CHLORPYRIFOS

APPENDIX A

PRODUCT FORMULATIONS CONTAINING MULTIPLE ACTIVE INGREDIENTS

The Agency does not routinely include, in its risk assessments, an evaluation of mixtures of active ingredients, either those mixtures of multiple active ingredients in product formulations or those in the applicator's tank. In the case of the product formulations of active ingredients (that is, a registered product containing more than one active ingredient), each active ingredient is subject to an individual risk assessment for regulatory decision regarding the active ingredient on a particular use site. If effects data are available for a formulated product containing more than one active ingredient, they may be used qualitatively or quantitatively[1, 2].

Currently, the Agency's guidance for assessing the potential risk of chemical mixtures is limited to human health applications (USEPA, 2000). However, the guidance includes principles for evaluating mixtures to assess potential interactive effects that are generally applicable. Consistent with EPA's Overview Document (USEPA 2004), the Agency's mixture guidance (USEPA 2000) discusses limitations in quantifying the risk of specified mixtures when there is differential degradation, transport and fate of chemical components following environmental release or application. The LD50 values are potentially useful only to the extent that a wild mammal would consume plants or animals immediately after these dietary items were directly sprayed by the product. Increasing time post application, the differential rates of degradation, transport, etc. for the active ingredients in the formulation only permit a qualitative discussion of potential acute risk (USEPA 2004).

As discussed in USEPA (2000) a quantitative component-based evaluation of mixture toxicity requires data of appropriate quality for each component of a mixture. In this mixture evaluation, LD50s with associated 95% confidence intervals are needed for the formulated product. The same quality of data is also required for each component of the mixture.

In the case of chloropyrifos, only one product (EPA Reg. No. 8329-36) has a definitive product LD50 value with an associated confidence interval. Although there are no 95% confidence intervals for the two active ingredients in this product (chlorpyrifos and permethrin), an evaluation of the available data show that for EPA Reg. No. 8329-36, the product toxicity can be attributed solely to the toxicity of chlorpyrifos. When the product

[1] Overview of the Ecological Risk Assessment Process in the Office of Pesticide Programs, Environmental Protection Agency (January 2004) (Overview Document).

[2] Memorandum to Office of Prevention, Pesticides and Toxic Substance, US EPA conveying an evaluation by the U.S. Fish and Wildlife Service and National Marine Fisheries Service of an approach to assessing the ecological risks of pesticide products (January 2004).

LD50 (1836 mg/kg) and associated confidence interval (1476-2285 mg/kg) are adjusted for the percent chlorpyrifos (12%); the adjusted LD50 value for the product is (220 mg/kg) is not toxicologically distinct from the LD50 value for the chlorpyrifos technical (223 mg/kg).

Because the active ingredients are not expected to have similar mechanisms of action, metabolites, or toxicokinetic behavior, it is reasonable to conclude that an assumption of dose-addition would be inappropriate. Consequently, an assessment based on the toxicity of chlorpyrifos is the only reasonable approach that employs the available data to address the potential acute risks of the formulated products.

Pesticide Products Formulated with Chlorpyrifos and Other Pesticide Active Ingredients

CHLORPYRIFOS PRODUCTS[3,4]

PRODUCT/TRADE NAME	EPA Reg.No.	% Chlorpyrifos	PRODUCT		ADJUSTED FOR ACTIVE INGREDIENT	
			LD 50 (mg/kg)	CI (mg/kg)	LD50 (mg/kg)	CI (mg/kg)
WHITMIRE PT 1920 TOTAL RELEASE INSECTICIDE	000499-00405	8	630	No Data	50	N/A
ULV MOSQUITO MASTER 412	008329-00036	12	1836	1476-2285	220	177-274
ULV MOSQUITO MASTER 2+6	008329-00073	6	No Data	No Data	N/A	N/A
WARRIOR INSECTICIDE CATTLE EAR TAG	039039-00006	10	No Data	No Data	N/A	N/A
WOODLIFE F-4WT	060061-00100	0.1	>5000	N/A	N/A	N/A

[3] From registrant submitted data to support registration. Compiled by Office of Pesticide Programs Registration and Health Effects Divisions.
[4] Chlorpyrifos: Oral LD50= 223 mg/kg
N/A= Not Applicable

List of Citations on Chlorpyrifos Mixtures – studies rejected by ECOTOX due to multiple active ingredients in the test substance.

The citations in this appendix were considered for inclusion in ECOTOX but rejected due to multiple active ingredients. Citations include the ECOTOX Reference number, as well as chemical codes and rejection codes (MIXTURE denotes multiple active ingredients). The query was run in October, 1999 and revised March and June, 2000.

Ajeigbe, H. A. and Singh, B. B. (2006). Integrated Pest Management in Cowpea: Effect of Time and Frequency of Insecticide Application on Productivity. *Crop Prot.* 25: 920-925.
Rejection Code: MIXTURE.

Arthur, F. H. (2004). Evaluation of a New Insecticide Formulation (F2) as a Protectant of Stored Wheat, Maize, and Rice. *J.Stored Prod.Res.* 40: 317-330.
Chem Codes: Chemical of Concern: CPY Rejection Code: MIXTURE.

Baerg, R. J., Barrett, M., and Polge, N. D. (1996). Insecticide and Insecticide Metabolite Interactions with Cytochrome P450 Mediated Activities in Maize. *Pestic.Biochem.Physiol.* 55: 10-20.
Chem Codes: Chemical of Concern: DDA,12T,NSF,TBO,PRT,CPY,MLN,CBF,CBL,PMR,FNF,TBS Rejection Code: IN VITRO/MIXTURE.

Biediger, D. L., Baumann, P. A., Weaver, D. N., Chandler, J. M., and Merkle, M. G. (1992). Interactions Between Primisulfuron and Selected Soil-Applied Insecticides in Corn (Zea Mays). *Weed Technol.* 6: 807-812.
Chem Codes: Chemical of Concern: TBO,CBL,CBF,CPY,DZ,DS,FNF Rejection Code: MIXTURE.

Borchert, D. M. and Walgenbach, J. F. (2000). Comparison of Pheromone-Mediated Mating Disruption and Conventional Insecticides for Manangement of Tufted Apple Bud Moth (Lepidoptera: Tortricidae). *J.Econ.Entomol.* 93: 769-776.
Chem Codes: Chemical of Concern: CPY,MP,DMT,PSM Rejection Code: MIXTURE.

Britson, C. A. and Threlkeld, S. T. (1998). Abundance, Metamorphosis, Developmental, and Behavioral Abnormalities in Hyla Chrysoscelis Tadpoles Following Exposure to Three Agrichemicals and Methyl Mercury in Outdoor Mesocosms. *Bull.Environ.Contam.Toxicol.* 61: 154-161.
Chem Codes: Chemical of Concern: ATZ,MSMA,CPY,Hg Rejection Code: MIXTURE.

Bromilow, R. H., De Carvalho, R. F., Evans, A. A., and Nicholls, P. H. (2006). Behavior of Pesticides in Sediment/Water Systems in Outdoor Mesocosms. *J.Environ.Sci.Health Part B* 41: 1-16.
Chem Codes: Chemical of Concern: CPY,DFC,PMR,MCPP1,PDM,LNR Rejection Code: FATE/MIXTURE.

Byford, R. L., Lockwood, J. A., Smith, S. M., Harmon, C. W., Johnson, C. C., Luther, D. G., Morris, H. F., and Penny, A. J. (1986). Insecticide Residues in Cattle Treated With a Cypermethrin, Chlorpyrifos, Piperonyl Butoxide-Impregnated Ear Tag. *Bull.Environ.Contam.Toxicol.* 37: 692-697 .
Chem Codes: Chemical of Concern: CYP,CPY,PPB Rejection Code: MIXTURE.

Carden, P. W. (1987). Supervised Control of Apple Pest in Southern England. *Crop Prot.* 6: 234-243.
Rejection Code: MIXTURE.

Chapin, J. W. and Thomas, J. S. Soil Insecticide and Fungicide Treatment Effects on Lesser Cornstalk

Borer Injury, White Mold Incidence, and Peanut Yield, 1993. 1994; 19, 247 (No. 97F). Notes: Chemical of Concern: CPY. Rejection Code: MIXTURE.

Clements, R. O., Lewis, G. C., Jackson, C. A., and Bentley, B. R. (1986). The Relative Importance of a Range of Factors to the Herbage Yield of Newly-Sown Grass. *Tests Agrochem.Cultiv.* 7: 118-119. Chem Codes: Chemical of Concern: BMY,Captan,DMT,CPY Rejection Code: MIXTURE.

Davis, P. M. and Coleman, S. (1997). Managing Corn Rootworms: (Coleoptera Chrysomelidae) on Dairy Farms: the Need for a Soil Insecticide. *J.Econ.Entomol.* 90: 205-217. Chem Codes: Chemical of Concern: CPY,TFT,TBO,ACR,ATZ,PDM,MTL,DMB,CZE Rejection Code: MIXTURE.

De Vlaming, V., DiGiorgio, C., Fong, S., Deanovic, L. A., Carpio-Obeso, M. S., Miller, J. L., Miller, M. J., and Richard, N. J. (2004). Irrigation Runoff Insecticide Pollution of Rivers in the Imperial Valley, California (Usa). *Environmental Pollution [Environ. Pollut.]. Vol. 132, no. 2, pp. 213-229. Nov 2004.* Rejection Code: MIXTURE.

Dow Chemical Co. (1992). Initial Submission: Dursban/Dimethoate Ef 772: Acute Oral Toxicity Study in the Rat With Cover Letter Dated 041092. *EPA/OTS Doc.#88-920001921* 17 p. (NTIS/OTS0539375). Chem Codes: Chemical of Concern: DMT,CPY Rejection Code: MIXTURE.

Feretti, D., Zerbini, I., Zani, C., Ceretti, E., Moretti, M., and Monarca, S. (2007). Allium cepa Chromosome Aberration and Micronucleus Tests Applied to Study Genotoxicity of Extracts from Pesticide-Treated Vegetables and Grapes. *Food Addit.Contam.* 24: 561-572. Chem Codes: Chemical of Concern: ES,DCNA,ACP,FRM,CTN,DM,Folpet,VCZ,IPD,BFT, EP,AZ,FVL,DMT,OMT,CYP,MP,FNT,CBL,CPY,MYC,EPRN,GCYH,CMX,HCZ Rejection Code: IN VITRO/MIXTURE.

George, T. K., Liber, K., Solomon, K. R., and Sibley, P. K. (1999). Assessment Of The Toxicity And Interaction Of Pesticide Mixtures Using A Combination Approach Of Probabilistic Risk Assessment And Toxic Equivalents. *Proceedings Of The 26th Annual Aquatic Toxicity Workshop., Edmonton, Alberta, Canada, October 04-06, 1999.ycanadian Technical Report Of Fisheries And Aquatic Sciences* 0: 82-83. Rejection Code: MIXTURE/METHOD

Gomes, J., Dawodu, A. H., Lloyd, O., Revitt, D. M., and Anilal, S. V. (1999). Hepatic Injury and Disturbed Amino Acid Metabolism in Mice Following Prolonged Exposure to Organophosphorus Pesticides. *Hum.Exp.Toxicol.* 18: 33-37. Chem Codes: Chemical of Concern: DMT,CPY,PIRM,DDVP,PFF Rejection Code: MIXTURE.

Gruber, S. J. and Munn, M. D. (1998). Organophosphate and Carbamate Insecticides in Agricultural Waters and Cholinesterase (Che) Inhibition in Common Carp (Cyprinus Carpio). *Arch.Environ.Contam.Toxicol.* 35: 391-396. Chem Codes: Chemical of Concern: DZ,CPY,AZ,DS,CBL,MLN,EP Rejection Code: MIXTURE.

Haffner, Karin, Buenemann, G., and Schenker, D. (Effects of insecticides on fruit quality of apples. *Gartenbauwissenschaft (1985)* 50: 177-83 CODEN: GTBWAY; ISSN: 0016-478X. Rejection Code: MIXTURE.

Hogmire, H. W. and Winfield, T. (1997). Igr Evaluation Experiment 1, 1996. *Arthropod Manag.Tests* 22: 6-7 (7A). Chem Codes: Chemical of Concern: CPY,AZ,IMC,TUZ Rejection Code: MIXTURE.

Ito, N., Hagiwara, A., Tamano, S., Hasegawa, R., Imaida, K., Hirose, M., and Shirai, T. (1995). Lack of Carcinogenicity of Pesticide Mixtures Administered in the Diet at Acceptable Daily Intake (ADI)

Dose Levels in Rats. *Toxicol.Lett.* 82/83: 513-520.
Rejection Code: MIXTURE.

Ito, Nobuyuki, Imaida, Katsumi, Hirose, Masao, and Shirai, Tomoyuki (Medium-term bioassays for carcinogenicity of chemical mixtures. *Environ. Health Perspect. Suppl. (1998)* 106: 1331-1334
CODEN: EHPSEO; ISSN: 1078-0475.
Rejection Code: MIXTURE.

Jackson, R. E., Bradley, Jr JR, Van Duyn, J. W., and Gould, F. (2004). Comparative Production of Helicoverpa Zea (Lepidoptera: Noctuidae) From Transgenic Cotton Expressing Either One or Two Bacillus Thuringiensis Proteins With and Without Insecticide Oversprays. *J.Econ.Entomol.* 97: 1719-1725.
Rejection Code: MIXTURE.

Johnson, A. W., Csinos, A. S., Golden, A. M., and Glaze, N. C. (1992). Chemigation for Control of Black Shank-Root-Knot Complex and Weeds in Tobacco. *J.Nematol.* 24: 648-655.
Chem Codes: Chemical of Concern: PDM,IPN,PEB,CPY,MLX,FMP Rejection Code: MIXTURE.

Karanth, S., Olivier, K. Jr., Liu, J., and Pope, C. (2001). In Vivo Interaction Between Chlorpyrifos and Parathion in Adult Rats: Sequence of Administration Can Markedly Influence Toxic Outcome. *Toxicol.Appl.Pharmacol.* 177: 247-255.
Chem Codes: Chemical of Concern: CPY,PRN Rejection Code: MIXTURE.

Kvien, C. K., Culbreath, A. K., Wilcut, J. W., Brown, S. L., and Bell, D. K. (1993). Peanut Production in Systems Restricting Use of Pesticides Based on Carcinogenicity or Leachability. *Peanut Sci.* 20: 118-124 . Chem Codes: Chemical of Concern: MLN,BMY,Captan,MZB,CTN,MLX,24DB,AND,CPY,MOM Rejection Code: MIXTURE.

Lambert, M. R. K. (Environmental effects of heavy spillage from a destroyed pesticide store near Hargeisa (Somaliland) assessed during the dry season, using reptiles and amphibians as bioindicators. *Arch. Environ. Contam. Toxicol. (1997)* 32: 80-93
CODEN: AECTCV; ISSN: 0090-4341. Rejection Code: MIXTURE.

Latuszynska, J., Luty, S., Raszewski, G., Tokarska-Rodak, M., Przebirowska, D., Przylepa, E., and Haratym-Maj, A. (2001). Neurotoxic Effect of Dermally-Applied Chlorpyrifos and Cypermethrin in Wistar Rats. *Ann.Agric.Environ.Med.* 8: 163-170.
Chem Codes: Chemical of Concern: CYP,CPY Rejection Code: MIXTURE.

Leoni, V., Cremisini, C., Giovinazzo, R., Puccetti, G., and Vitali, M. (1992). Activated Sludge Biodegradation Test As A Screening Method To Evaluate Persistence Of Pesticides In Soil. *Fourth International Workshop On Chemical, Biological And Ecotoxicological Behaviour Of Pesticides In The Soil Environment, Rome, Italy, May 29-31, 1991. Sci Total Environ* 123-124: 279-289. Rejection Code: MIXTURE. – Note: not tox. but fate. Only abs avail. in online lib.

Lewis, G. C. and Clements, R. O. (1985). Effect of Fungicide Seed Treatment and Post-Emergence Insecticide Sprays on the Establishment of Italian and Perennial Ryegrass. *Tests Agrochem.Cultiv.* 6: 66-67.
Chem Codes: Chemical of Concern: OMT,BMY,Captan,CPY Rejection Code: MIXTURE.

Lodovici, M.; Aiolli, S.; Monserrat, C.; Dolara, P.; Medica, A., and Di Simplicio, P. Effect of a mixture of 15 commonly used pesticides on DNA levels of 8-hydroxy-2-deoxyguanosine and xenobiotic-metabolizing enzymes in rat liver. Toxicol. Oncol. (1994): 13(3), 163-8
CODEN: JEPOEC; ISSN: 0731-8898. Notes: Chemical of Concern: CPY. Rejection Code: MIXTURE.

Lodovici, Maura; Casalini, Chiara; Briani, Carla, and Dolara, Piero. Oxidative liver DNA damage in rats treated with pesticide mixtures. 117, (1): 55-60 CODEN: TXCYAC; ISSN: 0300-483X.
Notes: Chemical of Concern: CPY. Rejection Code: MIXTURE.

Lytle, J. S. and Lytle, T. F. (2002). Uptake and Loss of Chlorpyrifos and Atrazine by Juncus Effusus L. In a Mesocosm Study With a Mixture of Pesticides. *Environ.Toxicol.Chem.* 21: 1817-1825.
Chem Codes: Chemical of Concern: ATZ,CYP,MSMA,Hg,CPY Rejection Code: MIXTURE

Maul, J. D. and Farris, J. L. (2005). Monitoring Exposure of Northern Cardinals, Cardinalis Cardinalis, to Cholinesterase-Inhibiting Pesticides: Enzyme Activity, Reactivations, and Indicators of Environmental Stress. *Environ.Toxicol.Chem.* 24 : 1721-1730.
Chem Codes: Chemical of Concern: MLN,DCTP,ACP,ADC,CPY Rejection Code: MIXTURE.

Moawad, G., Khidr, A. A., Zaki, M., Critchley, B. R., McVeigh, L. J., and Campion, D. G. (1991). Large-Scale Use of Hollow Fibre and Microencapsulated Pink Bollworm Pheromone Formulations Integrated With Conventional Insecticides for the Control of the Cotton Pest Complex in Egypt. *Trop.Pest Manag.* 37: 10-16.
Chem Codes: Chemical of Concern: TDC,CPY,FNV,CYF Rejection Code: MIXTURE.

Moore, D., Ridout, M. S., and Clements, R. O. (1988). Mortality of Oscinella Spp. Due to Parasitism in Insecticide Treated and Untreated Ryegrass Reseeds. *J.Appl.Entomol.* 105: 154-159.
Chem Codes: Chemical of Concern: GYP,CPY,DMT Rejection Code: MIXTURE.

Moore, M. T., Denton, D. L., Cooper, C. M., Wrysinski, J., Miller, J. L., Reece, K., Crane, D., and Robins, P. (Mitigation Assessment of Vegetated Drainage Ditches for Collecting Irrigation Runoff in California. *J environ qual. 2008 mar-apr; 37(2):486-93. [Journal of environmental quality]: J Environ Qual*.
Chem Codes: Chemical of Concern: CPY Rejection Code: MIXTURE.

Morrison, J. E. Jr., Williams, D. F., Oi, D. H., and Potter, K. N. (1997). Damage to dry Crop Seed by Red Imported Fire Ant (Hymenoptera: Formicidae). *J.Econ.Entomol.* 90: 218-222.
Chem Codes: Chemical of Concern: Captan,CPYM,THM Rejection Code: MIXTURE.

Ncibi, S., Ben Othman, M., Akacha, A., Krifi, M. N., and Zourgui, L. (2008). Opuntia Ficus indica Extract Protects Against Chlorpyrifos-Induced Damage on Mice Liver. *Food Chem.Toxicol.* 46: 797-802.
Chem Codes: Chemical of Concern: CPY Rejection Code: CAS # UNAVAILABLE/MIXTURE.

Neicheva, A., Karageorgiev, D., and Konstantinova, T. (1992). Gas Chromatographic Determination of Some Modern Pesticides in Fruits. *In: 4th Int.Workshop on Chemical, Biological and Ecotoxicological Behaviour of Pesticides in the Soil Environment, May 29-31, 1991, Rome, Italy, Sci.Total Environ.* 123/124: 29-37.
Chem Codes: Chemical of Concern: DM,IPD,PIRM,VCZ,DMT,DZ,PHSL,FNT,CPY,CYH,TFZ,FRM Rejection Code: MIXTURE.

Pasquini, Rossana; Scassellati-Sforzolini, Giuseppina; Dolara, Piero; Pampanella, Lucia; Villarini, Milena; Caderni, Giovanna; Fazi, Marilena, and Fatigoni, Cristina. Assay of linuron and a pesticide mixture commonly found in the Italian diet, for promoting activity in rat liver carcinogenesis. 75, (3-4): 170-6 CODEN: PHTOEH; ISSN: 0901-9928.
Notes: Chemical of Concern: CPY. Rejection Code: MIXTURE.

Peshney, N. L. (1990). Compatibility of Fungicides With Some Insecticides With Reference to Fungitoxicity and Phytotoxicity. *PKV (Punjabrao Krishi Vidyapeeth) Res.J.* 14: 35-37.
Chem Codes: Chemical of Concern: CBL,CPY,PMR,PPHD,MLN,ES,HCCH,TBA,MZB, ZIRAM,THM,TPM,ACP Rejection Code: MIXTURE.

Pettigrove, V., Korth, W., Thomas, M., and Bowmer, K. H. (1996). The Impact of Pesticides Used in Rice Agriculture on Larval Chironomid Morphology. *CSIRO (Commonwealth Sci.Ind.Res.Org.) Inf.Serv.Branch, Victoria, Australia* 81-88.
Chem Codes: Chemical of Concern: MLN,CPY,MLT Rejection Code: MIXTURE.

Saleh, M. S. (1988). Use of Plastic Formulations of Chlorpyrifos and Sumithion as Mosquito Larvicides and Their Delayed Effects on the Basal Follicle Numbers Developed by Female Survivors. *Anz.Schaedlingskd.Pflanzenschutz Umweltschutz* 61: 14-17.
Chem Codes: Chemical of Concern: CPY Rejection Code: MIXTURE.

Schreck, E., Geret, F., Gontier, L., and Treilhou, M. (2008). Neurotoxic Effect and Metabolic Responses Induced by a Mixture of Six Pesticides on the Earthworm Aporrectodea caliginosa nocturna. *Chemosphere* 71: 1832-1839. Chem Codes: Chemical of Concern: FSTAL,CYH,CPY,MLX,Folpet,MYC Rejection Code: MIXTURE.

Schulz, R. (2003). Using a Freshwater Amphipod in Situ Bioassay as a Sensitive Tool to Detect Pesticide Effects in the Field. *Environ.Toxicol.Chem.* 22: 1172-1176.
Chem Codes: Chemical of Concern: AZ,ES,CPY Rejection Code: MIXTURE.

Schulz, R. and Liess, M. (1997). Runoff-Related Short-Term Pesticide Input Into Agricultural Streams: Measurement by Use of an in Situ Bioassay With Aquatic Macroinvertebrates. *Verh.Ges.Oekol.* 27: 399-404 . Chem Codes: Chemical of Concern: CPY,FNV Rejection Code: MIXTURE .

Serrano, R., Lopez, F. J., Hernandez, F., and Pena, J. B. (1997). Bioconcentration of Chlorpyrifos, Chlorfenvinphos, and Methidathion in Mytilus Galloprovincialis. *Bull.Environ.Contam.Toxicol.* 59: 968-975 .
Chem Codes: Chemical of Concern: CPY,MDT Rejection Code: MIXTURE .

Sibley, P. K., Chappel, M. J., George, T. K., Solomon, K. R., and Liber, K. (2000). Integrating Effects of Stressors Across Levels of Biological Organization: Examples Using Organophosphorus Insecticide Mixtures in Field-Level Exposures. *J.Aquat.Ecosyst.Stress Recovery* 7: 117-130.
Chem Codes: Chemical of Concern: AZ,CPY,DZ Rejection Code: MIXTURE.

Simwat, G. S. and Dhawan, A. K. (1993). Phytotoxic Effect Of Spraying Mixtures Of Systemic And Contact Insecticides On Upland Cotton (Gossypium Hirsutum). *Indian J Agric Sci* 63: 390-392.
Rejection Code: MIXTURE.

Smith, Milton R., Thomas, Nancy J., and Hulse, Craig (Application of brain cholinesterase reactivation to differentiate between organophosphorus and carbamate pesticide exposure in wild birds. *J. Wildl. Dis. (1995)* 31: 263-7 CODEN: JWIDAW; ISSN: 0090-3558.
Rejection Code: MIXTURE

Somasundaram, L., Racke, K. D., and Coats, J. R. (Effect of manuring on the persistence and degradation of soil insecticides. *Bull. Environ. Contam. Toxicol. (1987)* 39: 579-86 CODEN: BECTA6; ISSN: 0007-4861. Rejection Code: MIXTURE.

Spaull, A. M., Clements, R. O., Ridout, M. S., and Mewton, P. G. (1986). Ryegrass Establishment and Yield in Relation to Pesticide Treatment, Irrigation and Fertilizer Level. *Ann.Appl.Biol.* 109: 353-363.
Chem Codes: Chemical of Concern: PCZ,CPY,MCB,OML Rejection Code: MIXTURE.

Staton, J. L., Schizas, N. V., Klosterhaus, S. L., Griffitt, R. J., Chandler, G. T., and Coull, B. C. (2002). Effect of Salinity Variation and Pesticide Exposure on an Estuarine Harpacticoid Copepod, Microarthridion Littorale (Poppe), in the Southeastern Us. *J.Exp.Mar.Biol.Ecol.* 278: 101-110.
Chem Codes: Chemical of Concern: CPY,DDT Rejection Code: MIXTURE.

Stevens, P. J. G., Walker, J. T. S., Shaw, P. W., and Suckling, D. M. (1994). Organosilicone Surfactants: Tools for Horticultural Crop Protection. *In: Brighton Crop Prot.Conf.- Pests and Disease, Conf., Nov.21-24, 1994, Brighton, England* 1-3: 755-760.
Chem Codes: Chemical of Concern: TDF,Captan,CPY,AZ,DOD,CBL,FUZ Rejection Code: MIXTURE.

Suckling, D. M. and Shaw, P. W. (1992). Conditions That Favor Mating Disruption of Epiphyas Postvittana (Lepidoptera: Tortricidae). *Environ.Entomol.* 21: 949-956.
Chem Codes: Chemical of Concern: AZ,CPY Rejection Code: MIXTURE.

Tarrant, K. A., Field, S. A., Langton, S. D., and Hart, A. D. M. (1997). Effects on Earthworm Populations of Reducing Pesticide Use in Arable Crop Rotations. *Soil Biol.Biochem.* 29: 657-661.
Chem Codes: Chemical of Concern: PIM,OMT,CPY,ADC,FUZ,CBD Rejection Code: MIXTURE/NO CONC.

Torres-Vila, L. M., Rodriguez-Molina, M. C., and Lacasa-Plasencia, A. (2003). Testing Ipm Protocols for Helicoverpa Armigera in Processing Tomato: Egg-Count- Vs. Fruit-Count-Based Damage Thresholds Using Bt or Chemical Insecticides. *Crop Prot.* 22: 1045-1052.
Chem Codes: Chemical of Concern: MOM,ES,CPY,BFT Rejection Code: MIXTURE.

Van den Brink, P. J., Hartgers, E. M., Gylstra, R., Bransen, F., and Brock, T. C. M. (2002). Effects of a Mixture of Two Insecticides in Freshwater Microcosms: II. Responses of Plankton and Ecological Risk Assessment. *Ecotoxicology* 11: 181-197.
Chem Codes: Chemical of Concern: CPY,HCCH Rejection Code: MIXTURE

Wang, Z. and Zhang, Y. (1987). Effect of Soil Pollution on Soil Animal Community Structure. *Nat.Sci.J.Hunan Norm.Univ.* 10: 90-96.
Chem Codes: Chemical of Concern: CPY Rejection Code: MIXTURE.

Werner, I., Deanovic, L. A., Connor, V., De Vlaming, V., Bailey, H. C., and Hinton, D. E. (2000). Insecticide-Caused Toxicity to Ceriodaphnia Dubia (Cladocera) in the Sacramento-San Joaquin River Delta, California, Usa. *Environ.Toxicol.Chem.* 19: 215-227.
Chem Codes: Chemical of Concern: DZ,CPY,CBF Rejection Code: MIXTURE.

Wicks, T. J. and Granger, A. R. (1989). Effects of Low Rates of Pesticides on the Control of Pests and Diseases of Apples. *Aust.J.Exp.Agric.* 29: 439-444.
Chem Codes: Chemical of Concern: ES,CPY,Ziram,FRM,DOD,AZ,MZB Rejection Code: MIXTURE.

Yeary, R. A. (1984). Oral Intubation of Dogs With Combinations of Fertilizer, Herbicide, and Insecticide Chemicals Commonly Used on Lawns. *Am.J.Vet.Res.* 45: 288-290.
Chem Codes: Chemical of Concern: DMB,24DXY,CPY,MCPP1,BS Rejection Code: MIXTURE.

Zhang, Z. Y., Liu, X. J., Yu, X. Y., Zhang, C. Z., and Hong, X. Y. (2007). Pesticide Residues in the Spring Cabbage (Brassica Oleracea L. Var. Capitata) Grown in Open Field. *Food Control* 18: 723-730.
Chem Codes: Chemical of Concern: DM,CTN,DMT,CPY,CYH,CYP,FNV Rejection Code: MIXTURE