

TABLE 3.—SUMMARY OF TOXICOLOGICAL DOSE AND ENDPOINTS FOR IMAZAPYR FOR USE IN HUMAN RISK ASSESSMENT.—
Continued

Exposure Scenario	Dose Used in Risk Assessment, UF	Special FQPA SF* and Level of Concern for Risk Assessment	Study and Toxicological Effects
Short- and Intermediate- and Long-Term Dermal (1 to 30 days, 1 to 6 months, ≤6 months)	Oral study NOAEL= 250 mg/kg/day (dermal absorption rate = 100 %)	LOC for MOE =100 (Occupational) LOC for MOE =100 (Residential, includes the FQPA SF - At present time no residential uses)	1-Year Dog [feeding] Study No LOAEL was demonstrated with imazapyr at doses up to 250 mg/kg/day (HDT); HIARC recommended this dose for RA for imazapyr, based on skeletal muscle effects seen in dogs with structural analog imazapic.
Short- and Intermediate- and Long-Term Inhalation (1 to 30 days, 1 to 6 months, >6 months)	Oral study NOAEL= 250 mg/kg/day (inhalation absorption rate = 100%)	LOC for MOE =100 (Occupational) LOC for MOE =100 (Residential, includes the FQPA SF - At present time no residential uses)	1-Year Dog [feeding] Study No LOAEL was demonstrated with imazapyr at doses up to 250 mg/kg/day (HDT); HIARC recommended this dose for RA for imazapyr, based on skeletal muscle effects seen in dogs with structural analog imazapic
Cancer Risk	A quantitative cancer risk assessment is not required for imazapyr	N/A	2-Year Chronic [feeding] Toxicity/Carcinogenicity Study in Rats: Group E - "no evidence of carcinogenicity in at least 2 adequate animal tests in different species."

* The reference to the FQPA SF refers to any additional SF retained due to concerns unique to the FQPA.

C. Exposure Assessment

1. *Dietary exposure from food and feed uses.* Tolerances have been established (40 CFR 180.500) for the residues of imazapyr, in or on corn, field, forage; corn, field, grain; and corn field, stover at 0.05 ppm. Risk assessments were conducted by EPA to assess dietary exposures from imazapyr in food as follows:

i. *Acute exposure.* Quantitative acute dietary risk assessments are performed for a food-use pesticide if a toxicological study has indicated the possibility of an effect of concern occurring as a result of a one day or single exposure. No appropriate endpoint attributable to a single exposure was identified for imazapyr.

ii. *Chronic exposure.* In conducting this chronic dietary risk assessment the Dietary Exposure Evaluation Model (DEEM™) analysis evaluated the individual food consumption as reported by respondents in the USDA 1994–1996 nationwide Continuing Surveys of Food Intake by Individuals (CSFII) and accumulated exposure to the chemical for each commodity. The dietary exposure analysis assumed 100% crop treated tolerances and residues. Based on total food exposure for imazapyr, all population subgroups are below 1% cPAD (Chronic Population Adjusted Dose).

iii. *Cancer.* Imazapyr showed no evidence of carcinogenicity in at least 2 adequate animal tests in different species, and therefore, a quantitative cancer risk assessment was not performed.

2. *Dietary exposure from drinking water.* The Agency lacks sufficient monitoring exposure data to complete a comprehensive dietary exposure analysis and risk assessment for imazapyr 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 imazapyr.

The Agency uses the First Index Reservoir Screening Tool (FIRST) or the Pesticide Root Zone/Exposure Analysis Modeling System (PRZM/EXAMS), to produce estimates of pesticide concentrations in an index reservoir. The SCI-GROW model is used to predict pesticide concentrations in shallow groundwater. 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. While both FIRST and PRZM/EXAMS incorporate an index reservoir environment, the PRZM/EXAMS model includes 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 highly unlikely that drinking water concentrations would ever 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 imazapyr they are further discussed in the aggregate risk section E.

Based on the FIRST and SCI-GROW models the estimated environmental concentrations (EECs) of imazapyr for acute exposures are estimated to be 137 parts per billion (ppb) for surface water and 1,700 ppb for ground water. The EECs for chronic exposures are estimated to be 81 ppb for surface water and 1,700 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). Imazapyr is currently registered for use on the following residential sites that could