

Instead drinking water levels of comparison (DWLOCs) are calculated and used as a point of comparison against the model estimates of a pesticide's concentration in water. DWLOCs are theoretical upper limits on a pesticide's concentration in drinking water in light of total aggregate exposure to a pesticide in food, and from residential uses. Since DWLOCs address total aggregate exposure to pyriproxyfen they are further discussed in the aggregate risk in Unit III.E.

Pyriproxyfen is relatively long-lived in soil and water, with variable half-lives of approximately 2 weeks to 2 months. Pyriproxyfen is immobile, as indicated by the relative mobility scheme in Dragan (1998) for five soils and one sediment. The registrant determined the half-lives, 6.8 and 9 days, respectively, for the phenyl-label and pyridyl-label portions of pyriproxyfen. Since there is only one value, the longest half-life (9 days) was multiplied by 3 using EFED input guidance. Thus, the aerobic soil half-life in the modeling assessment was 27 days.

EPA determined that the residue of concern in water is pyriproxyfen *per se*. Drinking water estimates include surface water EDWCs based on the linked PRZM/EXAMS models and the SCI-GROW groundwater regression model, which was developed from studies with different hydrology and study conditions. Both models assumed a maximum seasonal application rate of 0.11 lb active ingredient (ai)/acre (A), 3 times per year (citrus and stone fruit).

Based on the PRZM/EXAMS model the EECs of pyriproxyfen for surface water was estimated to be 2.15 parts per billion (ppb) for the peak concentration, and 0.40 ppb for the long term average. Based on the SCI-GROW model the EECs of pyriproxyfen for groundwater was estimated to be 0.006 ppb for both the acute and chronic exposure.

3. *From non-dietary exposure.* The term "residential exposure" is used in this document to refer to non-occupational, non-dietary exposure (e.g., for lawn and garden pest control, indoor pest control, termiticides, and flea and tick control on pets).

Pyriproxyfen is currently registered for use on the following residential non-dietary sites: Flea and tick control (home environment and pet treatments) as well as products for ant and roach control (indoor and outdoor applications). Formulations include carpet powders, foggers, aerosol sprays, liquids (shampoos, sprays, and pipettes for pet treatments), granules, bait (indoor and outdoor), and impregnated materials (pet collars). There is a

potential for short-term dermal and inhalation exposures to pet owners and homeowners who apply products containing pyriproxyfen (handlers); however, EPA did not select short-term dermal or inhalation endpoints. Therefore, due to the lack of toxicity observed in animal testing, no residential pet owner/homeowner handler risk of concern is expected.

Toddlers could potentially be exposed to pyriproxyfen residues on treated carpets, floors, furniture, and pets. There is potential for exposure expected for the following scenarios:

i. *Hand-to-mouth.* Short-, intermediate-, and long-term hand-to-mouth exposures by toddlers from treated carpets, flooring (note the efficacy of carpet powders is approximately 365 days).

ii. *Hand-to-mouth.* Short- and intermediate-term hand-to-mouth exposures by toddlers from petting treated animals (shampoos, sprays, spot-on treatments, and collars). Long-term hand-to-mouth exposures by toddlers from petting treated animals (pet collars; note efficacy of pet collars up to 395 days).

iii. *Dermal.* Long-term dermal exposures from treated carpets, flooring, and pets (note that treated furniture is included in the carpet/flooring assessment). Due to the lack of toxicity observed in animal testing, the Agency did not select any short- or intermediate-term dermal endpoints and no dermal risk of concern for these durations is expected. A long-term dermal assessment is included, since EPA selected a long-term dermal endpoint.

iv. *Ingestion of granules or bait by toddlers (acute, episodic event).* For the granular ingestion scenario, it should be noted that the Agency believes that if a toddler were to be exposed to a pellet/granular formulation (i.e., ant bait), the event is most likely to be "episodic," that is, a one-time occurrence and not likely to be repeated. It is not likely that a toddler would repeatedly locate and ingest very small, sand colored granules. For pyriproxyfen, EPA did not select an acute dietary endpoint, since an appropriate endpoint could not be attributed to a single-oral dose; therefore, no acute dietary risk of concern is expected.

Exposure and risk estimates from post-application exposure to indoor crack and crevice treatments are not presented in this assessment, as indoor broadcast treatments (i.e., carpet powders and sprays) are anticipated to have a higher exposure potential. Additionally, the Agency acknowledges that pet owners could retreat the home

environment and/or the pet near the end of the efficacy period identified on the product labels. However, there are no chemical-specific residue data for pyriproxyfen to determine the dissipation rate of residues or whether residues may be additive upon retreatment. Therefore, a tier 1 assessment was performed based on day 0 residues without accounting for daily residue dissipation. EPA anticipates that this assessment is protective as pyriproxyfen residues would be expected to dissipate from day 0 residue values.

4. *Cumulative exposure to substances with a common mechanism of toxicity.* Section 408(b)(2)(D)(v) of the FFDCA requires that, when considering whether to establish, modify, or revoke a tolerance, the Agency consider "available information" concerning the cumulative effects of a particular pesticide's residues and "other substances that have a common mechanism of toxicity."

EPA does not have, at this time, available data to determine whether pyriproxyfen has a common mechanism of toxicity with other substances or how to include this pesticide in a cumulative risk assessment. Unlike other pesticides for which EPA has followed a cumulative risk approach based on a common mechanism of toxicity, pyriproxyfen does not appear to produce a toxic metabolite produced by other substances. For the purposes of this tolerance action, therefore, EPA has not assumed that pyriproxyfen has a common mechanism of toxicity with other substances. For information regarding EPA's efforts to determine which chemicals have a common mechanism of toxicity and to evaluate the cumulative effects of such chemicals, see the final rule for Bifenthrin Pesticide Tolerances (62 FR 62961, November 26, 1997).

D. Safety Factor for Infants and Children

1. *In general.* Section 408 of the FFDCA provides that EPA shall apply an additional tenfold margin of safety for infants and children in the case of threshold effects to account for prenatal and postnatal toxicity and the completeness of the data base on toxicity and exposure unless EPA determines that a different margin of safety will be safe for infants and children. Margins of safety are incorporated into EPA risk assessments either directly through use of a MOE analysis or through using uncertainty (safety) factors in calculating a dose level that poses no appreciable risk to humans.