



Department of Pesticide Regulation



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Director

MEMORANDUM

Edmund G. Brown Jr.
Governor

TO: Dr. Marylou Verder-Carlos
Assistant Director
Pesticide Programs Division

HSM-16016
(No. assigned after issuance of memo)

FROM: Lisa Ross, Ph.D.
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[Original signed by L. Ross]

DATE: July 12, 2016

SUBJECT: COMPLETION OF CYCLOATE MITIGATION

This memorandum describes the findings of the Worker Health and Safety Branch (WHS) in regards to the need for mitigation of exposures to cycloate, a thiocarbamate herbicide.

In 1995, DPR's Risk Characterization Document (RCD) for cycloate (Meierhenry 1995) identified multiple exposure scenarios for cycloate handlers for which Margins of Safety (now called Margins of Exposure) were less than 100. DPR scientists determined that a combination of engineering controls, additional personal protective equipment (PPE), and work restrictions could adequately mitigate cycloate exposure for the scenarios of concern (Meierhenry 1995).

As of July 2016, there are three cycloate products with active California registrations (DPR 2016a):

- Ro-Neet Herbicide (EPA Reg. No. 74530-16);
- Ro-Neet 6-E Selective Herbicide (EPA Reg. No. 73637-5-74530); and
- Cycloate 6-E Selective Herbicide (EPA Reg. No. 73637-5).

WHS has reviewed the most recent DPR-approved product labels for these three products and determined that all have engineering control and PPE requirements, and California-only work restrictions, that adequately mitigate the exposure scenarios of concern, as summarized in Table 1 below. DPR first approved those cycloate label requirements in the early 2000's.

Although cycloate use in California has declined, cycloate continues to be used in production of spinach, beet, and certain other commodities (DPR 2016b). In 1995, the year of the RCD, reported use of cycloate was 49,138 pounds of active ingredient statewide. Ten years later, in 2005, reported use had dropped to 40,092 pounds. In 2014, the most recent year for which use statistics are available, cycloate use was 36,568 pounds, of which more than 90% was for spinach production (DPR 2016b).

Despite ongoing cycloate use, during the most recent 10 years for which illness statistics are available, 2004 through 2013, only one case of handler illness or injury associated with cycloate



was reported to DPR’s Pesticide Illness Surveillance Program (PISP). The illness in that one case cannot be attributed unequivocally to cycloate; according to the PISP narrative description, “an inadequately trained & equipped worker [handler] developed symptoms while applying a carbamate herbicide [cycloate] near a fumigation [field fumigation using 1,3-D plus chloropicrin]. . . . Some symptoms probably reflect fumigant irritation” (DPR 2016c).

Table 1. Summary of mitigation measures on California-only supplemental labels for cycloate products with active California registrations as of July 2016

| Mitigation measure | Requirement on the California-only supplemental label of: | | |
|--|--|--|---|
| | Ro-Neet Herbicide (EPA Reg. No. 74530-16) | Ro-Neet 6-E Selective Herbicide (EPA Reg. No. 73637-5-74530) | Cycloate 6-E Selective Herbicide (EPA Reg. No. 73637-5) |
| Engineering controls | <ul style="list-style-type: none"> Mixers and loaders must use a closed system Applicators must use motorized ground equipment that is equipped with an enclosed cab | | |
| Additional PPE that was not required at time of 1995 RCD | <ul style="list-style-type: none"> Chemical-resistant apron when mixing and loading [in addition to closed system] Respiratory protection (NIOSH-approved respiratory cartridge) for mixer/loaders and applicators | | |
| Work restrictions | For California only: mixers, loaders, applicators, and other handlers are prohibited from handling more than 93 gallons (560 pounds active ingredient) in any 21-day period. | | |
| Record-keeping to support work restrictions | For California only: property operators must include in their Pesticide Use Records the name of the person(s) that handled the product for each application | | |

Given that all currently-registered cycloate products have label restrictions that adequately address the exposure scenarios of concern (Meierhenry 1995), and given the low number of reports of cycloate-related illness during the past 10 years, WHS finds that there is no need for further mitigation action for cycloate. Your approval of this conclusion is requested.

cc: Kevin Solari, Environmental Program Manager I, WHS Branch

APPROVAL

[Original signed by M. Verder-Carlos]
 Marylou Verder-Carlos, Assistant Director

July 15, 2016
 Date

REFERENCES

- DPR (California Department of Pesticide Regulation). 2016a. *California Product / Label Database Queries & Lists*. California Department of Pesticide Regulation, California Environmental Protection Agency, Sacramento, CA. Available at: <http://www.cdpr.ca.gov/docs/label/labelque.htm> (accessed July 6, 2016).
- DPR (California Department of Pesticide Regulation). 2016b. *California Pesticide Information Portal (CALPIP), Pesticide Use Report Database*. California Department of Pesticide Regulation, California Environmental Protection Agency, Sacramento, CA. Available at: <http://calpip.cdpr.ca.gov/main.cfm> (accessed July 6, 2016).
- DPR (California Department of Pesticide Regulation). 2016c. *California Pesticide Illness Query (CalPIQ)* [Online]. California Department of Pesticide Regulation, California Environmental Protection Agency, Sacramento, CA. Available at http://apps.cdpr.ca.gov/calpiq/calpiq_input.cfm (accessed July 6, 2016)
- Meierhenry, E.F. 1995. *Cycloate (Ro-Neet) Risk Characterization Document*. Medical Toxicology and Worker Health and Safety Branches, California Department of Pesticide Regulation, California Environmental Protection Agency, Sacramento, CA. Available at: <http://www.cdpr.ca.gov/docs/risk/rcd/cycloate.pdf> (accessed July 6, 2016).