

with cyhalothrin. The Agency concluded there are no residual uncertainties for pre- and/or postnatal exposure. The RfDs and other endpoints established for risk assessment are protective of pre-/postnatal toxicity following exposure to cyhalothrin.

#### *D. 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 + chronic non-dietary, non-occupational 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 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 lambda-cyhalothrin 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 lambda-cyhalothrin on 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 lambda-cyhalothrin will occupy 41% of the aPAD for the U.S. population, 24% of the aPAD for females 13 years and older, 71% of the aPAD for all infants <1 year old and 82% of the aPAD for children 1-6 years old. In addition, despite the potential for acute dietary exposure to lambda-cyhalothrin in drinking water, after calculating DWLOCs and comparing them to conservative model estimated environmental concentrations of lambda-cyhalothrin in surface and ground water, EPA does not expect the aggregate exposure to exceed 100% of the aPAD, as shown in Table 2 of this unit:

TABLE 2.— AGGREGATE RISK ASSESSMENT FOR ACUTE EXPOSURE TO LAMBDA-CYHALOTHRIN

Population Subgroup	aPAD mg/kg)	% aPAD (Food)	Surface Water EEC (ppb)	Ground Water EEC (ppb)	Acute DWLOC (ppb)
U.S. Population (total)	0.005	40.86	0.62	0.012	103
All Infants (<1 year)	0.005	71.22	0.62	0.012	14
Children 1-6 years	0.005	82.36	0.62	0.012	9
Children 7-12 years	0.005	46.09	0.62	0.012	27
Females 13-50	0.005	23.83	0.62	0.012	114
Males 13-19	0.005	27.61	0.62	0.012	127
Males 20+ years	0.005	21.69	0.62	0.012	137
Seniors 55+	0.005	21.85	0.62	0.012	137

2. *Chronic risk.* Using the exposure assumptions described in this unit for chronic exposure, EPA has concluded that exposure to lambda-cyhalothrin from food will utilize 8.2% of the cPAD for the U.S. population, 11.7% of the cPAD for all infants < 1 year old and 21.8% of the cPAD for children 1-6

years old. Based the use pattern, chronic residential exposure to residues of lambda-cyhalothrin is not expected. In addition, despite the potential for chronic dietary exposure to lambda-cyhalothrin in drinking water, after calculating DWLOCs and comparing them to conservative model estimated

environmental concentrations of lambda-cyhalothrin in surface and ground water, EPA does not expect the aggregate exposure to exceed 100% of the cPAD, as shown in Table 3 of this unit:

TABLE 3.— AGGREGATE RISK ASSESSMENT FOR CHRONIC (NON-CANCER) EXPOSURE TO LAMBDA-CYHALOTHRIN

Population Subgroup	cPAD mg/kg/day	% cPAD (Food)	Surface Water EEC (ppb)	Ground Water EEC (ppb)	Chronic DWLOC (ppb)
U.S. Population (total)	0.001	8.2	0.098	0.012	32
All Infants (< 1 year)	0.001	11.7	0.098	0.012	9