APPENDIX 9-B

INITIAL SHORTLIST OF PESTICIDES USED IN SUGARCANE AND PINEAPPLE OPERATIONS AND SELECTION FOR FURTHER CONSIDERATION

Table 9-B
Initial Shortlist of Pesticides Used in Sugarcane and Pineapple Operations and Selection for Further Consideration

Chemical[1]	Synonyms	Laboratory Analytical Grouping[2]	Period Used in Hawaii[3]	Persistence[4]	Mobility[5]	Known Use in Sugar Cane Production?	Known Use in Pineapple Production?
Benomyl	Benlate	8321 (Carbamates)	1970s to present?	Moderate	Moderate	Yes	Yes
Diuron	Karmex	8321 (Carbamates)	1960s-present	Moderate	Moderate	Yes	Yes
Methyl Sulfanilcarbamate	Asulam	8321 (Carbamates)	1970s-present	Moderate	Moderate	Yes	Yes
Oxamyl	Vydate	8321 (Carbamates)	1980s-present?	Low	High	No	Yes
Propiconazole	Tilt	8321 (Carbamates)	1980s-present?	Moderate	Low	Yes	Yes
Dalapon		8151 or 8321 (Chlorinated Herbicides)	1953 - present?	Moderate	High	Yes	Yes
Dicamba		8151 or 8321 (Chlorinated Herbicides)	? to present	Moderate	High	Yes	No
Dichlorophenoxyacetic Acid (2,4 D)	2,4-D	8151 or 8321 (Chlorinated Herbicides)	1960s-present	Low	Moderate	Yes	No
Dichloropropane, 1,2-		8151 or 8321 (Chlorinated Herbicides)	1940s-1974	Moderate	High	No	Yes
Dichloropropene, 1,3-	Telone, D-D 92	8151 or 8321 (Chlorinated Herbicides)	1940s-present?	Low	High	No	Yes
Picloram	Tordon	8151 or 8321 (Chlorinated Herbicides)	1960s-present?	Moderate	High	Yes	No
Trichlorophenoxyacetic Acid, 2,4,5- (2,4,5 T)	2,4,5-T	8151 or 8321 (Chlorinated Herbicides)	1960s-1985?	Moderate	Moderate	Yes	No
Trichloro- Phenoxypropionic Acid, 2,4,5- (2,4,5 Tp)	2,4,5-TP, Silvex	8151 or 8321 (Chlorinated Herbicides)	1960s-1985?	Low	High	Yes	No

Notes on Page 9-B-5

Table 9-B (continued)

Chemical[1]	Synonyms	Laboratory Analytical Grouping[2]	Period Used in Hawaii[3]	Persistence[4]	Mobility[5]	Known Use in Sugar Cane Production?	Known Use in Pineapple Production?
Arsenic		6010B or 6020 (Heavy Metals)	1913 to 1960s	High	Site-specific	Yes	?
Lead		6010B or 6020 (Heavy Metals)	Unknown	High	Site-specific	Yes	No
Mercury	Phenylmercuric acetate	7471 (Mercury)	?-1969	High	Moderate	Yes	No
Methyl Mercury		7471 (Mercury)	?-1969	High?	High?	Yes	No
Captafol	Difolatan	8081 or 8270 (Organochlorine Pesticides)	1970s to ?	Low	Moderate	Yes	Yes
Chlordane (Technical)	Technical Chlordane	8081 or 8270 (Organochlorine Pesticides)	1960s to 1988	Moderate	Moderate	No	Yes
Endosulfan		8081 or 8270 (Organochlorine	1960s-1980s?	Moderate	Moderate	No	Yes
Heptachlor		8081 or 8270 (Organochlorine Pesticides)	1960s-1988	Moderate	Moderate	Yes	Yes
Heptachlor Epoxide		8081 or 8270 (Organochlorine Pesticides)	1960s-1988	High	Low	No	Yes
Hexachlorocyclohexane, Gamma	Lindane, BHC	8081 or 8270 (Organochlorine Pesticides)	1960s-present?	Moderate	Moderate	No	Yes
Trifluralin	Treflan	8081 or 8270 (Organochlorine Pesticides)	1980s-present	Moderate	Moderate	Yes	No
Chlorpyrifos	Dursban	8141 or 8270 (Organophosphorus Pesticides)	1970s to present?	Moderate	Low	Yes	Yes

Notes on Page 9-B-5

Table 9-B (continued)

Chemical[1]	Synonyms	Laboratory Analytical Grouping[2]	Period Used in Hawaii[3]	Persistence[4]	Mobility[5]	Known Use in Sugar Cane Production?	Known Use in Pineapple Production?
Diazinon		8141 or 8270 (Organophosphorus Pesticides)	1960s - present	Moderate	Moderate	Yes	Yes
Malathion		8141 or 8270 (Organophosphorus Pesticides)	1960s-present?	Low	High	Yes	Yes
Parathion		8141 or 8270 (Organophosphorus Pesticides)	1960s-1992	High	Moderate	No	Yes
Ethephon	Ethrel	8270 (SVOCs)	1980s-present?	Low	High	Yes	Yes
Captan	Ethyl Mercapton	8270 (SVOCs)	1960s to ?	Low	Moderate	No	Yes
Dichlorophenol, 2,4-		8270 (SVOCs)	1960s-present	Low	Moderate	Yes	No
Tetrachlorophenol, 2,3,4,6-		8270 (SVOCs)	1960s-1984?	Moderate	Moderate	Yes	Yes
Pentachlorophenol		8270 or 8151 (SVOCs or Chlorinated Herbicides)	1960s-1984?	Moderate	Low	Yes	Yes
Ametryn	Evik	8141 or 8270 (Triazine Pesticides)	1960s to present	Moderate	Moderate	Yes	Yes
Atrazine	Astrex	8141 or 8270 (Triazine Pesticides)	1960s to present	Moderate	Moderate	Yes	Yes
Hexazinone	Velpar	8141 or 8270 (Triazine Pesticides)	1970s-present	Moderate	Moderate	Yes	Yes
Metribuzin		8141 or 8270 (Triazine Pesticides)	1970s-present	High	Moderate	Yes	No
Simazine		8141 or 8270 (Triazine Pesticides)	1960s-present	Moderate	Moderate	Yes	Yes

Notes on Page 9-B-5

Table 9-B (continued)

Chemical[1]	Synonyms	Laboratory Analytical Grouping[2]	Period Used in Hawaii[3]	Persistence[4]	Mobility[5]	Known Use in Sugar Cane Production?	Known Use in Pineapple Production?
Bromodichloromethane		8260 (VOCs)	1960s to ?	Low	High	No	Yes
Bromomethane	Methyl Bromide	8260 (VOCs)	1960s to present	Low	High	No	Yes
Dibromo-3-Chloropropane, 1,2-	DBCP	8260 (VOCs)	1940s-1985	Moderate	Moderate	No	Yes
Dibromochloromethane		8260 (VOCs)	Unknown	Moderate	High	No	Yes
Dibromoethane, 1,2-	EDB	8260 (VOCs)	1940s-1983	Moderate	High	No	Yes
Trichloropropene, 1,2,3-	TCP	8260 (VOCs)	1940s-1978	Moderate	Moderate	No	Yes
Dioxins/Furans		8280/8290 (Dioxins/furans)	1960s-1985?	High	Low	Yes	Yes
Glyphosate	Roundup, Rodeo, Polado	547		Low	High	Yes	Yes
Terbacil	Sinbar	633 (Organonitrogen Pesticides)	1970s-present	High	High	Yes	No

Notes on Page 9-B-5

Table 9-B (continued)

Notes:

1 Refer to Appendix 9-A. Pesticide retained for consideration if toxicity data and standard laboratory analytical method available. Includes pesticide likely to drive environmental hazards at former agricultural sites.

2 Laboratory analytical method used to categorize pesticides may not match actual pesticide chemical category.

3 Dates are based on available historical records and should not be considered exact. Synthetic pesticides generally became available in the 1930s and 1940s. Most available records date back to the only to the 1960s, but may have begun prior.

4 Persistence ranking based on chemical and biological degradation potential.

- Metals all given persistence of "high"
- Scale for persistence for chemicals with half-life data:
  High = >1 year
  Moderate = one month to one year
  Low = <one month
- Where multiple values reported, highest value used to make determination. Soil degradation rates used are used preferentially.
- Data for one isomer used to estimate persistence of other isomers, as necessary.

5 Mobility ranking based on sorption coefficient, solubility and volatility.

- Sorption coefficient (Koc):
  High = KoC<100
  Moderate = 100<Koc<3,000
  Low KoC>3,000
- KoC values from USEPA May 2008 RSL guidance when available; otherwise as complied as noted in Appendix 9-A.
- If no KoC was available, but water solubility was high, pesticide was assumed to have high mobility.
- All volatiles given a mobility of High. Volatiles = Henry's law constant (unitless) >1E-4 and molecular weight <200
- All metals given a mobility of Low

VOC Volatile Organic Compounds

SVOC Semi-Volatile Organic Compounds