

United States
Environmental Protection
Agency

Prevention, Pesticides
And Toxic Substances
(7508C)

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Report on FQPA Tolerance Reassessment Progress and Interim Risk Management Decision (TRED) for Trichlorfon

4. Residential Handler and Non-Occupational Risk

This section addresses residential risk associated with the use of trichlorfon. New data and methodologies are now available to assess these risk scenarios since the RED was completed in 1995.

Residents or homeowners may be exposed to a pesticide through mixing, loading, or applying, or through entering or performing other activities on treated areas. Residential handlers include homeowner applicators treating their own lawns. As mentioned above, trichlorfon exposure to adults and children also occurs from contact with treated lawns or other turf areas. Estimated risk for all of these potentially exposed populations is measured by a margin of exposure (MOE), which determines how close the occupational or residential exposure comes to a NOAEL.

a. Toxicity

All risk calculations are based on the most current toxicity information available for trichlorfon. The toxicological endpoints, and other factors used in the residential risk assessment for trichlorfon are shown in Table 5.

Table 5. Endpoints for Assessing Residential Risks for Trichlorfon

Endpoint	NOAEL mg/kg/day	Margin of Exposure and Uncertainty Factor	Study/Effect
Short/ Intermediate-Term Dermal	100	1,000 (residential) UF = 100 FQPA SF = 10x	21-day dermal (rabbit), RBC ChEI (MRIDs 0040369, 40306901)
Long-Term Dermal	A long-term exposure scenario is not expected based on the use patterns of trichlorfon.		
Inhalation Any time period	3.45 (0.0127 mg/L ^a)	1,000 (residential) UF = 100 FQPA SF = 10X	21-day inhalation (rats), RBC ChEI (MRID 00256446)

^a 3.45 mg/kg/day = NOAEL (0.0127 mg/l) x respiration rate of a young adult Wistar rat (8.46 L/hr) x study daily exposure duration (6 hr/day)/body weight of a young adult Wistar rat (0.187 kg).

b. Residential Handler and Lawn Care Operator Risks

Trichlorfon is also used on residential lawns and ornamentals. In determining the residential handler risks, the Agency assumed that homeowners wear only short sleeved shirts and short pants while applying trichlorfon to turf. The professional lawn care operator (LCO) treating residential lawns is assessed at baseline attire, which includes only long sleeved shirt, long pants, shoes and socks (no gloves or respirator). Residential handler exposure to trichlorfon residues via dermal and inhalation routes can occur during handling, mixing, loading, and applying activities. The endpoints for the short-term and intermediate term scenario durations are the same, so the actual time duration of the activity is unimportant in estimating the risk. The areas treated per day in this risk assessment were assumed to be 0.5 and 5 acres for turf broadcast applications for homeowners and LCOs, respectively. The resultant MOEs do not exceed the Agency's level of concern and can be found in Table 6 of this document.

Using the Pesticide Handler Exposure Database (PHED) data and preliminary information from the Occupational and Residential Exposure Task Force (ORETF), the Agency was able to assess risk to handlers loading/applying granules to residential lawns using a “push-type” broadcast spreader. The same assumptions are used to estimate exposures for the LCO and residential handler; therefore, exposure and combined MOEs for the professional LCO (Scenario 8) and residential handler are both presented in Table 6. For residential exposure and risk estimates, an uncertainty factor of 100 was used to account for inter-species extrapolation and intra-species variability, because the 10x FQPA safety factor was retained for the protection of infants and children. The target residential MOE is 1,000 (100 x 10x FQPA safety factor). Neither MOEs for residential handlers or LCOs exceed the Agency’s levels of concern.