



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
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OFFICE OF CHEMICAL SAFETY
AND POLLUTION PREVENTION

**Spray Drift Mitigation Decision for Chlorpyrifos (059101)
July 2012**

Summary

This document discusses mitigation measures that the chlorpyrifos technical registrants Dow AgroSciences, AAKO B.V., Cheminova Inc., Drexel Chemical Company, Gharda Chemicals Ltd, and Makhteshim Chemical Works Ltd. (registrants) have voluntarily agreed to implement in order to mitigate risks to children and bystanders from spray drift that occurs during agricultural applications of chlorpyrifos. To ensure timely implementation of the spray drift mitigation, EPA is taking steps to make sure that the new use restrictions appear on all chlorpyrifos agricultural product labels starting in late 2012.

The new mitigation measures require buffer zones for groundboom, airblast, and aerial application methods around sensitive sites such as residential lawns, homes, pedestrian sidewalks, outdoor recreational areas, and all property associated with buildings typically occupied by people. In addition, rates for aerial application are being reduced from 6 lbs ai/A to 2.0 lbs ai/A.¹

This effort to mitigate a chemical's risks early in the registration review process is consistent with the Agency's approach for registration review. Where risks are identified early in the registration review process and opportunities for early mitigation exist, the Agency will pursue those opportunities as they arise, rather than waiting for completion of a chemical's registration review in order to mitigate risks. Potential risks to children and bystanders due to spray drift from chlorpyrifos applications are an area where the opportunity for early mitigation existed.

Background

Chlorpyrifos is used widely for controlling insects on food crops including fruits, nuts, vegetables, and grains, and on non-food sites such as golf course turf, industrial sites, greenhouses, nurseries, sod farms, and wood products. Public health uses include aerial and ground-based fogger treatments to control adult mosquitoes. An organophosphate, chlorpyrifos can cause cholinesterase inhibition in humans; i.e., it can over-stimulate the nervous system if there is sufficient exposure.

Chlorpyrifos is currently undergoing registration review, EPA's periodic reevaluation of all registered pesticides to ensure that they continue to meet the statutory standard of no

¹ The lone exception is up to a 2.3 lbs ai/A rate to control Asian Citrus Psylla (ACP). Chlorpyrifos is one of the few options available for protecting mature bearing trees from ACP – currently FL is the only state with a 2.3 lb ai/A for ACP.

unreasonable adverse effects. As part of registration review, the chlorpyrifos preliminary Human Health Risk Assessment (HHRA) was released for public comment in July 2011.² In the preliminary HHRA, risks to bystanders from spray drift and exposure from volatilization were identified as concerns. The public comment period closed in October 2011. As the Agency works to finalize its HHRA, it has further refined its analysis regarding spray drift from various chlorpyrifos application scenarios in order to have a broader understanding of the potential risks. That assessment, Evaluation of the Potential Risks from Spray Drift and the Impact of Potential Risk Reduction Measures³, is being released in conjunction with this decision document.

In addition, in 2007, the Natural Resources Defense Council (NRDC) and Pesticide Action Network North America (PANNA) jointly petitioned the Agency to revoke all tolerances and cancel all registrations for chlorpyrifos.⁴ One of the issues identified in the Petition deals with inhalation routes of exposure from spray drift and volatilization. This more refined spray drift assessment and subsequent mitigation measures will inform the Agency's response to the spray drift portion of petitioners' inhalation claim. The Agency's volatilization assessment continues to be refined in the context of the final HHRA.

This more refined spray drift analysis resulted in a better estimate of potential exposures and risks to bystanders, particularly children, around treated fields. While the analysis showed there were health risks due to spray drift, the analysis also indicated that the risks could be mitigated by requiring buffer distances and specific application methods. Specifically, by linking droplet size with application rates and application methods in order to dictate appropriate buffer distances. Table 1 indicates the various buffer distances that will be required when using certain application rates, nozzle droplet type, and application method.

Table 1: Buffer Distances from Sensitive Sites

Application rate (lb ai/A)	Nozzle Droplet Type	Required Setback (Buffer Zones) (feet)		
		Aerial	Airblast	Ground
>0.5 - 1	coarse or very coarse	10	10	10
>0.5 - 1	medium	25	10	10
>1 - 2	coarse or very coarse	50	10	10
>1 - 2	medium	80	10	10
>2 - 3	coarse or very coarse	80 ¹	10	10
>2 - 3	medium	100 ¹	10	10
>3 - 4	medium or coarse	NA ²	25	10
>4	medium or coarse	NA	50	10

¹Aerial application of greater than 2 lb ai/A is only permitted for Asian Citrus Psylla control, up to 2.3 lb ai/A.

²NA is not allowed.

² Available at <http://www.regulations.gov/#!documentDetail;D=EPA-HQ-OPP-2008-0850-0025>.

³ Dawson J, Britton W, Bohaty R, Mallampalli N, Grube A. U.S. EPA (2012). Chlorpyrifos, PC Code 059101, DP Barcode 399483 and 399485; Evaluation of the Potential Risks From Spray Drift and the Impact of Potential Risk Reduction Measures. Available at <http://www.regulations.gov/#!docketDetail;D=EPA-HQ-OPP-2008-0850>.

⁴ Petition of Natural Resources Defense Council and Pesticide Action Network North America to Revoke All Tolerances and Cancel All Registrations for the Pesticide Chlorpyrifos (September 12, 2007) at 1. (hereinafter Petition). Available at <http://www.regulations.gov/#!documentDetail;D=EPA-HQ-OPP-2007-1005-0005>.

As Table 2 demonstrates, these new buffer distance requirements presented in Table 1 will address risk concerns regarding bystanders' margin of exposure (MOE).⁵

Application method	Lowest MOE Pre-Mitigation	Lowest MOE Post-Mitigation
Aerial	10	104
Airblast	57	132
Groundboom	10	143

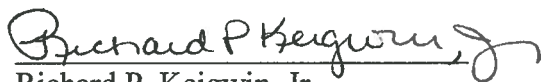
In addition, the mitigation measures will provide greater specificity on chlorpyrifos labels regarding what constitutes a sensitive site. The new sensitive site language is the following

Sensitive sites are areas frequented by non-occupational bystanders (especially children). These include residential lawns, pedestrian sidewalks, outdoor recreational areas such as school grounds, athletic fields, parks and all property associated with buildings occupied by humans for residential or commercial purposes. Sensitive sites include homes, farmworker housing, or other residential buildings, schools, daycare centers, nursing homes, and hospitals. Non-residential agricultural buildings, including barns, livestock facilities, sheds, and outhouses are not included in this prohibition.

For the complete spray drift analysis, refer to the Evaluation of the Potential Risks from Spray Drift and the Impact of Potential Risk Reduction Measures, itself. This and all other documents related to chlorpyrifos registration review are located at <http://www.regulations.gov> under docket number EPA-OPP-2008-0850. Documents related to the Petition are located in docket number EPA-OPP-2007-1005.

Conclusion

This document presents the mitigation measures being taken voluntarily by registrants to address the current risks to bystanders, particularly children from spray drift that occurs during agricultural applications of chlorpyrifos.



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⁵ The ratio of the estimated NOAEL to the exposure is referred to as the Margin of Exposure (MOE). Generally, MOEs that are less than 100 exceed the Agency's level of concern for worker risk.