

underestimate risk to adults as well as to children. In a few cases where chemical-specific data were not available, the SOPs were used alone. The residential SOPs are based upon reasonable worst-case assumptions and are not expected to underestimate risk. These assessments of exposure are not likely to underestimate the resulting estimates of risk from exposure to imidacloprid.

In its objections to a separate imidacloprid tolerance action, NRDC argues that in light of the outstanding data requirement for prospective groundwater monitoring studies, EPA should have retained a 10X FQPA factor for imidacloprid. EPA disagrees. Two small-scale prospective ground-water monitoring studies were originally requested by the Agency in 1994. This request predates the development of the Tier 1 ground-water screening model in 1997 and the Food Quality Protection Act of 1996. The field phase of these prospective ground-water monitoring studies commenced in 1996. Results from these studies have now been received and the levels of imidacloprid observed (0.1 ppb) are below the screening concentration of 2.09 ppb calculated on the basis of the SCI-GROW, the Tier 1 ground-water screening model. In any event, as noted above, since higher values are predicted for imidacloprid residues in surface water, these higher values were used in conducting the risk assessment.

#### *E. Aggregate Risks and Determination of Safety*

To estimate total aggregate exposure to a pesticide from food, drinking water, and residential uses, the Agency calculates DWLOCs which are used as a point of comparison against the model estimates of a pesticide's concentration in water (EECs). DWLOC values are not regulatory standards for drinking 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 residential uses. In calculating a DWLOC, the Agency determines how much of the acceptable exposure (i.e., the PAD) is available for exposure through drinking water [e.g., allowable chronic water exposure (mg/kg/day) = cPAD - (average food + residential exposure)]. This allowable exposure through drinking water is used to calculate a DWLOC.

A DWLOC will vary depending on the toxic endpoint, drinking water consumption, and body weights. Default body weights and consumption values as used by the USEPA Office of Water are used to calculate DWLOCs: 2 liter (L)/70 kg (adult male), 2L/60 kg (adult female), and 1L/10 kg (child). Default body weights and drinking water consumption values vary on an individual basis. This variation will be taken into account in more refined screening-level and quantitative drinking water exposure assessments. Different populations will have different DWLOCs. Generally, a DWLOC is

calculated for each type of risk assessment used: Acute, short-term, intermediate-term, chronic, and cancer.

When EECs for surface water and groundwater are less than the calculated DWLOCs, OPP concludes with reasonable certainty that exposures to the pesticide in drinking water (when considered along with other sources of exposure for which OPP has reliable data) would not result in unacceptable levels of aggregate human health risk at this time. Because OPP considers the aggregate risk resulting from multiple exposure pathways associated with a pesticide's uses, levels of comparison in drinking water may vary as those uses change. If new uses are added in the future, OPP will reassess the potential impacts of residues of the pesticide in drinking water as a part of the aggregate risk assessment process.

1. *Acute risk.* Using the exposure assumptions discussed in this unit for acute exposure, the acute dietary exposure from food to imidacloprid will occupy 25% of the aPAD for the U.S. population, 17% of the aPAD for females 13 to 49 years, 54% of the aPAD for infants < 1 year old and 64% of the aPAD for children 1-2 years. In addition, there is potential for acute dietary exposure to imidacloprid in drinking water. After calculating DWLOCs and comparing them to the EECs for surface and ground water, EPA does not expect the aggregate exposure to exceed 100% of the aPAD, as shown in Table 3 of this unit:

TABLE 3.—AGGREGATE RISK ASSESSMENT FOR ACUTE EXPOSURE TO IMIDACLOPRID

Population Subgroup	aPAD (mg/kg)	% aPAD (Food)	Surface Water EEC (ppb)	Ground Water EEC (ppb)	Acute DWLOC (ppb)
U.S. Population	0.14	25	36.04	2.09	3,700
Females 13–49 years	0.14	17	36.04	2.09	3,500
Infants <1 year	0.14	54	36.04	2.09	650
Children 1–2 years	0.14	64	36.04	2.09	510

2. *Chronic risk.* Using the exposure assumptions described in this unit for chronic exposure, EPA has concluded that exposure to imidacloprid from food will utilize 11% of the cPAD for the U.S. population, 26% of the cPAD for infants < 1 year and 35% of the cPAD

for children 1-2 years. Based the use pattern, chronic residential exposure to residues of imidacloprid is not expected. In addition, there is potential for chronic dietary exposure to imidacloprid in drinking water. After calculating DWLOCs and comparing

them to the EECs for surface and ground water, EPA does not expect the aggregate exposure to exceed 100% of the cPAD, as shown in Table 4 of this unit: