

Interim
Final



**Section 9
Supplemental Guidance for
Select Contaminants of Concern**

**APPENDIX 9-A
GENERAL PESTICIDE INFORMATION**

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**Table 9-A
General Pesticide Information**

Chemical	Laboratory Analytical Group*	Standard Laboratory Method*	Availability of Toxicity Factors**	KoC (cm ³ /g)	Half-Life in Soil (days)	Half-Life Reference***	Notes
Ametryn	Triazine Pesticides	8141 or 619M	Yes	4.5E+02	1.8E+02	5	Moderately persistent herbicide. Used since the 1960s (possibly earlier).
Arsenic	Heavy Metals	6010B/ 6020	Yes	?	na	-	Highly persistent herbicide component.
Atrazine	Triazine Pesticides	8141 or 619M	Yes	2.3E+02	1.0E+02	3	Moderately persistent herbicide. Used since the 1960s (possibly earlier).
Benomyl	Carbamates	8321	Yes	5.2E+02	3.6E+02	6	Moderately persistent fungicide used for seed dipping. Used since the 1970s.
Bromodichloromethane	VOCs	8260	Yes	3.5E+01	1.5E+00	3	Fumigant with low persistence.
Bromomethane	VOCs	8260	Yes	1.4E+01	2.8E+01	2	Fumigant with low persistence.
Captafol	Organochlorine Pesticides	8081 or 8270	Yes	2.7E+03	7.0E+00	8	Fumigant with low persistence.
Captan	SVOCs	8270	Yes	8.6E+02	2.5E+00	8	Fumigant with low persistence.
Chlordane (Technical)	Organochlorine Pesticides	8081	Yes	8.7E+04	1.0E+02	8	Moderately persistent insecticide. Cancelled in 1988.
Chlorpyrifos	Organo-phosphorus Pesticides	8141	Yes	6.8E+03	8.4E+01	1	Moderately persistent insecticide used since the 1970s.
Dalapon	Chlorinated Herbicides	8151 or 8321	Yes	2.7E+00	3.0E+01	8	Low to moderately persistent herbicide used since the 1950s.
Diazinon	Organo-phosphorus Pesticides	8141	Yes	1.3E+03	4.0E+01	8	Moderately persistent insecticide broadly used since the 1960s (possibly earlier).
Dibromo-3-Chloropropane, 1,2-	VOCs	8260 or 8081	Yes	1.3E+02	1.8E+02	1	Moderately persistent (although volatile) fumigant broadly used from the 1940s through 1980s.
Dibromochloromethane	VOCs	8260	Yes	3.5E+01	1.8E+02	2	Moderately persistent pesticide; unknown if used in cultivation.

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Table 9-A (continued)

Chemical	Laboratory Analytical Group*	Standard Laboratory Method	Availability of Toxicity Factors**	KoC (cm ³ /g)	Half-Life in Soil (days)	Half-Life Reference***	Notes
Dibromoethane, 1,2-	VOCs	8260	Yes	4.4E+01	1.0E+02	8	Moderately persistent (although volatile) fumigant broadly used from the 1940s through 1980s.
Dicamba	Chlorinated Herbicides	8151 or 8321	Yes	2.9E+01	3.1E+01	7	Herbicide with low to moderate persistence.
Dichlorodiphenyl-dichloroethane (DDD)	Organochlorine Pesticides	8081 or 8270	Yes	1.5E+05	1.0E+03	8	Highly persistent impurity of DDT insecticide.
Dichlorodiphenyl-dichloroethylene (DDE)	Organochlorine Pesticides	8081 or 8270	Yes	1.5E+05	1.0E+03	8	Highly persistent impurity of DDT insecticide.
Dichlorodiphenyl-trichloroethane (DDT)	Organochlorine Pesticides	8081 or 8270	Yes	2.2E+05	1.2E+02	8	Moderately persistent insecticide. Used by State for mosquito control until banned in 1972.
Dichlorophenol, 2,4-	SVOCs	8270	Yes	7.2E+02	2.6E+00	1	Intermediate product of 2,4-D and other herbicides with low persistence.
Dichlorophenoxyacetic Acid (2,4 D)	Chlorinated Herbicides	8151 or 8321	Yes	7.2E+02	1.0E+01	8	Herbicide with low persistence.
Dichloropropane, 1,2-	Chlorinated Herbicides	8151	Yes	6.8E+01	3.6E+02	8	Moderately persistent (although volatile) fumigant used from the 1940s to 1974.
Dichloropropene, 1,3-	Chlorinated Herbicides	8151	Yes	8.1E+01	1.0E+01	8	Fumigant with low persistence.
Dioxins/Furans	Dioxins/furans	8280/8290	Yes	2.6E+05	3.7E+04	1	Highly persistent impurity of chlorinated phenol pesticides (pentachlorophenol; 2,4,5-T; 2,4,5-TP).
Diuron	Carbamates	8321	Yes	1.4E+02	9.0E+01	8	Moderately persistent herbicide. Used since the 1960s (possibly earlier).
Endosulfan	Organochlorine Pesticides	8081 or 8270	Yes	2.2E+04	1.5E+02	16	Pesticide with moderate persistence.

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Table 9-A (continued)

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Ethephon	SVOC	8270	Yes	3.6E+00	8.0E+00	7	Growth regulator with low persistence.
Glyphosate	Other	547	Yes	1.9E+01	4.7E+01	-	Herbicide with low to moderate persistence (breaks down in water).
Heptachlor	Organochlorine Pesticides	8081 or 8270	Yes	5.2E+04	2.5E+02	8	Moderately persistent insecticide and component of technical chlordane. Cancelled in 1988. Potentially used in fields with drip irrigation between 1979 & 1985.
Heptachlor Epoxide	Organochlorine Pesticides	8081 or 8270	Yes	5.3E+03	3.7E+02	-	Highly persistent component of technical chlordane.
Hexachlorocyclohexane, Gamma	Organochlorine Pesticides	8081 or 8270	Yes	3.4E+03	2.4E+02	12	Moderately persistent insecticide.
Hexazinone	Triazine Pesticides	8141	Yes	6.1E+02	2.2E+02	7	Moderately persistent herbicide used since the 1970s.
Lead	Heavy Metals	6010B/ 6020	Yes	?	na	-	Unknown if lead-based insecticides, herbicides, & rodenticides used in cultivation. Highly persistent.
Malathion	Organo-phosphorus Pesticides	8141 or 8270	Yes	3.1E+01	1.0E+00	7	Insecticide with low persistence. Used since the 1960s (possibly earlier).
Mercury	Heavy Metals	7471	Yes	1.7E+02	?	-	Highly persistent fungicide (seed dipping). All food uses cancelled in 1969.
Methyl Mercury	Heavy Metals	7471	Yes	?	?	-	Methylated form of mercury generated in reducing environments; potential byproduct.
Methyl Sulfanilcarbamate	Carbamates	8321A	Yes	1.2E+03	3.1E+01	-	Herbicide used since the 1970s. Low to moderate persistence.
Metribuzin	Triazine Pesticides	8141	Yes	1.2E+03	4.4E+02	7	Highly persistent herbicide used since the 1970s.

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Table 9-A (continued)

Chemical	Laboratory Analytical Group*	Standard Laboratory Method	Availability of Toxicity Factors**	KoC (cm ³ /g)	Half-Life in Soil (days)	Half-Life Reference***	Notes
Mirex	Organochlorine Pesticides	8081 or 8270	Yes	4.7E+05	3.7E+02	-	Highly persistent insecticide. Very limited use in Hawai'i. Not sold in US since 1978.
Oxamyl	Carbamates	8321	Yes	1.0E+01	2.7E+01	7	Insecticide with low persistence.
Parathion	Organo-phosphorus Pesticides	8141 or 8270	Yes	1.7E+03	7.3E+02	13	Highly persistent insecticide. Registration cancelled in 1992.
Pentachlorophenol	SVOCs or Chlorinated Herbicides	8270 or 8151	Yes	3.4E+03	3.0E+01	16	Herbicide used from 1960s (possibly earlier) until the mid-1980s. Low to moderate persistence.
Picloram	Chlorinated Herbicides	8151	Yes	1.8E+01	3.0E+02	7	Moderately persistent sugarcane herbicide used since the 1960s (possibly earlier).
Propiconazole	Carbamates	8321	Yes	5.6E+03	8.4E+01	7	Moderately persistent fungicide. Used since the 1980s.
Simazine	Triazine Pesticides	8141 or 619M	Yes	1.5E+02	2.5E+02	8	Moderately persistent herbicide. Used since the 1960s (possibly earlier).
Terbacil	Organonitrogen	633	Yes	7.8E+01	5.2E+02	7	Highly persistent herbicide. Limited used since the 1970s; not significantly toxic.
Tetrachlorophenol, 2,3,4,6-	SVOCs	8270	Yes	2.0E+03	3.0E+01	-	Component of pentachlorophenol with low to moderate persistence.
Trichlorophenoxyacetic Acid, 2,4,5- (2,4,5 T)	Chlorinated Herbicides	8151 or 8321	Yes	1.2E+03	3.0E+02	10	Moderately persistent herbicide. Suspended in 1985.
Trichlorophenoxypropionic Acid, 2,4,5- (2,4,5 Tp)	Chlorinated Herbicides	8151 or 8321	Yes	4.9E+01	1.7E+01	11	Herbicide with low persistence. Suspended in 1985.
Trichloropropane, 1,2,3- (TCP)	VOCs	8260	Yes	1.3E+02	3.1E+01	-	Impurity in fumigant DD with low to moderate persistence.
Trifluralin	Organochlorine Pesticides	8081 or 8270	Yes	9.7E+03	6.0E+01	8	Moderately persistent herbicide. Used since the 1980s.

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Table 9-A (continued)

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Used But No Toxicity Data And/Or No Standard Laboratory Method							
Amitrole	Other	?	No	2.0E+01	2.6E+01	4	Herbicide used pre-1971 with low persistence.
Ammonium Sulfamate	Other	?	Yes	?	?	-	Herbicide used in the 1960s until possibly the 1980s; assumed low persistence.
Bromacil	Carbamates	8321	No	9.3E+00	2.4E+02	3	Moderately persistent herbicide. Used since the 1960s.
Chloropicrin	Other		No	5.1E+01	1.0E+00	8	Fumigant with low persistence.
Dichloropropene, 2,3-	Chlorinated Herbicides	8151	No	8.1E+01	1.6E+01	8	Fumigant with low persistence.
Diphacinone	Other	?	No	5.0E+03	3.7E+02	?	Rodenticide with moderate to high persistence.
Diquat	Other	?	Yes	1.9E+03	1.0E+03	8	Highly persistent growth regulator.
Endrin Aldehyde	Organochlorine Pesticides	8081 or 8270	No	1.1E+04	3.7E+02	8	Highly persistent impurity of Endrin.
Fenaminosulf	Other	?	Yes	1.0E+00	1.5E+01	8	Fungicide with low persistence.
Fenamiphos	Organo-phosphorus Pesticides	8141	No	2.3E+02	5.0E+00	8	Nematicide with low persistence.
Fenthion	Organo-phosphorus Pesticides	8141 or 8270	No	1.1E+02	3.4E+01	8	Moderately persistent insecticide used since the 1960s.
Fosetyl-Aluminum	Other	?	Yes	5.3E+03	1.0E-01	8	Fungicide with low persistence.
Hydramethylnon	Other	?	No	6.3E+08	?	-	Insecticide (ant control) with unknown persistence.
Mancozeb	Other	?	Yes	1.0E+01	2.0E+00	7	Fungicide with low persistence.
Monuron	Carbamates	8321	No	?	1.0E+02	-	Herbicide with moderate persistence. Registration cancelled in 1977.
Paraquat	Other	?	Yes	1.4E+03	7.3E+02	14	Highly persistent herbicide. Used since the 1960s.

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Pindone	Other	?	No	2.8E+01	?	-	Rodenticide with unknown persistence.
Quizalofop-P-Ethyl	Other	?	No	5.4E+02	6.0E+01	3	Moderately persistent herbicide. Used from the 1980s until present.
Sodium Chlorate	Other	?	No	1.0E+00	?	-	Herbicide with unknown persistence.
Sodium Monofluoroacetate	Other	?	Yes	1.2E+00	?	-	Rodenticide with unknown persistence. Used in 1960s until unknown time.
Sodium Trichloroacetate	Other	?	No	1.0E+00	?	-	Herbicide with unknown persistence. Used in the 1960s until unknown time.
Sulfometuron-Methyl	Carbamates (modified)	8321Mod	No	7.8E+01	2.8E+01	7	Herbicide with low persistence.
Temephos	Other	?	Yes	1.6E+06	?	-	Insecticide with unknown persistence. Used in the 1960s until unknown time.

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Notes:

- * Laboratory analytical method used to categorize pesticides may not match actual pesticide chemical category.
- ** Toxicity value availability noted as "Yes" if listed in May 2008 USEPA Regional Screening Levels guidance (USEPA, 2008). KoC values from same reference.
- *** Half-Life References. The number in the column above corresponds to the references shown below.
 - 1 Montgomery, J.H. 2000. Groundwater Chemicals. Desk Reference (3rd Ed).
 - 2 Mackay, Shiu, Ma. 1992. Illustrated Handbook of Physical-Chemical Properties and Environmental Fate for Organic Chemicals.
 - 3 Extonet. Available online at: <http://extonet.orst.edu/>
 - 4 USEPA. Reregistration Eligibility Decision - Amitrole. List A. Case 0095. (<http://www.epa.gov/oppsrrd1/REDS/0095red.pdf>)
 - 5 Spectrum. Chemical fact Sheet - Ametryn (<http://www.speclab.com/compound/c834128.htm>)
 - 6 Benomyl fact Sheet. Pesticides News No.35, March 1997, p20-21 (<http://www.pan-uk.org/pestnews/actives/benomyl.htm>)
 - 7 ARS Pesticide Properties Database (<http://www.ars.usda.gov/Services/docs.htm?docid=14199>)
 - 8 Knisel & Davis. 2000. Groundwater Loading Effects of Agricultural Management Systems.
 - 9 Toxicological Profile for Pentachlorophenol. ATSDR 1991. <http://www.atsdr.cdc.gov/toxprofiles/tp51.html>
 - 10 Spectrum Chemical fact Sheet - 2,4,5-Trichlorophenoxyacetic Acid. <http://www.speclab.com/compound/c93765.htm>
 - 11 Spectrum Chemical fact Sheet - 2,4,5-Trichlorophenoxypropionic Acid. <http://www.speclab.com/compound/c93721.htm>
 - 12 Extonet - Lindane (BHC). Available online at <http://extonet.orst.edu/>
 - 13 Extonet - Parathion. Available online at <http://extonet.orst.edu/>
 - 14 Extonet - Paraquat. Available online at <http://extonet.orst.edu/>
 - 15 Extonet - Ronnel. Available online at <http://extonet.orst.edu/>
 - 16 Toxnet HSDB. Available online at <http://toxnet.nlm.nih.gov/cgi-bin/sis/htmlgen?HSDB>