7. REGULATIONS AND ADVISORIES

The national and state regulations and guidelines regarding diisopropyl methylphosphonate in water and other media are summarized in Table 7-l. No international regulations or guidelines were located regarding diisopropyl methylphosphonate. No NTP or IARC cancer classifications have been reported for diisopropyl methylphosphonate (IARC 1997). No regulations or guidelines were located regarding diisopropyl methylphosphonate in air.

ATSDR has derived an intermediate-duration oral MRL of 0.8 mg/kg/day based on the lack of effects including hematological effects in dogs treated with diisopropyl methylphosphonate in the diet at a dose of 75 mg/kg/day for 90 days (Hart 1980). The NOAEL was divided by an uncertainty factor of 100 to extrapolate from animals to humans and to account for human variability. ATSDR also has derived a chronic-duration oral MRL of 0.6 mg/kg/day based on the lack of effects, including hematological effects, in mink treated with 57 mg/kg/day of diisopropyI methylphosphonate for 13 months (Bucci et al. 1997). In this derivation, the NOAEL was divided by an uncertainty factor of 100 to extrapolate from animals to humans and for human variability. EPA has determined an RfD for diisopropyl methylphosphonate of 0.08 mg/kg/day with an uncertainty factor of 1,000 (10 for extrapolation of dose levels from laboratory animals to humans, 10 for uncertainty in the threshold for sensitive humans, and 10 for uncertainty in the effect of duration when extrapolating from subchronic to chronic exposure), based on the same 90-day dog feeding study (IRIS 1995). Based on this RfD and on the assumptions that a 70-kg person drinks 2 L of water/day and that 20% of the diisopropyl methylphosphonate exposure would occur through drinking water, EPA has recommended a lifetime drinking water health advisory of 0.6 mg/L (EPA 1996).

In contrast to federal government agencies, the state of Colorado has chosen a more conservative approach. Based on the Aulerich et al. (1979) study, it calculated a safe oral intake of 0.001 mg/kg/day based on a LOAEL of 11 mg/kg/day for death of female mink and an uncertainty factor of 10,000 (10 each for interspecies variation, intraspecies variation, less than Iifetime exposure, and extrapolation from a LOAEL). Using the assumptions of a 70-kg person drinking 2 L of water/day, with 20% of exposure resulting from drinking water, a groundwater and surface water standard of 0.008 mg/L has been derived (Colorado 1993a, 1993b). This standard is enforceable throughout the state of Colorado.

TABLE 7-1. Regulations and Guidelines Applicable to Diisopropyl Methylphosphonate

Agency	Description	Information	References
NATIONAL			
Guidelines:			
a. Water:			
EPA ODW	Health Advisories:		EPA 1996
	1-day (child)	8 mg/L	
	10-day (child)	8 mg/L	
	Longer term (child)	8 mg/L	
	Longer term (adult)	30 mg/L	
	RfD	0.08 mg/kg/day	
	DWEL	3 mg/L	
	Lifetime	0.6 mg/L	
EPA	Carcinogenic classification	D[a]	EPA 1996
EPA	Drinking water criterion	26.3 mg/L	Dacre and Rosenblatt 1987
USAMBRDL	Drinking water	0.5 ppm (0.5 mg/L)	Burrows 1978
USAMBRDL	Water for recreation	5 ppm (5 mg/L)	Burrows 1978
	Water to protect aquatic life	12.5 ppm (12.5 mg/L)	
	Water for irrigation	20 ppm (20 mg/L)	
b. Food:			
USAMBRDL	Food	0.5 ppm (0.5 mg/L)	Burrows 1978
STATE			
Regulations and Guidelines:			
a. Water:			
Colorado	Groundwater, surface water standards	8 ppb (0.008 mg/L)	Colorado 1993a, 1993b

[a] EPA Group D: Not classifiable as to human carcinogenicity

EPA = Environmental Protection Agency; DWEL = Drinking Water Equivalent Level; ODW = Office of Drinking Water; RfD = reference dose; USAMBRDL = United States Army Medical Bioengineering Research and Development Laboratory

The two-generation study in mink (Bucci 1997) has been completed and will hopefully help resolve the differences between the federal agencies' recommendation and those of the state of Colorado.