

TABLE 4.—AGGREGATE RISK ASSESSMENT FOR CHRONIC (NON-CANCER) EXPOSURE TO IMAZAPYR.—Continued

Population Subgroup	cPAD (mg/kg/day)	Chronic Food Exposure (mg/kg/day)	Maximum Chronic Water Exposure ¹ (mg/kg/day)	Ground Water EEC ² ppb	Surface Water EEC ² ppb	Chronic DWLOC ³ ppb
Adults (50+ years old)	2.5	0.000287	2.499	1,700	81	87,000

¹maximum water exposure (mg/kg/day) = cPAD (mg/kg/day) - food exposure (mg/kg/day)

²The crop producing the highest level was used.

³DWLOC calculated as follows: DWLOC = (maximum water exposure (mg/kg/day)) * (body weight (kg)) * (1,000 µg/mg)/water consumption (liter/day)

3. *Short-term risk.* Short-term aggregate exposure takes into account residential exposure plus chronic exposure to food and water (considered to be a background exposure level).

Imazapyr is currently registered for use that could result in short-term residential exposure and the Agency has determined that it is appropriate to aggregate chronic food and water and short-term exposures for imazapyr. Short-term aggregate risk assessments are required for adults as there is potential for both dermal and inhalation handler exposure, and dermal post-application exposure from the residential and recreational uses of imazapyr on turf and swimmer exposure. In addition, short-term aggregate risk assessments are required

for children and toddlers because there is a potential for oral and dermal post-application exposure resulting from the residential uses of imazapyr on turf and from swimming. The short-term residential handler scenario results in the highest exposure for adults. Therefore, for adults, the homeowner handler scenario was aggregated with the chronic dietary food exposure for the U.S. General population. The swimmer scenario resulted in the highest exposure for toddlers and children. Therefore, the swimmer scenario exposure estimates were aggregated with the chronic dietary (food) to provide a worst-case estimate of short-term aggregate risk for children 1-2 years old.

Using the exposure assumptions described in this unit for short-term exposures, EPA has concluded that food and residential exposures aggregated result in aggregate MOEs of 75,000 for the United States population, and 55,000 for children 1-2 years old. These aggregate MOEs do not exceed the Agency's level of concern, an MOE of 100, for aggregate exposure to food and residential uses. In addition, short-term DWLOCs were calculated and compared to the EECs for chronic exposure of imazapyr in ground and surface water. After calculating DWLOCs and comparing them to the EECs for surface and ground water, EPA does not expect short-term aggregate exposure to exceed the Agency's level of concern, as shown in Table 5 of this unit:

TABLE 5.—AGGREGATE RISK ASSESSMENT FOR SHORT-TERM EXPOSURE TO IMAZAPYR

Population Subgroup	Aggregate MOE (Food + Residential) ¹	Aggregate Level of Concern (LOC) ²	Surface Water EEC ³ (µg/L)	Ground Water EEC ³ (µg/L)	Short-Term DWLOC ⁴ (ppb)
U.S. Population	75,000	100	81	1,700	87,000
Children 1-2 years old	55,000	100	81	1,700	25,000

¹Aggregate MOE = [NOAEL / (Avg Food Exposure + Residential Exposure)]

²The level of concern (target MOE) includes 10X for interspecies extrapolation and 10X for intraspecies variation (MOE<100)

³The crop producing the highest level was used

⁴DWLOC calculated as follows: DWLOC = (maximum water exposure (mg/kg/day)) * (body weight (kg)) * (1,000 µg/mg)/water consumption (liter/day)

4. *Intermediate-term risk.*

Intermediate-term aggregate exposure takes into account residential exposure plus chronic exposure to food and water (considered to be a background exposure level). Though residential exposure could occur with the use of imazapyr, the short-term and intermediate-term endpoints are the same and thus the short-term assessment is conservative for the intermediate-term. Therefore, the aggregate risk is the sum of the risk from food and water, which do not exceed the Agency's level of concern.

5. *Aggregate cancer risk for U.S. population.* Imazapyr is not expected to pose a cancer risk because no evidence

of carcinogenicity was found in at least 2 adequate animal tests in different species.

6. *Determination of safety.* Based on these risk assessments, EPA concludes that there is a reasonable certainty that no harm will result to the general population, and to infants and children from aggregate exposure to imazapyr residues.

IV. Other Considerations

A. *Analytical Enforcement Methodology*

Two methods are currently listed in the Pesticide Analytical Manual (PAM) Vol. II for enforcing tolerances of imazapyr in or on corn commodities; Method M 2468 is a gas

chromatography/mass spectrometry (GC/MS) methods with a limit of quantitation (LOQ) of -0.01 ppm for imazapyr in or on corn grain, forage and fodder, and Method M 2657 is a capillary electrophoresis (CE) method with ultraviolet (UV) detection that has a LOQ of 0.05 ppm for imazapyr in or on corn grain, forage and fodder.

CE/UV methods were proposed for determining imazapyr in or on grass forage and hay (M 3023), in livestock tissues (M 3184), in milk and milk fat (M 3075 and M 3223), and in fish and shellfish tissues (M 3066). These methods are similar to the current enforcement method M 2657, and based on the concurrent method recovery data