poor storage conditions and often part of it finally gets into the household landfills. Potential risks to health, safety and environment therefore exist, both from direct contact with waste materials and from indirect effects due to contaminants leaching from disposal sites into underlying groundwater which may subsequently enter both surface hydrological systems and drinking water supplies.

WASTE GENERATION

The system of statistic on waste generation and management is under development in the Republic of Latvia. The first national survey on amounts and generators of hazardous waste was completed in 1995 together with Danish company Chemcontrol A/S /1,2/. In 1996 the second survey on this issue was carried out.

The study of general assessment on current hazardous waste situation showed that at present time there are accumulated approximately 1.2 mill. m³ hazardous waste in Latvia. The principal current and historic sources of hazardous wastes include those from industry, military sources and certain municipal sources. At present Latvia annually produces approximately 60-70 thousand tons of hazardous waste.

Most important types of hazardous waste are: contaminated soil, oil filters, waste from metal works, cleaning and filtering materials, paint sludge, hospital waste, wastewater sludge polluted by toxic substances, different types of engine oils, organic solvents containing halogens and sulphur, waste containing heavy metals (galvanic waste), waste from meat and fish processing, mercury containing lamps and military waste.

This study also demonstrated that among different kinds of hazardous waste we can point out special sort - unwanted agricultural chemical substances (pesticides) from former collective farms.

UNWANTED AGRICULTURAL CHEMICAL SUBSTANCES (PESTICIDES)

The total amount of unwanted pesticides in the country according to the last inventory made by share-holding company "BAO" together with Regional Environmental Boards is approximately 1400 m³. These pesticides are located at more than 420 sites through all Latvia, 40% of total amount is with unknown chemical composition. Big part of them are stored in appropriate conditions: no guards, damaged containers, even open air places, places without any owner/3/. In some of sites there have been accidents and fires concerned with bad storage conditions of unwanted pesticides.

Storage conditions are more or less acceptable only in two sites and there are collected approximately 700 m³ unwanted pesticides.

There are recorded more than 100 unwanted pesticides types but 18 of them are prohibited. According to chemical composition, pesticides are chlororganic, metalorganic and inorganic, sulphur, phosphor and nitrogen containing compounds. The classes of non-valid pesticides were used in our territory for a long time, including those which were forbidden many years ago, for example, DDT, Hexachloran (Lindane), ethylmercury chloride etc.

The reason of formation of great amount of old pesticides in Latvia has been:

- Soviet planned economy when plant protection with chemicals occurred often only on the paper, but actually unused pesticides were hidden from authorities;
- ineffective supervision and control of use and storage of pesticides by the plant protection and environmental authorities;
- partially unsuccessful reformation and privatisation of agricultural enterprises; shortcoming in the legislation concerning in the first order the environmental liability of old and new owners;
- interruption of links with the pesticides producers from states of former Soviet Union who were obliged to take back the residues of their production;
- significant drop of agricultural production after 1991, bans of several categories of plant protection chemicals.

At present time all this waste including pesticide storage sites formally are under the authority of local Municipalities. But the financial situation of most local Municipalities does not allow in proper way to manage this property, including storage, treatment or elimination of pesticides. Probably local Municipalities will not be able to solve this problem for a long time and therefore it is necessary to solve the historical hazardous waste problem (including old pesticides) on State level.

THE MAIN WASTE MANAGEMENT PROBLEMS

The tasks which are required to be solved in the nearest future in Latvia are:

Incineration of hazardous waste

From the very beginning the problem of incineration was planned to be solved by using the cement kiln which offers by far the best opportunity for the incineration of hazardous waste, as both the temperature and residence time of the kiln are easily sufficient to ensure the complete destruction of waste of various type. Unfortunately due to the stressed situation on the world-wide cement market the owners of the only cement plant in Latvia are not ready presently to take part in the incineration project of hazardous waste. At the same time in the next few years there is necessity to incinerate approximately 600-700 tons of pesticides which will be collected and disposed in specially upgraded storage facility. Besides there is an urgent necessity to incinerate also other kinds of hazardous waste, including such materials as oil products, paint sludge, solvents, hospital sludge and some others. At present Latvia annually produces approximately 9-10 thousand ton/year of hazardous waste which are necessary to incinerate.

Taking into account the current situation we are looking for the alternative ways of incineration of hazardous waste by using mobile incinerators or constructing a small hazardous waste incineration plant which meets the emission requirements for the cleaning systems for flue gases according to EC directive.

Establishment of a secure contained landfill

No contained landfill facility exists in Latvia, and much of hazardous waste has been disposed of to no contained gravel pits and other locations, with consequent adverse impacts upon groundwater and surrounding environment. There is an urgent need to begin the work to develop such landfill. Without contained landfill, waste which cannot be incinerate will accumulate at the just upgraded interim storage facility with no final outlet.

The amount of hazardous waste from ongoing production in Latvia which need to be deposited on controlled secure landfill is 50.000 ton/year.

Various studies have been carried out in order to evaluate existing landfill sites in Latvia, but no specific locations for secure contained landfill have been evaluated.

Physical/chemical treatment and stabilisation or solidification of inorganic waste

Latvia produces annually approximately 1.000 tons of inorganic hazardous waste, which can not to be burnt in incinerators due to a very low calorific value and high content of heavy metals. There are plans to treat such waste by physical/chemical methods, thus achieving a reduced volume of solid residues of hazardous waste with no or low toxicity, which can then be disposed of in a safe manner at the residual repository.

The main types of inorganic waste physical/chemical treatment and stabilisation are: waste from galvanic processes, inorganic alkali, inorganic acids and their mixtures and waste containing chromium.

The inorganic waste are mainly generated by electroplating enterprises and usually treated by themselves with more or less modern equipment. For stabilisation or solidification of hazardous waste the use of a cement based method is considered first of all.

Preparation of the guide-lines for pollution assessment and remediation of former storage sites of unwanted pesticides and other kinds of hazardous waste

The problem of pesticides in Latvia is considered as a extremely serious as this kind of hazardous waste is kept in a very poor conditions in more than 420 sites throughout all Latvia, which causes a serious threat to human health and environment. At present moment the collection and disposal of unwanted pesticides has started. At the same time there is a problem how to take care of the sites where pesticides were kept for tens of years and most of which are polluted. It is necessary to mention that huge amount of them are situated on agricultural lands. There is a necessity for a special guide-lines which will judge how to assess a situation, how to remedy the site, how to determine the further use of the

site, buildings etc. The same situation would be also for places and enterprises where presently other kinds of hazardous waste are stored.

Unfortunately such guide-lines do not exist in our country.

NATIONAL HAZARDOUS WASTE MANAGEMENT STRATEGY

For that reason at present Latvia with the assistance of EU and Danish Government has developed the National Hazardous Waste Management Strategy (NHWMS) and now has started the implementation phase of this Strategy, which is divided into two phases (the implementation phase 1 and the current, operative phase 2).

The key elements of the NHWMS involve: the upgrading of the suitable former Russian military site to function as a storage facility for hazardous waste; the purchase special trucks for the transportation of hazardous waste; the interim storage of hazardous waste at the upgraded storage facility; creation of the hazardous waste incineration plant; the implementation of the physical/chemical treatment methods for inorganic hazardous waste and a secure landfill for direct disposal.

Phase 1 - the Implementation phase - 1996-1998.

In the framework of implementation for NHWMS the project on hazardous waste storage place in former military site was developed and elaborated by companies A/S Chemcontrol and Blukon from Denmark. At 1996 planned reconstruction works at the storage place have been finished and developed the central hazardous waste storage facility.

Has founded special hazardous waste management share-holding company "BAO", which deals with collection, transportation, storage and treatment of hazardous waste.

During the Phase 1 our company mainly will deal with unwanted pesticides.

As mentioned above from 1.5 thousand tons of unwanted pesticides 40% is with unknown chemical composition.

At the moment important problem is identification of unknown substances to be done in laboratory using gas chromatography, IS, MS and other methods. At present there are identified more than 1300 samples of unknown substances. The analyses are financed by State budget.

Collection and repackaging is made on the separate already located sites and then transported to the central storage facility. Depending on chemical composition, hazardousness and state of aggregation, the plastic or steel drums and containers are used. In phase 1 the storage facility is developed for storage of 1000 m³ solid and liquid pesticides in total.

We are working for future elimination of collected hazardous waste as well.

In near future we have a plan to establish also a controlled secure landfill for permanent disposal of solidified wastes and to solve the problem for incineration of hazardous waste.

Due to planned activities we anticipate completely to solve the unwanted pesticide problem as a part of Latvia Hazardous Waste Project during the next year. However as it was mentioned above the first steps will be repackaging, collection and transportation of unwanted pesticides to the central storage facility. We suppose to finish this part of job till end of the next year.

Phase 2 (Operative phase)

It will be continuous collection, transport and treatment of currently produced hazardous waste with gradual transition on a principle "waste producer pays". We anticipate that in this stage dealings with unwanted pesticides will be minimal.

Today's economies do not have borders the same as does not have the environment. Therefore risk to environmental systems created by different activities can be reduced only by common efforts. It is the need to look for common solutions to toxic waste problems. Common approach of all the Baltic Sea region to the problem could allow the countries to save own resources significantly.

Latvia is in the beginning in solution of hazardous waste problem and we are very interested to profit by the experience, continue co-operation and discussion with other countries

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