



Karen Morrison
Director

Department of Pesticide Regulation

Gavin Newsom
Governor

Yana Garcia
Secretary for
Environmental Protection

MEMORANDUM

TO: Jagjinder Sahota
Environmental Program Manager II
Chief, Worker Health and Safety Branch

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VIA: Ann Schaffner
Environmental Program Manager I
Worker Health and Safety Branch

Ann Schaffner

FROM: Rach Pitts
Environmental Scientist
916-445-4201

Rach Pitts

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SUBJECT: PROPARGITE MITIGATION STATUS UPDATES

Overview

Propargite is an organosulfite miticide/acaricide that activates on contact to control spider mites. The mode of action involves inhibition of magnesium-stimulated ATPase. One of its primary mechanisms of toxicity in mammals is as a local irritant to site of contact. Propargite is also listed under Proposition 65 as a carcinogen and reproductive toxicant (OEHHA, 2025). There are currently eight actively registered products in California (Table 1). Propargite has been identified by both the Department of Pesticide Regulation (DPR) and the United States Environmental Protection Agency (U.S. EPA) as having human health exposure scenarios of concern. The purpose of this memorandum is to provide an updated assessment of propargite use, illness data, label review, and applicable regulations, as well as review U.S. EPA's mitigation actions and determine whether they address DPR's exposure risk findings.

Propargite Use and Sales

Propargite is used on a variety of crops, with corn, walnuts, and almonds having the highest recorded use. According to the California Pesticide Use Report (PUR), for the past ten years the total use of propargite, as the active ingredient (AI) of the total product, is 2,062,403 lbs. (Table 1). Propargite use has decreased about 50% over the past ten years, with 140,595 lbs. reported in 2023 (the most recent year available) compared to 246,496 lbs. reported in 2014 (Figure 1) (DPR, 2025a).

According to public records available through the Mill Assessment¹, a total of 2,323,742 lbs. were sold between 2014 and 2023 (Table 1). Sales of propargite fluctuated during this time

¹ The Mill Assessment is a self-reporting system based on monthly submitted sales data from registrants, pesticide brokers, and pest control dealers. Therefore, the data from the mill assessment may not align with pesticide use reporting.

period (DPR, 2025b). Records indicate the lowest sold is 52,672 lbs. in 2014 (DPR, 2025c) and the highest amount sold is 251,930 lbs. in 2018. Reported sales fluctuated from 2014 to 2020 and followed by a steady decrease to 69,717 lbs. by 2023 (Figure 2).

Figure 1. Total annual use and sales (lbs. AI) of propargite in California from 2014 to 2023 (DPR, 2025a; DPR, 2025b; DPR, 2025c)

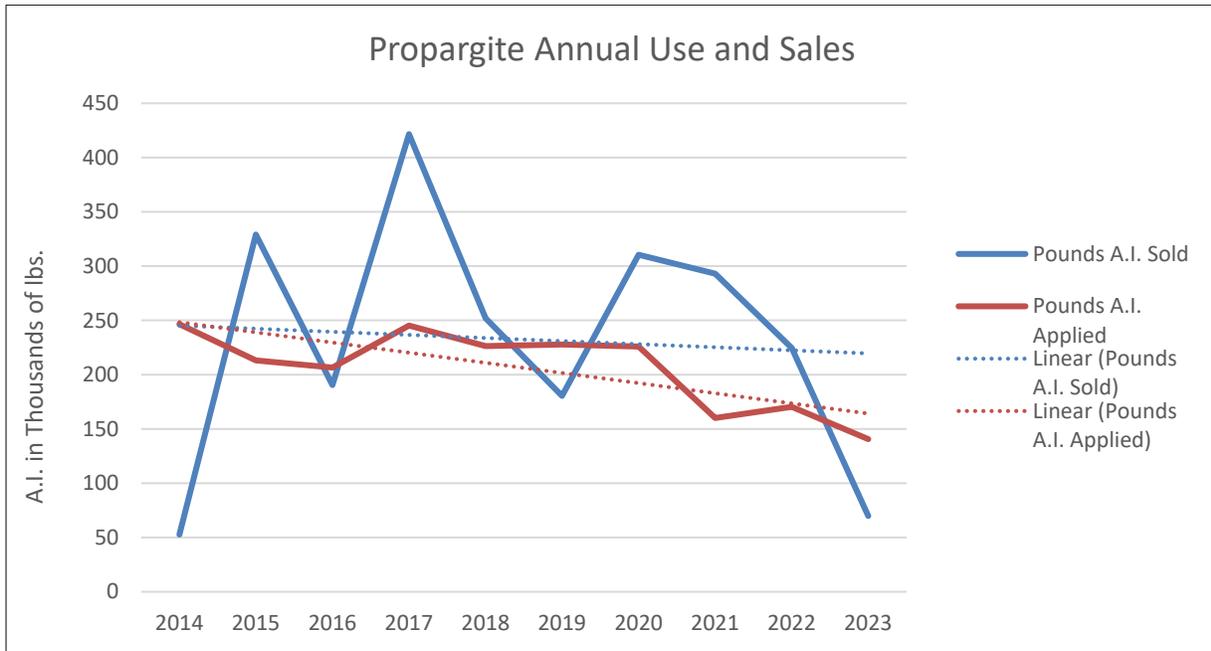
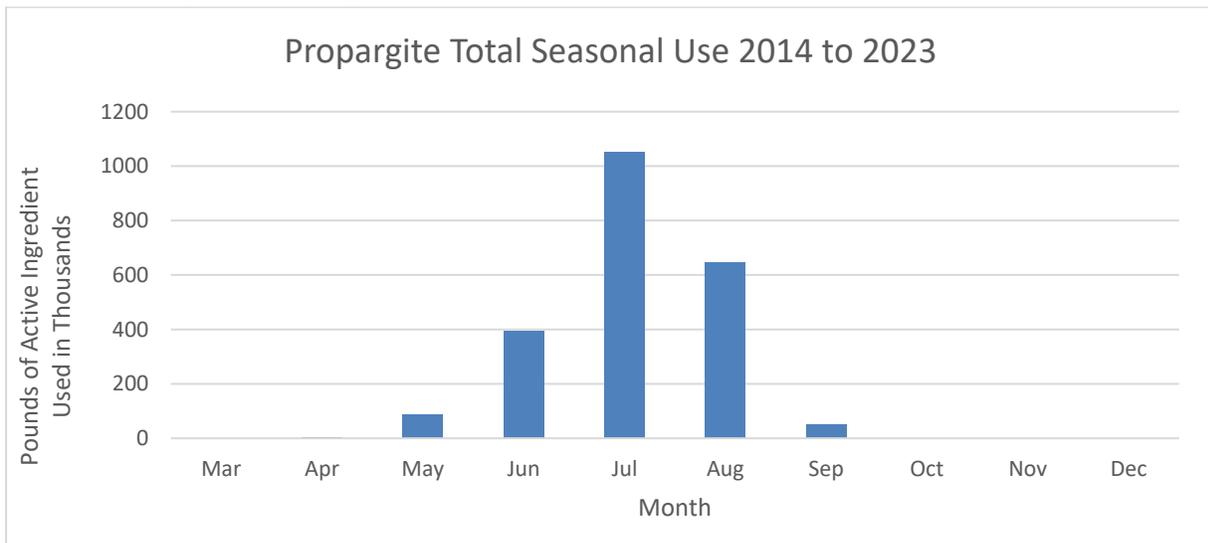


Table 1. Total annual use and sales (lbs. AI) of propargite in California from 2014 to 2023 (DPR, 2025a; DPR, 2025c)

Year	Total lbs. of AI Applied	Total lbs. of AI Sold
2014	246,496	52,672
2015	213,205	298,361
2016	206,503	58,461
2017	245,228	184,813
2018	226,375	95,234
2019	227,820	26,669
2020	225,843	82,591
2021	160,048	125,333
2022	170,289	224,582
2023	140,595	69,717
Grand Total	2,062,403	2,323,742

DPR defines the length of the pesticide use season as the number of consecutive months with AI use at or above 5% of the total annual pesticide use (Beauvais, 2014). The seasonal use of propargite is between May and August (Figure 2) (DPR, 2025a).

Figure 2. Total use (lbs. AI applied) of propargite by month (seasonal use) in California from 2014 to 2023 (DPR, 2025a).



Illness Review

Between 2015 and 2022 (most recent data available), the Pesticide Illness Surveillance Program reported 5 episodes resulting in 12 cases of human health exposure linked to propargite. In 2015, an irrigation worker experience pesticide exposure from water residue. In 2016, two applicators were exposed while using an airblast sprayer. One of the applicators experienced direct spray and showed symptoms of minor eye damage the following day. In 2018, an episode involved seven workers at a nut processing facility who may have come into contact with propargite (along with other pesticides) from offsite applications. In 2020, a worker mixing pesticides and fertilizer in the field was directly sprayed in abdomen and genital area. He washed off immediately but presented symptoms two weeks later. In 2021, a worker was repairing a 400-gallon mixing tank without wearing a respirator and inhaled fumes from inside the tank.

Reported cases were primarily due to offsite movement of the pesticide. Symptoms from the reported cases included nausea, vomiting, headache, dizziness, body aches, abdominal cramping, itchiness, and eye irritation. (DPR, 2025d).

Label Review and California Regulations on Propargite Use

There are currently eight registered products containing propargite (Table 2), seven of which are formulated as emulsifiable concentrates (liquids) and one that is a wettable powder (solid).

Table 2. California-registered products containing propargite (actively registered as of the date of publication)

Product Name	Registration Number	Registrant	AI %	Pesticide Formulation
Mitomax 6EC	2749-578-AA	Aceto Life Sciences, LLC, D/B/A Actylis	67.76	Emulsifiable concentrate
Decimite	91234-33-AA	Atticus, LLC	69.60	Emulsifiable concentrate
Endomite	91234-33-ZA	Atticus, LLC	69.60	Emulsifiable concentrate
Victimite	91234-33-AA-89391	Innvictis Crop Care, LLC	69.60	Emulsifiable concentrate
Cymyte II	34704-1132-AA	Loveland Products, Inc.	69.60	Emulsifiable concentrate
Comite	70506-566-AA	UPL NA Inc.	73.60	Emulsifiable concentrate
Omite-6E	70506-564-AA	UPL NA Inc.	69.20	Emulsifiable concentrate
Omite-30WS	70506-572-AA	UPL NA Inc.	32.00	Wettable powder

Section 6738.1 of Title 3 of the California Code of Regulations (3 CCR) applies to all pesticides. Employees "...must wear protective eyewear and chemical-resistant gloves when mixing loading applying pesticides by hand or ground rig and when exposed to equipment containing or contaminated by pesticides." All labels have the signal word of Danger or Poison/Danger. According to 3 CCR section 6738.1(e), employees handling these pesticides must use coveralls. This requirement is also on the labels.

Given that all propargite product labels contain "Corrosive, causes skin burns" or similar language, they fall under 3 CCR section 6746(c), which states that employees who mix liquid pesticides bearing statement "corrosive, causes skin damage" or other comparable language shall use a closed system that is capable of enclosing pesticide while removing contents from original container preventing pesticide from contacting handlers. Omite-30WS is formulated in a water-soluble packet and meets the requirement for a closed system.

Since mixer/loaders must use a closed system, according to 3 CCR section 6738.4(c), the following requirement would also apply.

“Protective eyewear, coveralls, chemical-resistant gloves, and a chemical-resistant apron may be worn instead of personal protective equipment required by pesticide product labeling when using a closed system to handle pesticide products with the signal word ‘DANGER’ or ‘WARNING.’”

Under 3 CCR section 6790, propargite is a minimal exposure pesticide. Therefore, those handling propargite must use coveralls (3 CCR section 6793(c)) and must wear chemical-resistant (CR) aprons, protective eyewear, CR gloves, and CR boots (3 CCR section 6793(d)(1)).

All mixer/loaders using products containing propargite require a minimum of:

- coveralls over long-sleeved shirt and long pants
- goggles, face shield or safety glasses
- CR footwear and socks
- CR gloves
- CR aprons
- closed system

Under 3 CCR section 6793(d)(1)), mixer/loaders must also wear CR boots. When mixer/loaders use a closed system, they can elect to substitute or exempt some of the required personal protective equipment (PPE) on the label per 3 CCR section 6738.4(c). However, a respirator and overhead gear must be available in a CR container at the worksite when workers are using products with labels that include the aforementioned PPE for mixer/loaders.

Applicators using products containing propargite must wear a minimum of:

- coveralls over long -sleeved shirt and long pants
- goggles, face shield or safety glasses
- CR footwear and socks
- CR gloves
- CR aprons
- CR headgear when there is a potential for overhead exposure, and
- respirator with organic vapor removing cartridge when required by label (Mitomax 6EC, Endomite, Decimite, Victimite, and Cymyte II)

Post-application restricted entry intervals (REIs) on the label range from 13 to 30 days, depending on the task and crop. Propargite also has California-specific REIs established in 3 CCR section 6772, which are different from those on the federal label:

- Apples: REI=21 days
- Citrus: REI=42 days
- Corn and cotton*: REI=7 days
- Grapes: REI=30 days
- Peaches and nectarines: REI=21 days
- Strawberries and field-grown roses**: REI=3 days
- All other crops: REI=21 days

*Minimum REI on current labels is 13 days for products permitted on corn.

**Minimum REI on current labels is 10 days for strawberries (non-bearing use only) and 14 days for roses.

Review of DPR's Risk Assessment

DPR Human Health Assessment Branch released its Risk Characterization Document (RCD) for propargite in 2004, which evaluated risk to human health due to dietary and drinking water exposure (Lewis, 2004). DPR released an exposure assessment in 2013, based on these initial findings (Dong, 2013). In 2014, DPR released a follow-up RCD, which evaluated occupational and ambient air exposures and identified exposures of concern for applicators, fieldworkers, and bystanders (Lewis et al, 2014).

In 2020, DPR published a memorandum that updated the reference concentrations for inhalation exposure to a standard 8-hour occupational workday (Lewis et al, 2020). DPR published another memorandum in 2021 to update exposure estimates to incorporate regulatory requirements for minimal exposure pesticides. DPR used an acute point of departure (POD) of 0.8 mg/kg/day, based on the No Observed Effect Level (NOEL) and adjusted for 17% dermal absorption and 100% for inhalation, the most sensitive toxicological endpoints (Kwok and Reeve, 2021).

DPR assesses exposure scenarios by determining the ratio of each short-term absorbed daily dosage (STADD) against the POD to give an estimated margin of exposure (MOE) (Kwok and Schaffner, 2019). In this case, the target MOE is 100, which reflects a 10-fold uncertainty factor for intraspecies variation and an additional 10-fold uncertainty factor for interspecies variation. Occupational scenarios with MOEs that are below the target MOE of 100 are identified as scenarios of concern. Using these criteria for systemic toxicology, DPR identified 13 acute handler (Table 3) and 19 acute re-entry scenarios of concern (Table 4) (Kwok and Reeve, 2021). This includes mixer/loaders for aerial and airblast application methods with water-soluble bag and liquid formulations, applicator for aerial and airblast application methods, and mixer/loader/applicators for high pressure, low pressure, and backpack sprayer. The RCD also identified

scenarios of concern for seasonal and chronic exposures, many of which correspond to identified acute exposure scenarios of concern. The RCD further identified cancer risks to occupational handlers and reentry workers.

Table 3. Highest handler STADDs with corresponding MOEs for systemic toxicity below the target MOE (Kwok and Reeve, 2021)

Handler Type ^a	Application Method ^a	STADD ^b (mg/kg/day)	MOE ^c (Target=100)
Mixer/Loader	Groundboom (closed system, liquids, w/ gloves)	0.039	20.7
	Groundboom (water-soluble bags w/ gloves)	0.019	42.6
	Aerial (closed system, liquids, w/ gloves)	0.232	3.4
	Aerial (water-soluble bags w/ gloves)	0.066	12
	Airblast (closed system, liquids, w/ gloves)	0.01	82.1
Applicator	Groundboom (open cab, w/ gloves)	0.068	12.2
	Aerial (open cockpit)	0.632	1.3
	Airblast (open cab, w/ gloves)	0.465	1.7
Flagger	(liquids)	0.14	5.7
Mixer/Loader/ Applicator	High-Pressure Handwand M/L/A (open pour liquid M/L)	0.691	1.2
	Low-Pressure Handwand M/L/A (open pour liquid M/L)	0.015	55
	Backpack M/L/A (open pour liquid M/L)	0.015	55

^a The handler and application method relates to the Pesticide Handler Exposure Database (PHED) exposure data for the head, hands, arms, legs, and torso were obtained from patch dosimeters located underneath the long-sleeved shirt, long pants, and gloves worn by the handler. Exposures were adjusted for the use of additional required PPE.

^b The STADD value for each exposure scenario was generated using the associated PHED data subset short-term exposure rate in µg/lb. of AI handled (Beauvais et al, 2007), the maximum product label application rate, the absorption factor (17% for dermal and 100% for inhalation), (Dong, 2013; Beauvais, 2008), the number of acres treated/day (U.S. EPA, 2001), and the body weight (70 kg) (U.S. EPA, 1997). Each STADD value was rounded to 3 decimal places: STADD = STADD (dermal route of exposure) + STADD (inhalation route of exposure)

^c MOE = Acute oral systemic POD (0.8 mg/kg/day) ÷ STADD (mg/kg/day); target MOE = 100 (Lewis et al, 2020).

Table 4. Reentry worker short-term absorbed daily dosages (STADDs) with corresponding MOEs<100 (Kwok and Reeve, 2021)

Crop Group ^a	Reentry Activity ^b	Reentry Interval (REI)	Pre-Harvest Interval (PHI)	STADD ^c	MOE (Target=100) ^d
Field/Row (sweet corn)	Scouting	13	-	0.012	67
	Irrigation (hand-set)	13	-	0.021	39
	Detasseling	13	-	0.095	8
	Harvesting (hand)	-	30	0.035	23

Crop Group ^a	Reentry Activity ^b	Reentry Interval (REI)	Pre-Harvest Interval (PHI)	STADD ^c	MOE (Target=100) ^d
Field/Row (beans)	Irrigation (hand-set)	21	-	0.012	64.9
Nut Trees (almond)	Scouting	21	-	0.013	64
Bunch/Bundle (hops)	Irrigation (hand-set)	21	-	0.017	47
	Harvesting (mechanically assisted)	-	21	0.013	63
Fruit Trees (dates)	Hand-pruning	21	-	0.018	43
	Dethorning trees	21	-	0.018	43
Vine/Trellis (table grapes)	Leaf Pulling	30	-	0.02	39
	Tying/Training	30	-	0.02	39
	Girdling	30	-	0.072	11
	Turning	30	-	0.072	11
	Harvesting (hand)	-	30	0.02	39
Berry, low (blueberries, low bush)	Scouting	21	-	0.013	63
	Irrigation (hand-set)	21	-	0.021	36
Evergreen Trees (Christmas trees)	Hand-pruning/shaping	21	-	0.016	52
	Scouting	21	-	0.016	52
	Irrigation (hand-set)	21	-	0.051	16
Flowers, cut (roses, field grown)	Irrigation (hand-set)	14	-	0.027	30

^a The transfer coefficient (TC) and dislodgeable foliar residue (DFR) values for a given activity and representative crop were incorporated into the following formula developed by Zweig et al. (Zweig et al., 1984; Zweig et al., 1985). The ADD is the absorbed daily dosage:

$$ADD (\mu\text{g}/\text{kg}/\text{day}) = \frac{DA \times DFR \left(\frac{\mu\text{g}}{\text{cm}^2}\right) \times TC \left(\frac{\text{cm}^2}{\text{hour}}\right) \times ED \left(\frac{\text{hours}}{\text{day}}\right)}{BW(\text{kg})}$$

The assumed exposure duration (ED) is 8 hours, the dermal absorption (DA) rate is 17.2%, and the adult bodyweight is 70 kg (U.S. EPA, 1997). Crop group terminology and TC values were obtained from U.S. EPA's Scientific Advisory Panel for Exposure (ExpoSAC) Policy 3 document (U.S. EPA, 2017). The specific crop in parenthesis underneath the group is the only product label crop in the group or the crop with the highest associated reentry worker exposure estimates. If the worker reenters the treated field post-REI, no PPE is required. Hence, protection factors were not incorporated into the exposure estimates. The STADD values were rounded to 3 decimal places.

^b Reentry activity: activities carried out by workers reentering the treated field immediately after the REI.

^c For the STADD, the DFR value is adjusted to the maximum product label application rate.

^d MOE = Acute oral systemic POD (0.8 mg/kg) ÷ STADD (mg/kg); target MOE=100.

In addition to systemic toxicity, propargite has a dermal irritation toxicity that may have localized effects. The RCD identified the estimated NOEL to be 0.7 mg/cm² based on erythema seen in rabbits in the first 6 hours of the dermal toxicity study. For calculating MOEs, DPR used Pesticide Handler Exposure Database (PHED) values for individual body parts and estimated surface area based on the Exposure Factors Handbook (U.S. EPA 1997). Analyzing available studies at the time of publication, resulted in target MOE 30. Rabbits are more sensitive to dermal irritation, so the intraspecies uncertainty factor (UF) is 3 (Kwok and Reeve 2021) and the interspecies UF is 10. The following five occupational scenarios have exposure risk for dermal irritation: mixer/loaders for aerial application methods, applicators for aerial and airblast application methods, flaggers, and mixer/loader/applicators for high-pressure handwands (Table 5). For reentry workers, the only activity with an MOE below 30 is hand-harvesting jojoba (Table 6). The RCD also identified scenarios of concern for seasonal and chronic exposures, many of which correspond scenarios of concern identified from acute exposure.

Table 5. Handler scenarios and localized dermal area with corresponding MOEs<100 (Kwok and Reeve, 2021)

Handler Type ^a	Application Method ^a	Patch location ^a	MOE (Target=30) ^b
Mixer Loader	Aerial (closed system, liquids, w/ gloves)	Hands (w/ gloves)	10.8
Applicator	Aerial (liquid, open cockpit)	Hands (w/ gloves)	6
		Head (all)	18.9
	Airblast open cab, w/ gloves)	Head (all)	5.1
Flagger	(liquids)	Hands (w/ gloves)	28
Mixer/Loader/ Applicator	High-Pressure Handwand M/L/A (open pour liquid M/L)	Hands (w/ gloves)	4
		Head (all)	12

^a The handler and application method relates to the PHED (Beauvais et al, 2007) exposure data for the head, hands, arms, legs, and torso were obtained from patch dosimeters located underneath the long-sleeved shirt, long pants, and gloves worn by the handler. Exposures were adjusted for the use of additional required PPE.

^b MOE = Acute local dermal POD (0.7 mg/cm²) ÷ surface concentration in mg/cm²; target MOE = 30 (Lewis, 2020).

Table 6. Reentry worker localized dermal area and associated dermal toxicity MOEs<100 (Kwok and Reeve, 2021)^a

Crop	Reentry Activity ^b	Body Part ^c	REI	MOE ^d (Target=30)
Jojoba	Hand-harvesting	Hands	16	14.1

^a Dermal irritation acute adjusted NOEL is 0.7 mg/cm² (Lewis, 2020)

^b Reentry activity: activities carried out by workers reentering the treated field immediately after the REI.

^c Body part relates to default surface area Exposure Factor Handbook (US EPA 1997)

^d MOE = Acute local dermal POD (0.7 mg/cm²) ÷ surface concentration in mg/cm²; target MOE = 30.

DPR determined that acute, seasonal, and chronic MOEs for bystander inhalation exposures near the application site exceed the target MOE of 100. DPR also found that the aggregate MOEs for the general public from dietary, drinking water, and ambient air exposure exceed 100. All scenarios of concern consist of occupational exposure risk from systemic toxicity and dermal sensitivity in acute, seasonal, and chronic exposures.

Review of U.S. EPA's Risk Assessment

In 2019 U.S. EPA completed the Draft Propargite Human Health Risk Assessment in Support of Registration Review (Drew et al, 2019). After responding to comments, U.S. EPA released a revised draft in April of 2021 (Drew et al, 2021). During this process, U.S. EPA identified human health risks of concern for multiple occupational handler exposures and post-application occupational activities, as well as cancer risks for certain dietary exposures and certain occupational handler exposures. In response to these findings, U.S. EPA released the Proposed Interim Registration Review Decision (PID) (U.S. EPA, 2021). As U.S. EPA and DPR sometimes differ in categorizing scenarios and assessment protocol for toxicological, the results of risk assessment may differ between agencies. For example, U.S. EPA tends to use No Observed Adverse Effect Level (NOAEL). For assessing acute exposure, U.S. EPA used 4 mg/kg/day as the POD and 14.8% dermal absorption. U.S. EPA also employed a Human Equivalent Dose of 8.76 mg/kg/day based on lowest observable adverse effect concentration of 0.31 mg/L (Drew et al, 2019). Because the baseline figures differ between agencies, the various mitigation measures proposed by U.S. EPA do not adequately address all exposure scenarios of concern identified by DPR. U.S. EPA's measures include prohibiting propargite use on hops and ornamentals to address the human health risks and dietary exposure concerns, as well as prohibiting or restricting certain application methods affecting aerial application, chemigation, airblast sprayers, and handguns. U.S. EPA has further proposed additional restriction for remaining uses and applications methods including additional PPE, engineering controls, and revised REIs for certain activities to address occupational exposures.

U.S. EPA Proposed Mitigation for Occupational Scenarios (U.S. EPA, 2021)

Mixer/Loaders

To address risks to mixer/loaders, U.S. EPA proposed to prohibit the use of liquids for aerial application. These mitigation measures focused on addressing exposure concerns from applications to both typical and high acreage field crops. However, use on corn and cotton would be exempt from the prohibition as long as the product label requires engineering controls (Drew et al, 2021). Although California regulations already require mixer/loaders to use closed systems for propargite, U.S. EPA does not specify which engineering controls would be required on corn and cotton. Thus, it is unclear whether these exposures are sufficiently addressed (Lewis et al, 2014).

In addition to restricting use of liquids, U.S. EPA also proposed to prohibit the use of wettable powders for aerial application, which addresses DPR's concerns for the same scenario. This is the only scenario of concern specific to acute occupational exposure that is addressed by U.S. EPA's proposed changes.

Applicators

To address risks from airblast applications, U.S. EPA proposed to prohibit use of all propargite applications via airblast to orchard and vineyards. This prohibition is site-specific and does not explicitly prohibit airblast use in nurseries or fields. Although airblast applications are more common in orchards and vineyards, use in other agricultural sites is still allowed via regulation or label. Thus, the proposed prohibitions do not fully address applicator exposure concerns. U.S. EPA also proposed to add "double layer protection, gloves, (protection factor) PF10 respirators, and a chemical-resistant hat for airblast applications on orchards/vineyards" (U.S. EPA, 2021). However, given the existing additional PPE requirements for employees handling propargite products in California (3 CCR section 6793(c)), these proposed measures do not address the applicator scenarios of concern identified by DPR.

Flaggers

The PID did not include mitigation language that directly addresses the flagger occupational exposure scenario.

Mixer/Loader/Applicators

High-Pressure Handwand

U.S. EPA proposed to prohibit the use of liquids via mechanically pressurized handgun in nurseries, orchards/vineyards, and typical acreage crops, as well as prohibit wettable powders via mechanically pressurized handgun to orchards/vineyards and typical acreage crops. U.S. EPA defines mechanically pressurized handguns as equipment that applies solution "from a holding tank pressurized via electricity or fuel and released by wand or gun attached to the tank by a hose" (Tindall et al, 2019). DPR refers to this equipment as a high-pressure handwand. With regard to this equipment, the proposal suggests that only wettable powder applied via mechanically pressurized handgun (high-pressure handwand) would be permitted in nurseries. Given that there are additional potential site uses for mixer/loader/applicators using high pressure handwands, the proposed language would not address the exposure scenario of concern.

Low Pressure Handwand and Backpack Sprayer

U.S. EPA proposed to prohibit the use of liquids via handwands (which DPR specifically categorizes as low-pressure handwands) and backpacks in nurseries. U.S. EPA proposed to require gloves for uses that are still potentially permitted, such as application of liquids via low-pressure handwands and backpacks in orchards/vineyards and crops, as well as wettable powders using low-pressure handwands and backpacks sprayers for all application sites. CR gloves are already required when handling pesticides in California (3 CCR section 6738.1). Thus, these

proposed changes would not address the remaining permitted uses: low pressure handwands and backpack sprayers.

Table 7. Handler occupational scenarios of concern with MOE<100, as identified by DPR (Kwok and Reeve, 2021), and corresponding proposed changes from U.S. EPA’s PID (U.S. EPA, 2021)

Handler Type	Application Method	U.S. EPA Proposed Changes	Addresses Scenario of Concern?	Reason
Mixer/Loader	Ground boom (closed system, liquids, w/ gloves)	No proposed change	No	No change to MOE
Mixer/Loader	Ground boom (water soluble bags w/ gloves)	No proposed change	No	No change to MOE
Mixer/Loader	Aerial (closed system, liquids, w/ gloves)	Prohibit liquids for aerial application, except with corn and cotton with engineering controls (closed system requirements)	No (cotton & corn); Yes (all other crops)	CA regulations already mandate a closed system; no change in MOE for corn and cotton (scenarios in other crops addressed)
Mixer/Loader	Aerial (water soluble bags w/ gloves)	Prohibit wettable powders with aerial application	Yes	Scenario no longer permitted
Mixer/Loader	Airblast (closed system, liquids, w/ gloves)	Prohibit airblast application in orchard/vineyard	Yes (orchards/vineyards); No (all other use sites)	If airblast is used in other settings, MOE remains the same
Applicator	Groundboom (open cab, w/ gloves)	No proposed change	No	No change to MOE
Applicator	Aerial (open cockpit)	Prohibit liquids and wettable powders with aerial application, except for corn and cotton (liquid only) with engineering controls (closed system requirements)	No (cotton & corn); Yes (all other crops)	CA regulations already mandate a closed system; no change in MOE for corn and cotton (all other crops addressed)
Applicator	Airblast (open cab, w/ gloves)	Prohibit airblast application in orchard/vineyard Require double layer protection, gloves, PF10 respirators and CR hat	Yes (orchards/vineyards); No (all other use sites)	If airblast is used in other settings, MOE remains the same. CR hat not currently required in CA but will not sufficiently raise MOE to 100

Handler Type	Application Method	U.S. EPA Proposed Changes	Addresses Scenario of Concern?	Reason
Flagger	(liquids)	Prohibit liquids and wettable powders with aerial application, except for corn and cotton (liquid only) with engineering controls (closed system requirements)	No (cotton & corn); Yes (all other crops)	No change in MOE for corn and cotton (all other crops addressed)
Mixer/Loader/ Applicator	High-pressure handwand M/L/A (open pour liquid M/L)	Prohibit liquids via mechanically pressurized handgun in nurseries, wettable powders and liquids via mechanically pressurized handgun to orchard and vineyards, and wettable powders via mechanically pressurized handgun to typical acreage	No (wetable powders in nurseries); Yes (all other formulations/ use sites)	No change in MOE for high-pressure handwand with wettable powder in nurseries
Mixer/Loader/ Applicator	Low-pressure handwand M/L/A (open pour liquid M/L)	Prohibit liquids via backpack, mechanically pressurized handgun and handwand in nurseries Require gloves (in addition to long sleeves, long pants, shoes, socks, & coveralls)	No (orchards/ vineyards); Yes (all other use sites)	No change in MOE in orchards/ vineyards and fields Proposed PPE is already a requirement in CA
Mixer/Loader/ Applicator	Backpack M/L/A (open pour liquid M/L)	Prohibit liquids via backpack, mechanically pressurized handgun and handwands in nurseries	No (orchards/ vineyards & fields); Yes (all other use sites)	No change in MOE in orchards/ vineyards and fields

Reentry Workers

U.S. EPA proposed to revise the REI from 9 days to 10 days for dry beans for irrigation activities. However, California has its own REI requirements for propargite in 3 CCR section 6772. Dry beans fall under the “other crops” category, which has a standard REI of 21 days. U.S. EPA also proposes to revise the current REI for certain reentry tasks in grapes. Currently, Omite-30WS is the only propargite product permitted for use on grapes. The label requires an REI of 21 days for harvesting, 27 days for table grape cane turning, and 16 days for all other reentry activities. U.S. EPA proposed to change the REI to 24 days for the following activities on grapes: girdling, turning, tying/training, and hand harvesting. However, as California already has an REI of 30 days for all reentry activities associated with grapes, U.S. EPA’s change does not address the outstanding scenarios of concern. Only reentry activities for hops, ornamentals (including cut flowers), and evergreen trees would be addressed because U.S. EPA proposes to prohibit the use of propargite on those crops (Table 8). All other activities still have low MOEs for seasonal and chronic exposures.

Table 8. Reentry activity scenarios of concern with MOEs<100, as identified by DPR (Kwok and Reeve, 2021), and corresponding proposed changes from U.S. EPA’s PID (U.S. EPA, 2021)

Crop Group	Reentry Activity	U.S. EPA Proposed Changes	Addresses Scenario of Concern?
Field/Row (sweet corn)	Scouting	No proposed change	No
	Irrigation (hand-set)		No
	Detasseling		No
	Harvesting (hand)		No
Field/Row (beans)	Irrigation (hand-set)	Change REI to 10 (Federal is currently 9 days, CA is 21 days)	No
Nut Trees (almond)	Scouting	No proposed change	No
Bunch/Bundle (hops)	Irrigation (hand-set)	Prohibit use on hops	Yes
	Harvesting (mechanically assisted)		Yes
Fruit Trees (dates)	Hand-pruning	No proposed change	No
	Dethorning trees		No
Vine/Trellis (table grapes)	Leaf pulling	No proposed change	No
	Tying/training	Change REI to 24 days (federal is currently 16-27 days, CA is 30 days)	No
	Girdling		No
	Turning		No
	Harvesting (hand)	No proposed change	No
Berry, low (blueberries, low bush)	Scouting	No proposed change	No
	Irrigation (hand-set)		No
Evergreen Trees (Christmas trees)	Hand-pruning/shaping	Prohibit use on ornamentals	Yes
	Scouting		Yes
	Irrigation (hand-set)		Yes
Flowers, cut (roses, field grown)	Irrigation (hand-set)	Prohibit use on ornamentals	Yes

Updated Proposals and Action Steps

On July 8, 2024, U.S. EPA implemented an early mitigation step by requesting registrants to prohibit ornamental use on the label. This initial step for label amendment resulted from a meeting between U.S. EPA and the technical registrants of propargite-containing products on November 3, 2020. Registrants identified uses with low or no usage for removal from the label to refine the drinking water assessment, which in turn would help address the cancer dietary risks of concern. (U.S. EPA, 2024). Registrants have begun submitting labels with the agreed upon changes. However, the language from the PID has not been included in these changes. The 13 occupational handler and 15 reentry worker exposure scenarios of concern remain unaddressed following the proposed removal of ornamental uses from the label.

Conclusions

U.S. EPA identified mitigation measures to address multiple occupational handler and reentry worker exposure concerns from propargite use. Although exposures for mixer/loaders using water soluble bags for aerial application and reentry activities for certain crops were addressed by U.S. EPA's mitigation actions, DPR has identified the need for further mitigation for handlers applying via airblast, aerial, and high-pressure handwand, flaggers, mixer/loaders supporting groundboom and airblast applications, mixer/loaders using liquids in support of aerial applications, and certain reentry activities, based on systemic and local dermal effects from acute exposures and long-term systemic effects, including cancer risks, from seasonal and chronic exposures.

References

- Beauvais, S. 2014. Human Exposure Assessment Document for Carbaryl. HS-1788. Worker Health and Safety Branch. Department of Pesticide Regulation. California Environmental Protection Agency, Sacramento, CA. https://www.cdpr.ca.gov/wp-content/uploads/2024/10/carbaryl_final_ead_11-5-14_hs_1788.pdf.
- Beauvais, S., Powell, S., and Zhao, W. 2007. Surrogate Handler Exposure Estimates for Use in Assessments by the California Department of Pesticide Regulation. HS-1826. Worker Health and Safety Branch. Department of Pesticide Regulation. California Environmental Protection Agency, Sacramento, CA.
- Dong, M.H. 2013. Human Pesticide Exposure Assessment: Propargite. Revision No. 1. Medical Toxicology Branch, Department of Pesticide Regulation, California Environmental Protection Agency, Sacramento, CA.
- DPR. 2025a. California Pesticide Information Portal (CalPIP), 2014 – 2023. Pesticide Use Report Database. Department of Pesticide Regulation, California Environmental Protection Agency, Sacramento, CA. Accessed November 2025. <https://calpip.cdpr.ca.gov/main.cfm>.
- DPR. 2025b. Reports of Pesticides Sold in California, 2015 – 2023. Mill Assessment Program, Department of Pesticide Regulation, California Environmental Protection Agency, Sacramento, CA. Accessed November 2025. <https://www.cdpr.ca.gov/mill-assessment/#How-Does-Mill-Assessment-Work>.
- DPR. 2025c. Pesticides Sold in California, 2022 – 2023. Mill Assessment Program, Department of Pesticide Regulation, California Environmental Protection Agency, Sacramento, CA. Data supplied by Carolyn Luu, December 11, 2025.
- DPR. 2025d. California Pesticide Illness Query (CalPIQ), 1992 – 2022 [Online]. Pesticide Illness Surveillance Program Database. Department of Pesticide Regulation, California Environmental Protection Agency, Sacramento, CA. Accessed November 2025. https://apps.cdpr.ca.gov/calpiq/calpiq_input.cfm.
- DPR. 2021. Personal Protective Equipment (PPE) Requirements into Handler Exposure Estimates). Human Health Assessment Branch, Department of Pesticide Regulation, California Environmental Protection Agency, Sacramento, CA. https://www.cdpr.ca.gov/wp-content/uploads/2024/10/propargite_EAS_memo_september_2021.pdf.

- Drew, D., Hassan, U., Liccion, J., Nadrchal, D. 2019. Draft Human Health Risk Assessment in Support of Registration. Docket Number EPA-HQ-OPP-2014-0131-0051. Office of Chemical Safety and Pollution Prevention. United States Environmental Protection Agency, Washington, DC. <https://www.regulations.gov/document/EPA-HQ-OPP-2014-0131-0051>.
- Drew, D., Liccione, J., Nadrchal, D., 2021. Revised Draft Human Health Risk Assessment in Support of Registration. Docket Number EPA-HQ-OPP-2014-0131-0068. Office of Chemical Safety and Pollution Prevention. United States Environmental Protection Agency, Washington, DC. <https://www.regulations.gov/document/EPA-HQ-OPP-2014-0131-0068>.
- Kwok, E. and Schaffner, A. 2019. Developing Mitigation Margins of Exposure for Non Fumigant Pesticides with Threshold Effects. Human Health Assessment Branch, Department of Pesticide Regulation, California Environmental Protection Agency, Sacramento, CA.
- Kwok, E. and Reeve, I. 2021. Revised Memorandum on Recalculation of Short-Term Handler and Reentry Worker Exposure Estimates for Propargite and Calculation of the Corresponding Margins of Exposure for Purposes of Mitigation (Memorandum Revised to Incorporate 3 CCR 6793). Human Health Assessment Branch, Department of Pesticide Regulation, California Environmental Protection Agency, Sacramento, CA.
- Lewis, C.M. 2004. Propargite (Omite): Dietary Risk Characterization Document. Medical Toxicology Branch, Department of Pesticide Regulation, California Environmental Protection Agency, Sacramento, CA.
- Lewis, C.M., Aldous, C.N., and Dong, M.H. 2014. Propargite (Omite): Occupational, Ambient, and Aggregate Exposure Risk Characterization Document. Medical Toxicology Branch, Department of Pesticide Regulation, California Environmental Protection Agency, Sacramento, CA.
- Lewis, C.M., Lohstroh, P., and Koshlukova, S. 2020. Toxicity Endpoints, Critical Points of Departure, and Targets of Risk for Propargite. Human Health Assessment Branch, Department of Pesticide Regulation, California Environmental Protection Agency, Sacramento, CA.
- OEHHA. 2025. Safe Drinking Water and Toxic Enforcement Act of 1986, Proposition 65 List of Carcinogens or Reproductive Toxicants. Office of Environmental Health Hazard Assessment, California Environmental Protection Agency, Sacramento, CA. <https://oehha.ca.gov/sites/default/files/media/downloads/proposition-65/p65chemicalslist.pdf>.

Tindal, K., Chism, B., Meadows, S. 2019. Application Methods for Aquatic Applications of Herbicides and Estimates of Area Treated or Amount of Pesticide Handled. Docket Number EPA-HQ-OPP-2015-0591-0151. Office of Chemical Safety and Pollution Prevention. United States Environmental Protection Agency, Washington, DC. <https://www.regulations.gov/document/EPA-HQ-OPP-2015-0591-0151>.

U.S. EPA. 1997. Exposure Factors Handbook (1997, Final Report). Office of Research and Development. National Center for Environmental Assessment. U.S. Environmental Protection Agency, Washington, DC.

U.S. EPA. 2001. Policy Number 9.1 Regarding Standard Values for Daily Acres Treated in Agriculture. Science Advisory Council for Exposure. United States Environmental Protection Agency, Washington, DC.

U.S. EPA. 2021. Propargite Proposed Interim Registration Review Decision Case Number 0243. Docket Number EPA-HQ-OPP-2014-0131-0061. United States Environmental Protection Agency. Office of Pesticide Programs. <https://www.regulations.gov/document/EPA-HQ-OPP-2014-0131-0061>.

U.S. EPA. 2024. Pesticide Registration Review: Propargite Ornamental Cancellation and Prohibition Letters. Docket Number EPA-HQ-OPP-2014-0131-0079. Office of Chemical Safety and Pollution Prevention. United States Environmental Protection Agency, Washington, DC. <https://downloads.regulations.gov/EPA-HQ-OPP-2014-0131-0079/content.pdf>.