



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

WASHINGTON D.C., 20460

OFFICE OF
PREVENTION, PESTICIDES AND
TOXIC SUBSTANCES

DP Barcode: 306787
PC Code: 090601
Chemical Name: Carbofuran

MEMORANDUM

DATE: June 3, 2005

SUBJECT: Revised EFED Risk Assessment of Carbofuran in Support of the Reregistration Eligibility Decision; Response to FMC's Error Correction Submission

FROM: Elizabeth Behl, Chief
Environmental Risk Branch IV
Environmental Fate and Effects Division(7507C)

TO: Robert McNally, Chief
Special Review Branch
Special Review and Registration Division(7508C)

Please find included in this memo a table that outlines FMC's suggestions for Error Corrections for the EFED Risk Assessment of Carbofuran in Support of the Reregistration Eligibility Decision and a description of how EFED addressed each suggestion (found in the 'Response' column). EFED's responses to error corrections regarding the reference sections are included after the table; EFED's responses are bolded and underlined. Also, please find attached a copy of the revised EFED risk assessment in which the described corrections have been incorporated and additional minor editorial changes have been made.

Executive Summary

Header	Page #, Para #	Comments	Response
Executive summary	ii, Nonlisted Species, 2 nd bullet point	Sentence should end with i.e. (<i>at registered use rates</i>)	The suggested change was made
Executive summary	v, Ecological Risk Conclusions - 2 nd line	Range of RQs should be 0.6 - 6,897.5, rather than the document specified range 0.6 - 6552.	Executive summary edited for clarity in which this reference to RQ's was deleted
Executive summary	vi. 1 st full paragraph, line 7	It appears that <i>maximum</i> should be inserted before the word estimated for clarity.	Executive summary edited for clarity in which this sentence was deleted
Executive summary	vi. 2 nd full paragraph, line 3	It appears that <i>maximum</i> should be inserted before the word estimated for clarity.	Executive summary edited for clarity in which this sentence was deleted
Executive summary	xi, 2 nd paragraph, line 2	Insert <i>acutely</i> before the word exposed and <i>freshwater invertebrate</i> before the word populations.	The suggested changes were made
Executive summary	xi, 2 nd paragraph, line 4	Define the acronym <i>SSD</i> .	The suggested change was made
Executive summary	xii, 1 st paragraph, last sentence	The citation of incidents attributed to insecticide mixtures (e.g. carbofuran and azinphos-methyl) should be removed from the executive summary since the cause of mortality is uncertain.	The sentence now reads: Three large incidents... were also reported where carbofuran residues in surface water exceeded acute fish toxicity levels for applications of carbofuran (unknown formulation) in combination with azinphos-methyl to potatoes after rain events.
Executive summary	xiv, last paragraph, Line 9	The 1.2 ppb value for the invertebrate LC ₅₀ appears to be incorrect. The lowest reported in Appendix H6 is 4.6 ppb.	Executive summary edited for clarity in which this sentence was deleted

1. Environmental Risk Assessment

Header	Page #, Para #	Comments	Response
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1.2.3 Exposure Pathways	11, last sentence	Carbofuran is not appreciably volatile. Inferring exposure by this pathway would be erroneous.	Sentence does not address the significance of the pathway. Indicates that it's a potential pathway, which is correct
1.2.4 Assessment Endpoints	12, last sentence	Although the wettable powder formulation is registered by FMC, it has never been marketed and was replaced by the flowable formulation; therefore any risks associated with the wettable powder formulation are not relevant to the current assessment.	Sentence added to reflect this.
1.2.5.1 Screening-Level Risk Assessment	14, Last paragraph, 1 st sentence	Alter the sentence to end with (contaminated food items, <i>which is worst-case</i>).	Suggested modification would make statement incorrect. Not considering all potential routes of exposure, as stated in the next sentence, results in lower exposure levels than the "worst case".
1.2.5.2 Risk Hypothesis	15, last sentence in 1 st paragraph of section	The meaning of the sentence appears to be unclear (suggest rewording).	The sentence now reads: It was determined that estimating the magnitude and frequency of mortality for a subset of the terrestrial and aquatic analyses would help clarify the interpretation of risk.
1.2.5.2 Risk Hypothesis	16, 1 st paragraph	It is suggested that 2-d be changed to 2-D for text consistency.	The suggested changes were made

2. Characterization of Environmental Exposure

Header	Page #, Para #	Comments	Response
2.4 Aerobic soil metabolism	24, Paragraph 1, Line 7	It is more appropriate to use the term "bound" then the term "un-extracted"	The suggested change was made
2.5 Anaerobic Aquatic Metabolism	24, Paragraph 1, Line 6	It is more appropriate to use the term "bound" then the term "un-extracted"	The suggested change was made

2.6 Aerobic Aquatic Metabolism	24, Para 1, Line 2	The phrase “ <i>due to poor study design</i> ” is unnecessary.	This phrase was deleted from the sentence
2.6 Aerobic Aquatic Metabolism	24, Para 1, Line 6	It is suggested that the last sentence be removed. “ <i>Note that hydrolysis is expected to be negligible under these pH conditions</i> ”. This is a conclusion based on pure aqueous hydrolysis. Soil hydrolysis is governed by many other factors such as soil matrix catalysis.	The sentence was kept the same but a reference was added to “see MRID 421175-02”.
2.12 Terrestrial Field Dissipation	29 and 30 and Table 2.4	FMC’s most recent terrestrial field dissipation study is not discussed in this paragraph or in the tabular summary of dissipation studies. Please add discussion of “Furadan 4F Insecticide Terrestrial Field Dissipation”, 1998 (MRID#44656802). The study results show the half-lives to be 4 and 113 days for the Iowa and Kansas sites, respectively.	This study has been added to the discussion and Table 2.4

3. Refined Terrestrial Risk

Header	Page #, Para #	Comments	Response
3.0 Refined Terrestrial Risk	Page 31, Paragraph 1	See Appendix I not I	The suggested change has been made
3.0 Refined Terrestrial Risk	31, 2 nd sentence, 1 st paragraph	Range of RQs should be 0.6 - 6,897.5, not 0.6 to 6552.	The suggested change has been made
3.0 Refined Terrestrial Risk	Page 32, Paragraph 1, line 4	“... and associated with (insert) <i>time in treated fields</i> .”	The suggested change has been made
3.0 Refined Terrestrial Risk	Page 33, Paragraph 1	“... of the screening level (insert) <i>deterministic model</i> .”	The suggested change has been made

3.2.2.4 Cw in Puddles Contaminated by Field Runoff	Page 51, line 13	The units are omitted (<i>ppb</i>) for the means for corn and alfalfa.	The suggested change has been made (using 'ppm' not 'ppb')
3.3.1 Acute Toxicity to Terrestrial Species	52, line 2	"Fulvous Whistling Duck" for 7.9 mg/kg to the..." should read <i>Fulvous Whistling Duck to 7.9 mg/kg for the...</i> "	The suggested change has been made
3.3.2 Laboratory Toxicity Test Limitations	57, line 2	Please reference (could not verify) where the LC ₅₀ values for mallards is contained within the document.	The reference has been added
3.3.3 Inter-Species Toxicity Variability	59, Step 1 equation	Equations are confusing. Suggest more space between the two or else it appears to be one equation. The body weight scaling factor in the equation does not match the text. Please define the W.	The suggested change has been made
3.3.3 Inter-Species Toxicity Variability	59, Step 3 equation	Please define <i>SD</i> and show how the 1.71 value is obtained.	<i>SD</i> defined as suggested. Reference for 1.71 modified to indicate its from Aldenberg and Slob (1993).
3.3.2 Laboratory Toxicity Test Limitations	57, 2 nd sentence	It is not clear where the values in the sentence came from. Please show which studies were used to obtain the average LC ₅₀ =96.7 Using the LC ₅₀ values from Table 3.10 results in an average of 398.8 ppm	The suggested change has been made
3.3.4 Intra-Species Toxicity Variability	62, 1 st paragraph	Display the graph where the geometric mean of 5.7 is derived.	A graph was not used to derive the geometric mean.
3.3.5 Chronic Risk to Terrestrial Species	64, 2 nd paragraph	Goldenthal & Rapp (1979) reference should be with 2 nd sentence, not the 1st.	The suggested change has been made

3.3.5 Chronic Risk to Terrestrial Species	65, Paragraph 1, Line 7	“... 33 fold (not 51) difference”	51 is correct. The comparison is between the highest and lowest values reported not the means.
3.4.2 Results and Discussion	68, first full Paragraph 1, Line 3	“the choice of drinking water (insert the word <i>puddle</i> source does not influence...”	The suggested change has been made
3.4.2 Results and Discussion	79, 3 rd sentence	Max... was 48% Insert - <i>for the grasshopper sparrow</i>	The suggested change has been made
3.4.3.1 Effect of Time Step on Exposure Predications	86, Equation	Indicate reference of chicken elimination rate.	Reference added
Table 3.18	96, row corn, column 1972-1991, column post 1991	Table 3.18 (p-96) title should be “ <i>from 1972 to 2000</i> ” (coincides with text immediately above and Table 3.19 (p 100) which has no incidents after 2000. Second column (1972-1991), corn should be 3 incidents and 3 rd column (post 1991) should be 1991-2000 and corn incidents should be 4 rather than 6.	The suggested change has been made
	96, row alfalfa column 1972-1991, column total incidents	Second column (1972-1991), alfalfa should be 11 incidents and 4 th column (total should be 20 rather than 21. The 17Mar1992, Stanislaus County incident was counted twice. Incident was listed in both Table 3.19 and 3.20	The suggested change has been made
	96, row other column 1972-1991, column post 1991	Second column (1972-1991), other should be 1 rather than 2 and 3 rd column (post 1991) should be 2 rather than 1	The suggested change has been made
	96, row total	1972-1991 should be 16. Post 1991 should be 14. Total should be 30.	The suggested change has been made

3.5.1 Wildlife Incident Reports	99, last line	31 should be 30.	The suggested change has been made
Table 3.19	100, rows 1, 3, and 5	Mixtures of several products with carbofuran should be presented in a separate table.	Rows 1, 3 and 5 do not reference mixtures.
3.5.2.1 Cotton	116, paragraph after Table 3.22	Since this is a risk assessment for wildlife, it appears appropriate to remove the human incident portion from this section.	The implications from the human incident appears extremely relevant to risk to wildlife, particularly small mammals. Suggested modification not made.
3.5.3.1 Flowable Carbofuran Corn Studies	121, 1 st paragraph, last sentence	The sentence appears to be an incomplete thought.	Sentence edited to clarify
3.6 Refined Terrestrial Ecological Risk Summary and Conclusions	131, 2nd paragraph, last sentence	The “redwing blackbirds” are not properly referenced here since the mortality ranges are from 24-64% instead of the 95% value.	24- 64 % are the mean mortality levels, while the 95% refers to the highest level for a group of exposed individuals. No modification made.
3.6 Refined Terrestrial Ecological Risk Summary and Conclusions	132, line 7	31 should be 30.	The suggested change has been made

4. Refined Aquatic Risk

Header	Page #, Para #	Comments	Response
4.1.2 Routes of Exposure Considered	Page 135, Paragraph 2	Aqueous solubility is 350 not 700 mg/L. Reference: Alvarez, M. September 1998. Carbofuran Evaluation of Physical Properties. Unpublished report for FMC Corporation Princeton, New Jersey, USA. Report no. FMC-378AF8765-7. (MRID#44656801)	This change has not been made because most available studies agree with 700 mg/L
4.1.3 Overview of Surface Water Exposure Model	Page 135, Paragraph 1	The version number of PRZM and EXAMS model needs to be included.	The suggested change has been made

<p>4.1.3 Overview of Surface Water Exposure Model</p>	<p>136, Table 4.2</p>	<p>Aerobic Aquatic Metabolism half-life is 41 not 641 days. Reference: Saxena, A. et al. 1994. Aerobic Aquatic Metabolism of 14C-Carbofuran. Battelle, Columbus, Ohio, USA. Unpublished report for FMC Corporation Princeton, New Jersey, USA. Report no. PC-0199.(MRID#432869 01) Anaerobic Aquatic Metabolism half-life is 189 not 624 days. Reference: Saxena, A. et al. 1994d. Anaerobic Aquatic Metabolism of 14C-Carbofuran. Battelle, Columbus, Ohio, USA. Unpublished report for FMC Corporation Princeton, New Jersey, USA. Report no. PC-0206.(MRID#434371 01)</p>	<p>The study was rejected due to high pH levels</p>
<p>4.2.2 Acute Toxicity: Aquatic Invertebrates</p>	<p>140, last sentence, 1st paragraph</p>	<p>Red crayfish LC₅₀ = 2360 ppb, not 2700 ppb (FMC A1982-696-01 & NCT 354.61-02)</p>	<p>The DER has a summary statement of 2260 ppm value which was marked off and corrected on June 2000, because it was a typo. The reviewer's calc shows the correct 2690 ppm (which is rounded to 2700 ppm in table).</p>
<p>4.2.2 Acute Toxicity: Aquatic Invertebrates</p>	<p>140, 2nd paragraph, 2nd sentence</p>	<p>1.6 for midge not 1.4, to 44,600 not 48, 500.</p>	<p>The "1.4" was adjusted for analysis by a.i.</p>
<p>4.2.7.1 Acute SSD for Freshwater Fish and Amphibians</p>	<p>145, Paragraph 1, Line 9</p>	<p>Value for the 95th percentile LC₅₀ is missing in the text</p>	<p>It has been added to the text</p>
<p>4.2.7.1 Acute SSD for Freshwater Fish and Amphibians</p>	<p>145, 3rd to last sentence</p>	<p>... percentile LC₅₀ is 950 ppb (950 ppb is missing)</p>	<p>It has been added to the text</p>
<p>4.2.7.1 Acute SSD for Freshwater Fish and Amphibians</p>	<p>145, Table 4.3</p>	<p>Units are needed in the table for LC₅₀ or EC₅₀ column.</p>	<p>Units have been added</p>

4.2.7.2 Acute SSD for Freshwater Invertebrates	146, Paragraph 1, Line 13	Figure is missing a designation number in the sentence.	A figure designation number has been added
4.2.7.3 Acute SSD for Saltwater Invertebrates	147, Paragraph 1	Should state (<i>Table 4.3</i>) not (<i>Table 4.4</i>).	The suggested change has been made
4.2.7.3 Acute SSD for Saltwater Invertebrates	147, Paragraph 1	There is no <i>Table 4.4</i> present in this section of the document.	The reference has been changed to " <i>Table 4.3</i> "
4.2.8 Intra-Species Variability	148, Figure	Figure is missing a figure number	A figure number has been added
4.3.1.1 Corn - Maximum Foliar Application Rate	150	Please state the 2-D Monte Carlo analysis program that was employed?	The suggested change has been made
4.4.1 Carbofuran Monitoring in Surface Water and Ground Water	180, 1 st paragraph, Line 3	Chapter 6 should be referenced not Chapter 7.	The suggested change has been made

6. Drinking Water (Human) Resources Assessment

Header	Page #, Para #	Comments	Response
6.0 Drinking Water (Human) Resources Assessment	185, paragraph 3, Line 6	Table 6.23 should be referenced instead of Table 6.24.	The suggested change has been made
6.0 Drinking Water (Human) Resources Assessment	186, paragraph 1, Line 2	Table 6.20 should be referenced instead of Table 6.21.	The suggested change has been made
6.0 Drinking Water (Human) Resources Assessment	187, paragraph 2, Line 2	Section 6.3.2 should be referenced instead of Section 6.3.	The suggested change has been made
6.1.1 Surface Water Modeling of Carbofuran Transport into Drinking Water Sources	189, Table 6.2	Water Solubility should be 350 instead of 700. Alvarez, M. September 1998. Carbofuran Evaluation of Physical Properties. Unpublished report for FMC Corporation Princeton, New Jersey, USA. Report no. FMC-378AF8765-7. (MRID#44656801)	This change has not been made because most available studies agree with 700 mg/L

6.1.1 Surface Water Modeling of Carbofuran Transport into Drinking Water Sources	189, Table 6.2	Aerobic Aquatic Metabolism half-life is <i>41</i> instead of the 641 days listed. Reference: Saxena, A. et al. 1994. Aerobic Aquatic Metabolism of ¹⁴ C-Carbofuran. Battelle, Columbus, Ohio, USA. Unpublished report for FMC Corporation Princeton, New Jersey, USA. Report no. PC-0199.(MRID#432869 01)	The study was rejected due to high pH levels
Section 6.1.1 Surface Water Modeling of Carbofuran Transport into Drinking Water Sources	191, Table 6.3	The low rate label modeling results from ME and ID potato, CA grape, PA and CA alfalfa appear to be missing.	These were not included because they are not significant drivers
Section 6.2.2.1 Prospective Ground Water Monitoring	212, Table 6.21	The maximum value for the range column of 65 ppb should be changed to match the text value of 64 ppb.	The suggested change has been made
Section 6.2.2.1 Prospective Ground Water Monitoring	213, paragraph 3	Figure 6.1 mentioned in line 1 is missing.	The figure has been added
Section 6.2.2.1 Prospective Ground Water Monitoring	214, paragraph 3	In line 5, 10 lb/cre should read 10 lb/acre	The suggested change has been made

7. References

There appear to be a considerable number of errors discovered in this section (pages 253-272). To assist in error correction, a section at the end of this document is provided with a breakdown of the error categories beginning on page 15. See below for responses

Appendix 1

Header	Page #, Para #	Comments	Response
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<p>Appendix 1, Executive summary, Appendix 1, 1.1.1, Identification, Formulation, and Mechanism of Action Appendix 1, 1.3 Receptors and Assessment Endpoints</p>	<p>ix, 1st paragraph, 1, 2nd to last sentence, page 7</p>	<p>Although the wetttable powder formulation is registered by FMC, it has never been marketed and was replaced by the flowable formulation; therefore any risks associated with the wetttable powder formulation are not relevant to the current assessment.</p>	<p>Sentence added to reflect use information for wetttable powder</p>
<p>Appendix 1, 2.2 Avian and Mammalian Exposure Assessment</p>	<p>27</p>	<p>The FATE model should be referenced.</p>	<p>The suggested change has been made</p>
<p>Appendix 1, 2.3 Terrestrial Screening Level Effects Assessment</p>	<p>28, 1st paragraph, last sentence</p>	<p>Please change to read as “... ECOTOX, but <i>were not</i> used in the risk assessment.”</p>	<p>The suggested change has been made</p>
<p>Appendix 1, 2.3.1 Toxicological Profile for Terrestrial Wildlife</p>	<p>28, 1st paragraph, 2nd sentence</p>	<p>Insert either “MRID” or “ACC# (whichever is appropriate) to study # 2182006-06</p>	<p>The suggested change has been made</p>
<p>Appendix 1, 2.4.9 Secondary Poisonings</p>	<p>65, 2nd full paragraph</p>	<p>It is stated that 406 raptor mortalities are due to carbofuran - then it is stated that 25 were from label uses, 55 due to label abuse and for 36 use pattern was unknown - this adds up to 116 not 406.</p>	<p>406 is referring to individual mortalities while the others are referring to incidents that involved these mortalities. Edited to clarify meaning.</p>
<p>Appendix 1, 2.4.9 Secondary Poisonings</p>	<p>66, 67 tables 2.4.3, 2.4.4</p>	<p>It is unclear how the number of prey species needed to be consumed to equal the LD₅₀ is calculated. Need to know the ppm in prey species. How is that derived?</p>	<p>Table 2.4.3 gives the ppm and reference the source.</p>
<p>Appendix 1, 2.6.1 Residue Assumptions</p>	<p>78, 1st paragraph, last sentence 79, table 2.6.1</p>	<p>A NOEC of 15 ppm is available from a quail reproduction study. This number should be used rather than an estimated value.</p>	<p>The 15 ppm suggested is not a NOEC, but a LOEC as was the endpoint used. Even if, 15 ppm was a NOEC, with an LOEC lower, the higher NOEC would not be the appropriate number to use.</p>

Appendix 1, 2.6.2 The Significance of Foliar Half-Life Assumptions Used in the Model	80, 1 st paragraph, 2 nd sentence	insert <i>days</i> after 35	The suggested change has been made
Appendix 1, 2.6.2 The Significance of Foliar Half-Life Assumptions Used in the Model	80, 1 st paragraph, 2 nd sentence	270 days instead of 298	The suggested change has been made
Appendix 1, 2.6.2 The Significance of Foliar Half-Life Assumptions Used in the Model	80, 1 st paragraph, last sentence	Insert <i>days</i> after 2.72, 5 instead of 7 and 19 instead of 21 days.	The suggested change has been made
Appendix 1, 2.6.2 The Significance of Foliar Half-Life Assumptions Used in the Model	82, 1 st paragraph, 2 nd sentence	“... for 130 instead of 157 and 270 instead of 298 days”.	The suggested change has been made
Appendix 1, 2.6.3 Chronic Endpoints	82, 2 nd sentence	The (<i>NOEC</i>) instead of the (<i>LOEC</i>) for mallard is 2.0 ppm...	2.0 ppm is the <i>LOEC</i>
Appendix 1, 2.6.3 Chronic Endpoints	83, 2 nd paragraph, Line 2	This appears to be an FMC study, please provide an MRID #.	The suggested change has been made
Table 3.2.1 Carbofuran Fate Properties	Page 86, Table 3.2.1	Aqueous solubility is 350 not 700 mg/L. Reference: Alvarez, M. September 1998. Carbofuran Evaluation of Physical Properties. Unpublished report for FMC Corporation Princeton, New Jersey, USA. Report no. FMC-378AF8765-7. (MRID#44656801)	This change has not been made because most available studies agree with 700 mg/L
Table 3.2.1 Carbofuran Fate Properties	Page 86	Aerobic Aquatic Metabolism half-life is 41 not 641 days. Reference: Saxena, A. et al. 1994. Aerobic Aquatic Metabolism of 14C-Carbofuran. Battelle, Columbus, Ohio, USA. Unpublished report for FMC Corporation Princeton, New Jersey, USA. Report no. PC-0199.(MRID#432869 01)	The study was rejected due to high pH levels

Table 3.2.1 Carbofuran Fate Properties	Page 86	Anaerobic Aquatic Metabolism half-life is 189 not 624 days. Reference: Saxena, A. et al. 1994d. Anaerobic Aquatic Metabolism of 14C-Carbofuran. Battelle, Columbus, Ohio, USA. Unpublished report for FMC Corporation Princeton, New Jersey, USA. Report no. PC-0206.(MRID#434371 01)	These are model inputs which follow EFED model parameter guidance
Table 3.3.1 Summary of Measurement Endpoints...	Page 92	The bluegill sunfish value of 88 ppb is listed as “core” whereas in the EPA ECOTOX database it is listed as “supplemental”.	To our knowledge the designation of the study as ‘supplemental’ in the ECOTOX database is in error; we are working to confirm this.
Table 3.3.1 Summary of Measurement Endpoints...	Page 92	The NOEC that should be used for the Sheepshead minnow for chronic RAs should be 6.0 ppb rather than 2.6 ppb.	The DER for this study identified that the William’s test instead of the Dunnett’s test was used which produced a lower value
Appendix 1, 3.3.1 Acute Toxicity: Freshwater Fish and Amphibian Tests	93, last paragraph	There appear to be 10 freshwater species in Appendix H, NOT 8.	No change made (the correct number is ‘8’)
Appendix 1, 3.3.3 Acute Toxicity: Freshwater Aquatic Invertebrates	96, 2 nd full paragraph	Please change midge lowest LC ₅₀ to 1.6 from 1.4.	The “1.4” was adjusted for analysis by a.i.
Appendix 1, 6.3 Listed Species Occurrence in Carbofuran Use Areas	139-144, Table 6.3.1-6.3.4	In the pdf version, columns 6 & 8 are missing a taxonomic group title.	These are fine on the electronic version
Appendix 1, 7.0 References		There appear to be a considerable number of errors discovered in this section (pages 147-153). To assist in error correction, a section at the end of this document is provided with a breakdown of the error categories beginning on page 15.	See below

Appendix A Furadan 4F, Section 24C Uses

Header	Page #, Para #	Comments	Response
Corn, Field AL880003	A-1, Application rate and number of applications/year, and Application method column	Application rate: 1 pint per acre in 20-30 gallons of water (max of 4 foliar applications allowed). Application method: ground application only. Direct spray to base of plants.	The suggested change was made
Corn, Field SC79002600	A-1, Application rate and number of applications/year	Insert 1 application/season.	The suggested change was made
Cucurbits DE93000100	A-1, Application rate and number of applications/year	3.8 oz per 1000 linear ft of row (2 pints per acre based upon 60 inch row spacing)	The suggested change was made
Nursery Stock OR83003600	A-4, SLN#	The SLN number should be OR83003600 instead of OR83006000	The suggested change was made
Peppers NM98000200	A-5, Pest	The pests should include thrips.	The suggested change was made
Peppers TX03000200	A-5, SLN#, Application rate	The SLN# is TX03000200 instead of TX93001100. Application rate: 1 to 1.5 quarts per acre (1 to 1.5 pounds ai per acre)	The suggested change was made
Potatoes ID91000700	A-6, Pest, Application rate and number of applications/year, Application method columns	Pest: wireworms (suppression only). Application rate/year: Do not make a foliar application if Furadan was applied at planting. Application method: At planting up to 4 inch rosette.	The suggested change was made
Potatoes OR91000600	A-6, Pest, Application rate and number of applications/year, Application method columns	Pest: wireworms (suppression only). Application rate/year: Do not make a foliar application if Furadan was applied at planting. Application method: At planting up to 4 inch rosette.	The suggested change was made

Appendix A	A-12	The table is not complete.	Additional 24c 's added
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Appendix B Furadan 15G, Section 24C Uses

Header	Page #, Para #	Comments	Response
Cucurbits MI-82002500	B-1, SLN#	The SLN number should be MI82002500 instead of MI93000100	The suggested change was made
Cucurbits MO-86000300	B-1, SLN#	The SLN number should be MO86000300 instead of MO93002000	The suggested change was made

Appendix C Furadan 4F, Usage Information Used in RQ Calculations

Header	Page #, Para #	Comments	Response
Alfalfa Section 24C	C-1	All alfalfa at planting Section 24(c) labels have been cancelled. This use should be remove from RQ calculations.	The suggested change was made

Appendix D, Equations and Sample Calculations:

Header	Page #, Para #	Comments	Response
Appendix D	D-1, Broadleaf plants and insects	Last sentence - correct bird consumption is 115% instead of 114%	Difference appears to be due to rounding, not calculation error
Appendix D	D-2, Seeds, 1st sentence	Bird consumes 25.6% instead of 28.4%	The suggested change was made

Appendix E

Header	Page #, Para #	Comments	Response
Appendix E	E-3, third row, 4 th column, 2 nd line	First 50s should be deleted.	Suggested change made

Appendix G

Header	Page #, Para #	Comments	Response
Appendix G, Table of Contents	G-1	Page numbers for NC Tobacco should be G17, G17, and G18 instead of F-58, F-67, and F-69	The suggested change has been made

Appendix G,	G-2 to G17, Input File 1a to 8a	Corrections to aqueous water solubility as stated earlier (350 mg/L instead of 700 mg/L) , Aerobic aquatic metabolism (41 days instead of 642 days)	This change has not been made because most available studies agree with 700 mg/L; the study indicating 41 days was rejected due to high pH levels
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Appendix H

Header	Page #, Para #	Comments	Response
Appendix H	H-1, 1 st row	The validity of GS0003503 as a core study is questioned.	To our knowledge the designation of the study as ‘supplemental’ in the ECOTOX database is in error; we are working to confirm this.
Appendix H	H-4, 1 st table, 3 rd row	Red crayfish tox value is 2360 ppb, NOT 2700.	The DER has a summary statement of 2260 ppm value which was marked off and corrected on June 2000, because it was a typo. The reviewer's calc shows the correct 2690 ppm (which is rounded to 2700 ppm in table).

Appendix S

There appear to be a considerable number of errors discovered in this section (pages S1-S38). To assist in error correction, a section at the end of this document is provided with a breakdown of the error categories beginning on page 15. **See below for responses**

Appendix 6

Header	Page #, Para #	Comments	Response
Appendix 6	1, first row	This incident belongs in Appendix 5 (Wildlife Poisoning Incidents: Apparent Misuse)	Title of appendix modified to reflect contents of table
Appendix 6	1, 2 nd row	This incident belongs in Appendix 5 (Wildlife Poisoning Incidents: Apparent Misuse)	Title of appendix modified to reflect contents of table
Appendix 6	2, first row	This incident belongs in Appendix 5 (Wildlife Poisoning Incidents: Apparent Misuse)	Title of appendix modified to reflect contents of table

Appendix 6	3, 7 th row	This incident belongs in Appendix 5 (Wildlife Poisoning Incidents: Apparent Misuse)	Title of appendix modified to reflect contents of table
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Appendix 15

Header	Page #, Para #	Comments	Response
Appendix 15	1, last row	A negotiated settlement between FMC and EPA in 1991 regarding the discontinuance of the granular formulation in the US on corn makes reference to this incident of questionable significance. In addition FMC has already told EPA in previous responses that the reason the aquatic organisms died in this incident was due to the field becoming flooded by the local river after heavy rains and then the river retreated thereby land-locking the fish and eventually causing their deaths.	Change will be considered if additional documentation is provided

Appendix 17

There appear to be a considerable number of errors discovered in this section (pages 1-14). To assist in error correction, a section at the end of this document is provided with a breakdown of the error categories beginning on page 15. **See below for responses**

Errors Pertaining to Referencing within the Document

Section 7.0 References

Category 1) Reference is contained (i.e. name with a year) within the text of the document section but does not appear in the reference section.

None found.

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Dietrich, 1995 **Ref. Added**

Franson et. al., 1996 **Ref. Added**

Herbrandson, C. et.al., 1999 **Ref. Deleted**

Kamak, 1974 **"Kamak 1974" could not be found in the document**

Padhy, R. N. 2001 **Ref. Deleted**

Patil et. al., 1992 **Ref. Added**

Stinson, 1984 **Refs. to "Stinson 1984" were changed to "Stinson 1994"**

Category 2: Reference is contained within the text of the document but does not match what is in the reference section.

Felsot, 1998 Title? **Title added**

Surgeoner, year? **Year added**

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