Product Review for Milestone Herbicide

Milestone Herbicide (EPA Reg. No. 62719-519) is one of the formulated products containing the active ingredient aminopyralid that is being reviewed for the Sensitive Area Materials List. The Milestone Herbicide contains the active ingredient aminopyralid in the form of triisopropanolammonium salt (40.6% wt/wt), which corresponds to an acid equivalent (a.e.) aminopyralid concentration of 21.1% wt/wt. Aminopyralid is the subject of the current review for addition to the Sensitive Area Materials List.

Following the methods for evaluation of herbicides for the Sensitive Area Materials List [1], a review of available toxicological data for the formulated product was done. The purpose of this review was to evaluate if product-specific characteristics significantly alter the exposure potential or toxicity of the active ingredients.

The Safety Data Sheet (SDS) for Milestone Herbicide (DAS, 2015) [2] provides ecotoxicity data for the formulated product. Table 1 includes a summary of ecotoxicity information.

Table 1. Ecotoxicity information for Milestone Herbicide

Species	Endpoint Values	
Bobwhite Quail	Dietary LC_{50} Oral LD_{50}	> 21,422 mg/kg diet > 10,000 ppm
Rainbow Trout	96-hr LC_{50}	360 mg/L
Water flea	48-h LC_{50}	> 460 mg/L
Green Algae	72-h Growth Inhibition	> 1000 mg/L
Earthworms	14-d LC_{50}	> 10,000 mg/kg soil

Exposure Assessment

In order to evaluate the risk to non-target organisms, potential exposure levels of the herbicide product in soils and water were estimated. A conservative high-end exposure scenario was considered by assuming that there was no interception of spray by foliage and that soil or water area was over-sprayed and received all applied product. These are conservative assumptions considering that the application is done by foliar application to target plants such that only a fraction potentially reaches the soil surface. With respect to exposure to water bodies, the assumed scenario represents an accidental over-spray or 100% drift situation.

The concentrations of herbicide product in soil and water were calculated based on the maximum application rate of 0.236 kg product per acre. For soil exposure it was also assumed that applied product was mixed into a top soil layer with thickness of 1 inch or 4 inches. For water exposure, uniform mixing into shallow water bodies with a depth of 1 inch or 4 inches was considered. The calculated concentrations are listed in Table 2.

[1] MassDEP/MDAR. 2010. Herbicide Evaluation Technical Update No. 1 - Methods for the Evaluation of Herbicides for use in Sensitive Areas of Rights-of-Way

[2] Safety Data Sheet for Milestone Herbicide: http://www.cdms.net/LDat/mp77N002.pdf

Table 2 Calculated concentrations of Milestone Herbicide Product in soil and water

Scenario	Concentration of Herbicide Product (mg/kg for soil; mg/L for water)	
	1-inch Soil/Water Layer	4-inch Soil/Water Layer
Soil	1.5	0.38
Water	2.3	0.57

Risk Evaluation

Based on the ecotoxicity data presented above and summarized in Table 1, and the exposure levels calculated for worst-case scenarios as listed in Table 2, it can be concluded that adverse effects to non-target organisms are not expected. The exposure levels are expected to be much lower under more realistic circumstances (e.g., product is applied to target vegetation foliage and mostly intercepted and absorbed by vegetation, thus not reaching the ground; exposure to water bodies is minimized by drift reduction measures and regulatory setbacks from such areas).

Comparison with the toxicity of the active ingredients (see active ingredient review of aminopyralid) indicates that the product formulation does not significantly alter the toxicity to non-target organisms.

Surfactants in Milestone Herbicide

The general policy for surfactant review is that compounds will be designated for additional review when available information indicates a potential for increased risk to non-target species. Information on surfactants in the Milestone Herbicide formulation was provided by the registrant, but cannot be disclosed here for proprietary reasons. The information for the surfactants is summarized in a separate document (MDAR, 2016) [3]

The evaluation of the formulated product described above indicates that the product formulation does not substantially increase ecological toxicity and risks to non-target organisms. This is consistent with the review of the information on surfactants. The formulated product, when used as directed on the product label, would not result in exposure levels that would produce adverse effects in non-target organisms.

References

DAS, 2015. Safety Data Sheet for Milestone Herbicide, DOW AgroSciences. Accessed at: http://www.cdms.net/LDat/mp77N002.pdf

MDAR, 2016. Assessment of Surfactants in Milestone Herbicide Formulation. Document for internal use.

[3] Surfactants in Milestone Herbicide