HAZARDOUS WASTE MANAGMET– PESTICIDE CONTAINER MANAGEMENT PROBLEM AND SOLUTIONS

Višnja Mihajlović[1], Una Marčeta[1], Bogdana Vujić[1], Jelena Mićić[1]

[1] *University of Novi Sad, Technical Faculty Mihajlo Pupin, Department of Environmental Engineering, Djure Djakovica nn, Zrenjanin, Serbia e-mail: visnjamihajlovic@uns.ac.rs*

ABSTRACT

Use of pesticide increased every year, which in turn increase the quantity of pesticide containers. Pesticide containers, if are not managed properly, pose a risk for environment and health. In developed countries, system for pesticide container management are developed, and environmental impact of pesticide containers is reduced. However, developing and less developed countries are still struggling to develop system for pesticide container management. The aim of this paper is to analyze the current container system management in Serbia and identify the barriers and obstacles for development of sustainable pesticide container management.

INTRODUCTION

The problem of modern society is increasingly emphasized in providing sufficient quantities of food, the main source of which is the plant. Achieving high yields cannot be imagined without the use of mineral fertilizers and pesticides to control diseases, pests and weeds. Plant protection products play an important role in achieving higher yields and improving the quality of agricultural products. [1] Pests threaten cultivated plants and food stuffs by reducing plant fertility by 15 - 20% in developed countries and over 40% in underdeveloped countries [2]. Therefore, the use of agrochemicals is a necessity, but it occupies a special place in the environmental impact of agriculture due to numerous environmental problems in case of irrational use of these agents. [3]. Together with the plant protection products, the packaging also becomes available on the market, which becomes a waste after the use of the plant protection products. Packaging plays an important role in the safe delivery and use of plant protection products in the markets, minimizing the risk of loss in the supply chain as well as customer exposure. [1]

The main objective is that waste packaging contains minimal concentrations of the active substance and that it is harmless to human health and the environment, while on the other hand the economic impact is undeniable. [4] Solving the problem of packaging waste from plant protection products in Serbia has many obstacles, and the lack of experience in this field requires that we be informed as much as possible about the waste management system in EU Member States.

METHODOLOGY

In order to establish and operate a plant protection management system that ensures a high level of human health protection (for both users and consumers of agricultural products) and the environment (including flora and fauna), the following regulations apply in the European Union.

- Regulation (EC) No 1107/2009 - concerning the placing of plant protection products on the market and repealing Council Directives 79/117/EEC and 91/414/EEC [5],
- Regulation EU 540/2011 - list of approved active substances [6],

- Regulation EU 546/2011 - defines uniform principles for evaluation and authorization of plant protection products [7]
- Regulation EU 547/2011 - labelling requirements for plant protection products [8]
- Regulation EU 283/2013 - setting out the data requirements for active substances, [9]
- Regulation EU 284/2013 - setting out the data requirements for plant protection products [10]
- REGULATION (EC) No 396/2005 - define maximum residue levels of pesticides in or on food and feed of plant and animal origin [11]
- DIRECTIVE 2009/128/EC - framework for Community action to achieve the sustainable use of pesticides [12]
- DIRECTIVE 2009/127/EC - use of machinery for pesticide application [13]

These regulations include provisions on the placing on the market of plant protection products, the approval of active substances and the registration of plant protection products containing authorized substances, and contain restrictions on the maximum levels of residues of plant protection products in agricultural products, as well as proper storage and use.
The overall process involves two steps: first, the assessment and possible approval of the active substance at EU level, and then the assessment and approval by Member States of the plant protection products containing those substances. Implementation of mentioned regulations and Directives gives the framework for development of sustainable system for pesticide container management.

RESULTS AND DISCUSSION

Today, after a great experience in seeking to bring the hazardous waste system as closely as possible to high environmental requirements, additional options for hazardous waste management have been developed related to the advancement of technologies that generate less waste, substitution of hazardous substances with less hazardous waste, recycling and reuse existing hazardous waste and the like. This situation has resulted in the establishment of new technological standards, whose further improvements are measured by extremely short time intervals, and further progress in this area is inevitable. However, there is still different classification of pesticide containers after use across EU, Table 1.

Table 1: Classification of decontaminated (washed) packaging waste from plant protection products in Europe

Country	Classification of decontaminated (washed) packaging waste from plant protection products
Austria	Data are not available
Belgium	Non-hazardous waste
Bulgaria	Data are not available
Croatia	Hazardous waste
Cyprus	Data are not available
Czech Republic	Data are not available
Denmark	Non-hazardous waste
Estonia	Non-hazardous waste
Finland	Hazardous waste
France	If it is in accordance with the obligatory management program - non-hazardous, otherwise hazardous
Germany	Nonhazardous
Greece	Nonhazardous
Hungary	If it is in accordance with the obligatory management program - non-hazardous, otherwise hazardous
Ireland	Different classification at regional level
Italy	Non-hazardous
Latvia	Data are not available
Lithuania	Nonhazardous
Luxemburg	Nonhazardous
Malta	Data are not available
Netherland	Nonhazardous
Polska	Hazardous waste
Portugalia	Hazardous waste
Romania	Hazardous waste
Slovakia	Hazardous waste
Slovenia	Nonhazardous waste
Spain	Hazardous waste
Sweden	Data are not availible
Turkey	Hazardous waste
United Kingdom	Nonhazardous waste

Table 1 shows a different approach to the classification of flushed waste packaging within the EU, with at least a third of countries classifying this packaging as hazardous. In some

countries it was not possible to access the data because this issue had not yet been addressed by the competent institutions. This level of inconsistency across Europe has major current and future implications for the PPP packaging collection and reuse program. [14].

Across the EU, there are two models for managing this type of waste: voluntary and mandatory.
A voluntary system model is a voluntary agreement model, that is, a model whereby a system is formed by polluters without a legal obligation or pressure from the authorities to do so.
Operators authorized by law are those operating within the scope of national legislation.
A sustainable system for collecting pesticide packaging waste is only feasible if funding is provided. This is most easily achieved when the operator is legally authorized.
Generally, as it is mandatory to register and authorize a preparation, so it is also mandatory to participate in the packaging waste collection system, to be a member of the operator.
The threat of statutory operators being set up by the state is often enough to establish a system on a voluntary basis.
Statutory certified dispatchers can specify the level of service they offer to their clients. A system that makes it easy to return empty packaging will be significantly more efficient.
The system must be economically independent if it is to be sustainable. Authorized operators are required by the government to determine how the system wants to be funded:
- Compensation to suppliers;
- Pesticide sales tax;
- General fee.

CONCLUSION

Creating an adequate model of packaging waste management is the first step in the process of setting up a system for removing packaging plant protection products.
The second and perhaps most important step is the proper flushing of waste packaging, which would make it possible to classify such packaging as non-hazardous waste according to the classification.
Solving the problem of hazardous packaging waste from plant protection products in Serbia faces a number of obstacles such as: lack of adequate storage, lack of export license company, lack of cement plant with adequate equipment and permit for destruction and many others. SECPA is working on establishing an efficient packaging waste management system and proposes a sustainable and efficient model of packaging waste management modeled on the German PAMIRA packaging waste management and waste management system.

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