

MANAGING EXPIRED PESTICIDES AS HAZARDOUS WASTE ACROSS BORDERS

KREISLER, EVA¹ and HEISS, ROBERT²

¹ Senior Attorney, International Compliance Assurance Division, Office of Federal Activities, Office of Enforcement and Compliance Assurance, U.S. Environmental Protection Agency, 1200 Pennsylvania Avenue, N.W. Washington, DC, 20460, United States, kreisler.eva@epa.gov.

² Director, International Compliance Assurance Division, Office of Federal Activities, Office of Enforcement and Compliance Assurance, U.S. Environmental Protection Agency, 1200 Pennsylvania Avenue, N.W. Washington, DC, 20460, United States, heiss.robert@epa.gov.

SUMMARY

The notification process for controlling transboundary movements of hazardous waste under the Basel Convention and other international agreements also applies to transboundary movements of expired pesticides. Collecting expired pesticides from farmers and exporting them under a notification process in order to obtain safe disposal, however, poses unique problems. As a result, it is necessary to develop innovative approaches to deal with the practical and legal problems that are associated with managing these wastes to ensure compliance with applicable environmental laws. In this article we discuss the challenge to human health and the environment that is presented by growing stockpiles of expired pesticides around the world; analyze the unique problems associated with managing transboundary movements of these pesticides in established notification schemes; describe a pilot project by the U.S. Environmental Protection Agency (USEPA) to reduce the amount of expired pesticides in the United States–Mexico border region; and offer lessons learned to help with cleanups involving transboundary movements.

1 INTRODUCTION

Unlike other generators of hazardous waste, farmers do not actively produce pesticides as hazardous wastes. Instead, others manufacture the pesticides, which farmers acquire and store as chemical products for intended agricultural application. It is the expiration of the manufacturers' specified use dates that causes the pesticides to be re-classified as wastes because they are no longer suitable for their original intended purpose. Furthermore, since farming is not an economic process that regularly produces any kinds of hazardous wastes as byproducts, farmers are not accustomed to performing the role of a hazardous waste manager. Moreover, the quantities of particular expired pesticides held by each farmer may be small and may represent an inconsequential part of their farming operations,

even though the collective problem of managing expired pesticides in agricultural areas of a country may be large.

At both the domestic and transboundary level, pesticide wastes present particular challenges to enforcement programs, and do not lend themselves to an aggressive punitive response. Since most of the “violators” are diverse, small farmers, discovering the violations is a resource intensive exercise for inspectors. In addition, the penalty or sanction to an individual farmer is likely to be very low based on the small amount of pesticides they may have at their farm. The individual attention required for a traditional inspection and enforcement response approach demands great resources, while the benefits for each individual case may be very low. The collective harm caused, however, may be great, so compliance programs must look for other ways to address the collective problem with low investments at the individual level. Stockpiles that accumulate in countries that lack domestic facilities for the proper disposal of waste pesticides pose international environmental risks unless management pathways available elsewhere can be utilized for their disposal. Successfully managing these wastes before they become a compliance or enforcement problem is a challenge for the world community. Ultimately, for environmental enforcers worldwide, this is truly an instance, as the old adage says, where “an ounce of prevention is worth a pound of cure”.

Border areas between countries share common ecosystems and, therefore, need coordinated and comprehensive environmental protection. Nevertheless the existence of different governmental and legal systems in close proximity may offer unintended opportunities for the unscrupulous to deceive authorities and to mismanage expired pesticides in cross-border activities.

Adequate disposal facilities for waste pesticides may be located across borders or even across oceans from where the waste pesticides are stockpiled, requiring their transboundary movement. Established systems for controlling transboundary movements of hazardous waste are based on notice-and-consent schemes requiring prior informed consent for the shipment of identified maximum quantities and types of hazardous wastes.

2 WORLDWIDE PROBLEM OF SOUND ENVIRONMENTAL MANAGEMENT OF EXPIRED PESTICIDES

Expired pesticides are “those pesticides that can no longer be used for their intended purpose.”¹ For example, pesticides are sometimes left over from pest control campaigns and stored well after their shelf-life, leading to “physical or chemical changes that result in phytotoxic effects on the target crop, or an unacceptable hazard to human health or the environment”.² In other situations, stockpiles may consist of pesticides that have been banned for use or which were abandoned decades ago.³

Unfortunately, agricultural communities tend to be poor, rural populations that lack access to up-to-date information on the chemicals they are exposed to or the means to properly store or dispose of them. In addition, while proper management of pesticides requires continuous updating of inventory records, this is not always done.⁴ Thus, stockpiles can range “from well-stored products that can still be used in the field, to products that have leaked from corroded steel drums and other containers into the soil.”⁵

The multilateral environmental agreement known as the Basel Convention, the OECD Council Decision controlling transboundary movements of hazardous waste, and, in the United States, the Resource Conservation and Recovery Act, part of the Solid Waste Disposal Act, all treat expired pesticides as hazardous waste.⁶ Chemicals comprising pesticides deteriorate over time, resulting in hazardous waste that is more toxic than the original product and which poses a threat to human health and the environment.⁷ Unfortunately, expired pesticide stockpiles in developing nations are usually not stored properly, possibly leading to spillage, blending or illegal dumping. According to the UN Food and Agriculture Organization, “high quantities of toxic chemical waste from unused or obsolete pesticides are posing a continuing and worsening threat to people and the environment in Eastern Europe, Africa, Asia, the Middle East and Latin America”.⁸ Moreover, most of these countries do not have facilities for the destruction of these chemicals.⁹

Poorly stored hazardous waste that leaks into environment can cause a variety of problems to human health and the environment. Hazardous waste leachate may contain dangerous insecticides, such as the Persistent Organic Pollutants aldrin, chlordane, DDT, dieldrin, endrin, heptachlor and organophosphates.¹⁰ Leaching hazardous waste can lead to the chronic poisoning of entire communities, possibly resulting in death, cancer, or reproductive and neurological disorders.¹¹ “The UN World Health Organization estimates that three million people are poisoned by pesticides every year, most of them in developing countries. Every year some 20,000 of these poisoning victims die.”¹² As pesticides degrade, they may leach into soil and water, or they may be windswept or volatilized reaching neighboring, or far away, areas.¹³ Thus, the clean-up of hazardous waste stockpiles is an urgent matter around the globe.

An additional concern regarding waste pesticide stockpiles is that they can become the target of black markets.¹⁴ The chemicals sold in these black markets may be obsolete, banned or created for a different purpose from the one peddled by the sellers.¹⁵ Unfortunately, farmers may not be aware of the source of the pesticides sold to them and unwittingly introduce dangerous chemicals into the environment.

Countries with the capacity to properly dispose of hazardous waste are in a unique position to assist nations without facilities that can handle expired pesticides.

Their assistance could help eliminate existing stockpiles and prevent future accumulations around the world.¹⁶

3 UNITED STATES-MEXICO BORDER EXPIRED PESTICIDE CLEAN-UP PROJECT

The United States-Mexico Environmental Program, Border 2012, is a partnership between the United States and Mexico, represented by Federal environmental agencies, 10 border states and U.S. border tribes, is designed to improve the environment and protect the health of the nearly 12 million people living along the common border. Under Goal IV of the program, the United States and Mexico are working jointly to address pesticide issues at the border.

One of the projects undertaken as part of this initiative is a waste pesticide collection effort. The first of these collections took place in August 2006, in the areas of Yuma, Arizona, U.S and the San Luis Valley in Sonora, Mexico, resulting in the gathering and disposal of 72,000 pounds of hazardous waste at a U.S. facility. Another collection event, along the Baja California and California border, is tentatively scheduled for February 2008.

The USEPA and the Secretaria de Medio Ambiente y Recursos Naturales selected the Yuma-San Luis Valley area for collection because it was a highly productive agricultural area which, over time, had seen an increase in the amount of old or unwanted pesticides. Agricultural growers on both sides of the border were offered free collection and disposal of their stocks of unwanted or obsolete pesticides. In order to identify the types and amounts of hazardous waste to be collected from each grower, a registration form in both English and Spanish was developed. The types and maximum amounts of pesticides to be collected from each grower were predetermined to ensure a large number of participants. In addition, it was necessary for officials to know the universe and amounts of hazardous waste to be exported from Mexico in order to: 1) obtain the necessary export and import permits and consents in a timely manner; 2) determine the number of vehicles necessary to transport the hazardous waste; and 3) select the final destination facilities.

On collection day, the project team found a storage shed with many leaking and corroded pesticide drums at the San Luis Valley collection site. The amount of hazardous waste in these drums caused the quantity of waste at the site to exceed the limit in the document showing the U.S. consent for the import of hazardous waste. In response, staff from participating agencies coordinated their efforts to collect and properly store this extra waste until the waste could be exported. Secretaria de Medio Ambiente y Recursos Naturales staff submitted an amendment to its initial notice of intent to export, and USEPA gave its consent to the import without delay. Three months later the extra waste was shipped to the U.S. for proper disposal.¹⁷

4 EXPORT/IMPORT OF HAZARDOUS WASTE BETWEEN MEXICO AND THE UNITED STATES

The pesticide collection project invoked the requirements of *The Agreement of Cooperation Between the United States of America and the United Mexican States Regarding the Transboundary Shipments of Hazardous Wastes and Hazardous Substances* (The Agreement). This bilateral Agreement establishes notification procedures for importing and exporting waste between the U.S. and Mexico. While The Agreement itself has no binding affect on importers and exporters, both USEPA and Secretaria de Medio Ambiente y Recursos Naturales have promulgated standards under their hazardous waste regulations to ensure that the movement of hazardous waste across the U.S./Mexico border occurs after the receiving country has provided its prior informed consent.¹⁸

The process for the exportation of hazardous waste from Mexico to the U.S. is straightforward. The Mexican exporter submits a Notice of Intent (NOI) to export to Secretaria de Medio Ambiente y Recursos Naturales headquarters. This NOI must describe the quantity and type of hazardous waste to be exported during a 12-month period, or once if that is all that is needed. The process includes an exchange of cables between Relaciones Exteriores,¹⁹ and the U.S. Department of State. Upon obtaining consent, Secretaria de Medio Ambiente y Recursos Naturales processes all other documentation required for exports under its regulations, including insurance and bonds, before allowing the export to proceed.

For the pesticide collection project, USEPA and Secretaria de Medio Ambiente y Recursos Naturales staff worked together to acquire the appropriate import and export documentation. Secretaria de Medio Ambiente y Recursos Naturales's regional office in Sonora assumed responsibility as the exporter and requested consent to import from the USEPA. In order to streamline the process, USEPA regional and headquarters staff worked side by side with Secretaria de Medio Ambiente y Recursos Naturales regional and headquarters staff to ensure timely delivery of needed documentation. They instituted an expedited process for submission and approval of the notice of intent to export, and USEPA and Secretaria de Medio Ambiente y Recursos Naturales staff maintained open lines of communication to ensure that the permit process met no obstacles.

5 LESSONS LEARNED

Along with the immediate benefit of reducing the aggregate hazardous waste stockpile of expired pesticides, the extensive, hands-on cooperation that is required of the participating nations in a waste pesticide collection project yields a practical model for conducting sound environmental management, and anticipating and avoiding future compliance problems. The following lessons emerged from the United States-Mexico pesticide collection project:

5.1 In order to ensure that the complex process is successfully completed, the appropriate national and state authorities, or some other organization, must *coordinate all phases of the collection project*—from the notification process beforehand through the physical collection, movement, and disposal stages. Because the farmers are not organized for these purposes, leadership for the effort must be provided from somewhere else. Furthermore, the *coordinator* of the waste collection must serve, or find someone to serve, as the *exporter* who will pursue the notification process between the governments of the participating countries.

5.2 Whenever possible, local agency personnel, from regional or state offices, should be part of the coordinating team. Their area-based knowledge is invaluable in planning activities, communicating with the local population, and identifying potential pitfalls in implementation.

5.3 Because government authorities at the national and regional/state levels play vital roles in the *notification process*, they must participate in the early planning of the project and devise means to facilitate the approval phase of the project. Their knowledge of and experience with international agreements and domestic regulations for the transboundary movement of hazardous waste, and the issuance of import/export permits and consents is critical to the timely issuance of the appropriate documents to allow the waste pesticides to legally move internationally. If the sending country itself, or its sub-national unit, agrees to serve as the *exporter*, then the planning is somewhat simplified.

5.4 The coordinator(s) of the collection and ultimate disposal of the hazardous waste must have *adequate technical expertise* to tackle these activities. The handling of hazardous waste is a dangerous endeavor which necessitates highly skilled personnel in order to avoid human and environmental exposures.

5.5 The *private sector* has a role in these projects. Transporters and disposal facilities can be brought in to assist in the collection process. In the United States-Mexico project, a private party handled the transportation and final disposal of the hazardous waste. In future endeavors, hazardous waste management companies may be hired to act as the hazardous waste exporters. This would reduce the burden on government personnel and resources.

5.6 Based on the United States-Mexico border project, it is advisable to *estimate generously the potential quantity of waste pesticides for collection*. Some farmers may underestimate their stockpile during the planning phase, and some farmers may not even initially participate in the planning phase. Nevertheless they may deliver additional quantities on the collection day. The receiving country's consent to a notice, however, is limited to the maximum potential amount identified in the notice. Therefore, nothing can be done at the time of collection to increase the quantity allowance for the export, since consent to the additional amount will require either amendment of the existing notice or a new notice. So a generous initial estimate of the total quantity of the waste pesticides for export will avoid the cost of a follow-up collection.

5.7 The participation of the print and electronic press in promoting the collection projects as well as disseminating information concerning the proper handling of hazardous wastes will assist the government's *compliance assistance and outreach* to the agricultural sector.

5.8 *Press coverage on the day of the collection* itself can further assist in disseminating information both to industry and the public. In particular it can raise *citizen awareness* of the problem of waste pesticide stockpiles and can generate public interest in a continuing program of stockpile management and proper disposal. This augments government resources available for compliance assistance and inspections.

5.9 Collection projects should also emphasize that *prevention* is the goal of their program. This can be achieved by offering agricultural communities instruction on pesticide inventory management, regulatory controls on hazardous waste, and the proper handling and storage of hazardous waste. Training of this kind will raise the *awareness of agricultural communities*.

5.10 Whenever possible, countries should also establish ongoing assistance to encourage the transport and disposal of hazardous waste at appropriate disposal facilities. The Yuma-San Luis Valley project raised the awareness of the agricultural communities to the benefits of this type of program. As a direct result of this project, Arizona has budgeted \$100,000 per year for at least three years to collect and dispose of unwanted pesticides throughout the state. In Mexico, the collection events have led Federal agricultural leaders to request that all agricultural regions survey growers to report on quantities of unwanted pesticides that may be in storage. This is an important first step in building momentum for a *sustainable national collection program*.

5.11 The technical assistance provided during collection projects as well as the actual collection, shipping, and disposal of expired pesticides all cost money. Although these expenses should be internalized in the prices charged for the crops, that is generally not the case. As a result, governments and international organizations must step in with *funding* in order to reduce environmental risks and avoid damage.

6 CONCLUSION

To avoid the contamination of soil and groundwater from leaking expired pesticide containers, the misapplication of these pesticides on crops, and the dumping of these dangerous chemicals, a comprehensive, world-wide management strategy with adequate funding is needed for expired pesticides. Countries that possess adequate facilities to handle these hazardous wastes must ensure compliance with existing requirements for storage and disposal in their own countries through inspections and compliance assistance. For all other countries, the eradication of waste pesticide stockpiles remains a serious challenge for the world's environment.

Effective management in these circumstances is a complex endeavor best achieved through cooperation between nations and their respective governmental and non-governmental organizations. Where facilities exist across borders, or even in countries that are an ocean away, it is important to facilitate access to effective stewardship elsewhere through controlled transboundary movement, rather than letting illegal disposal occur where the stockpiles exist.

The United States-Mexico border project for the collection and disposal of waste pesticides offers one model to consider. The comprehensive effort conducted simultaneously in both countries reduced the potential opportunity for private parties to take advantage of the situation in either country, effectively reduced the existing stockpiles on both sides of the border, and ensured compliance with applicable environmental requirements.

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¹ Martinez, J., Practical Guideline on Environmentally Sound Management of Obsolete Pesticides in the Latin America and Caribbean Countries [Practical Guideline]. 2004, p. 4 .

² Id. at 7. Pesticides generally have a shelf-life of two years from the date of release.

³ Id. at 17.

⁴ Id. at 18.

⁵ Id.

⁶ Basel Convention on the Control of Transboundary Movements of Hazardous Waste and their Disposal (1989), Article 1, paragraph 1(a); OECD Decision of the Council Concerning the Transfrontier Movements of Hazardous Wastes as Amended (2001), Chapter II, A (i) and (ii), and the Solid Waste Disposal Act, Resource Conservation and Recovery Act, 40 USC 261.32 and 33 .

⁷ Obsolete Pesticides, United Nations Food and Agricultural Organization, (2006) available at <http://www.fao.org/ag/AGP/AGPP/Pesticid/Disposal/en/what/103380/index.html>.

⁸ FAO warns of pesticide waste time bomb in poor countries. United Nations Food and Agricultural Organization, (9 September 2004) available at <http://www.fao.org/newsoom/en/news/2004/50119/index.html>.

⁹ There is no destruction or final disposal facility in most Latin American countries. Practical Guideline, *supra* note 3, p. 25.

¹⁰ Id.

¹¹ Obsolete Pesticides, *supra* note 9, p. 2.

¹² Id.

¹³ In the Caribbean, for example, “[t]he impact of the mismanagement of such stocks is further aggravated by the vulnerability of small-island developing states to severe natural disasters. For example, stockpiles of pesticides are easy targets for hurricanes in the Caribbean, which help spread waste into the sea, or leach into scarce groundwater supplies with direct and immediate impact on local populations and the environment.” Thus, UNEP has called for resource mobilization in order to initiate a Project for the final disposal of existing waste

pesticides and selected persistent organic pollutants and the prevention of future accumulation in the Caribbean. United Nations Environmental Program, Call for Resource Mobilization, available at <http://www.basel.int/resmob/app-funding.html>.

¹⁴ Portas, Pierre, *Unwanted Stocks of Hazardous Wastes Breaking the Vicious Cycle* (2000) available at <http://www.oecd.org/dataoecd/22/30/1934602.pdf>.

¹⁵ In Pakistan, for example, a black market exploited a dump of expired pesticides that went unmanaged for over twenty-five years. Albion Monitor, Malir, (2001) available at <http://albionmonitor.com/0102a/malir.html>.

¹⁶ For example, during September 2005, the World Bank announced that it had approved the first phase of the Africa Stockpiles Program (ASP-P1). The aim of the continent-wide is to eliminate and prevent future build-ups of waste pesticide stockpiles, including persistent organic pollutants. World Bank News & Broadcast, Press Release No: 2006/096/ESSD, (29 September 2005) available at <http://web.worldbank.org/WBSITE/EXTERNAL/NEWS/0,,contentMDK:20666046~pagePK:64257043~piPK:437376~theSitePK:4607,00.html>.

¹⁷ The time frame between the two collections ran from August to November 2006.

¹⁸ U.S. regulations for exports of hazardous waste can be found at 40 C.F.R. 262, subpart E.

¹⁹ Mexico's Foreign Relations department.

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INECE Secretariat
2300 Wisconsin Ave, NW Suite 300B
Washington, DC 20007
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<http://www.inece.org>