

fate data suggest that sulfentrazone and 3-carboxylic acid sulfentrazone are persistent and mobile. Based on the structure similarity, 3-carboxylic acid sulfentrazone could potentially have similar toxicity as the parent.

The Agency lacks sufficient monitoring exposure data to complete a comprehensive dietary exposure analysis and risk assessment for sulfentrazone in drinking water. Because the Agency does not have comprehensive monitoring data, drinking water concentration estimates are made by reliance on simulation or modeling taking into account data on the physical characteristics of sulfentrazone.

The Agency uses the FQPA Index Reservoir Screening Tool (FIRST) or the Pesticide Root Zone Model/Exposure Analysis Modeling System (PRZM/EXAMS), to produce estimates of pesticide concentrations in an index reservoir. The Screening Concentrations in Ground Water (SCI-GROW) model is used to predict pesticide concentrations in shallow ground water. For a screening-level assessment for surface water EPA will use FIRST (a Tier 1 model) before using PRZM/EXAMS (a Tier 2 model). The FIRST model is a subset of the PRZM/EXAMS model that uses a specific high-end runoff scenario for pesticides. FIRST and PRZM/EXAMS incorporate an index reservoir environment, and both models include a percent crop area factor as an adjustment to account for the maximum percent crop coverage within a watershed or drainage basin.

None of these models include consideration of the impact processing (mixing, dilution, or treatment) of raw water for distribution as drinking water would likely have on the removal of pesticides from the source water. The primary use of these models by the Agency at this stage is to provide a coarse screen for sorting out pesticides for which it is unlikely that drinking water concentrations would exceed human health levels of concern.

Since the models used are considered to be screening tools in the risk assessment process, the Agency does not use estimated environmental concentrations (EECs) from these models to quantify drinking water exposure and risk as a %RfD or %PAD. 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 sulfentrazone, they are further discussed in the aggregate risk sections in Unit E.

Based on the FIRST and SCI-GROW models the EECs of sulfentrazone plus its major metabolite 3-carboxylic acid for acute exposures are estimated to be 35.8 parts per billion (ppb) for surface water and 26.0 ppb for ground water. The EECs for chronic exposures are estimated to be 7.8 ppb for surface water and 26.0 ppb for ground water.

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). Sulfentrazone is proposed for use on use on turf by professional lawn care operators as a broadcast spray at a maximum application rate of 0.03 lbs active ingredient. Based on the proposed use pattern, potential residential/non-occupational post-application exposures include the following: Short-term oral turfgrass exposure (toddler hand-to-mouth, object-to-mouth); short-term dermal turfgrass exposure (adult and toddler) and short-term dermal golfer exposure (adult and adolescent). Incidental ingestion of soil is assumed to be negligible. Exposure over intermediate-term (1-6 months) or long-term (chronic, more than 6 months) exposure is not expected. Homeowner handler exposure is not expected since sulfentrazone will be applied by professional lawn care operators.

4. *Cumulative effects from 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 sulfentrazone has a common mechanism of toxicity with other substances. Unlike other pesticides for which EPA has followed a cumulative risk approach based on a common mechanism of toxicity, EPA has not made a common mechanism of toxicity finding as to sulfentrazone and any other substances and sulfentrazone 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 sulfentrazone 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 policy statements released by EPA's Office of Pesticide Programs concerning common mechanism determinations and procedures for cumulating effects from substances found to have a common mechanism on EPA's website at <http://www.epa.gov/pesticides/cumulative/>.

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.

2. *Prenatal and postnatal sensitivity.* There is evidence of increased quantitative susceptibility following *in utero* exposure in the developmental-toxicity studies in rats via the oral and dermal routes, and there is evidence for increased qualitative susceptibility following prenatal and/or postnatal exposure in the 2-generation reproduction study in rats. A Degree of Concern Analysis was performed by EPA and it was concluded that concerns are low for the quantitative susceptibility of rat fetuses observed following oral and dermal exposures, the qualitative susceptibility of rabbit fetuses seen via the oral route, and the qualitative susceptibility seen in the 1- and 2-generation reproduction studies. The conclusion was based on the following:

- The dose-response was well characterized.
- There were clear NOAELs and LOAELs for developmental, offspring, maternal, and parental toxicities.
- The developmental effects in rabbits and the offspring effects in the rats were seen in the presence of maternal and parental toxicities, respectively.
- The parental reproductive and offspring effects were reproducible between the two reproductive studies.

3. *Conclusion.* There is a complete toxicity data base for sulfentrazone and