

EEB FILE
6-16-94

June 16, 1994

NOTE TO: Dave Farrar, SACS
EEB File

SUBJECT: Addendum to 06/15/94 Amended Review for Sodium Omadine
RED: Barcode D199051

FROM: Norm Cook, EEB *Norm Cook*

The attached amended review was completed on 06/15/94 and forwarded to SACS. This review represents an amendment of the original 05/19/94 review based on a recalculation of the aquatic EECs. However, upon completion of this amendment EEB learned via discussion with Dave Farrar of SACS and Dave Jones of EFGWB that the "typical exposure case" EEC for Group D pesticides should be 106 ug/l (ppb). (See copy attached.)

Based on this correction, page 4 of the amended review should be modified to read as follows:

Paragraph one, last sentence: "The EECs from EFGWB (copy of review attached) range from 10,900 ppb to 133,300 ppb for the "high exposure case" and from 8.7 ppb to 106 ppb for the "typical exposure case".

Paragraph three, last sentence: "RQ values for rainbow trout, bluegill sunfish, and Daphnia magna using the **higher** "typical exposure case" EEC are: $106/7.3 = 14.5$, $106/8100 = 0.01$, and $106/9.2 = 11.5$, respectively".

If there any questions on the above, please let me know.

Attachment

cc: C. Laird

1/17



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

OFFICE OF
PESTICIDES AND
TOXIC
SUBSTANCES

MEMORANDUM

SUBJECT: Addendum to "Tier 1c EEC's for sodium omadine" with corrections
Reregistration Case: 0209
PC Code: 201509
DP Barcode: D201509
Registration No. 1258-843 1258-990
1258-1205 1258-1213
4808-3

TO: Tony Maciorowski, Chief
Ecological Effects Branch
Environmental Fate and Effects Branch

FROM: R. David Jones, Ph.D., Agronomist *R David Jones*
Surface Water Section
Environmental Fate and Ground Water Branch

THROUGH: Henry Nelson, Ph.D., Section Chief *H Nelson*
Surface Water Section
Environmental Fate and Ground Water Branch
Henry Jacoby, Branch Chief *Henry Jacoby*
Environmental Fate And Ground Water Branch 6/9/94
Environmental Fate And Effects Division

The memo "Tier 1c EEC's for sodium omadine had an error in Table 1. The Table 1 in that memo should be replaced by the Table 1 in this memo. The EEC for the high exposure case for the group D pesticides was in error and should be $133,300 \mu\text{g} \cdot \text{L}^{-1}$, not $13,300 \mu\text{g} \cdot \text{L}^{-1}$.

Table 1. Tier 1c EEC's for sodium omadine from use in metal working fluids.		
Pesticide	High Exposure Case	Typical Exposure Case
Group A	10,900 $\mu\text{g} \cdot \text{L}^{-1}$	8.7 $\mu\text{g} \cdot \text{L}^{-1}$
Group B	19,200 $\mu\text{g} \cdot \text{L}^{-1}$	15 $\mu\text{g} \cdot \text{L}^{-1}$
Group C	34,100 $\mu\text{g} \cdot \text{L}^{-1}$	27 $\mu\text{g} \cdot \text{L}^{-1}$
Group D	133,300 $\mu\text{g} \cdot \text{L}^{-1}$	106 (10.6 $\mu\text{g} \cdot \text{L}^{-1}$)

Group A: Cimcool Additive SO, Reg No. 4808-3
 Group B: Triadine 20% Industrial Microbiostat, Reg. No. 1258-1205
 Group C: Triadine 10 Bactericide-Fungicide, Reg. No. 1258-990
 Group D: Sodium Omadine 40% Aqueous Solution, Reg. No. 1258-843; Sodium Omadine 10% Aqueous Solution, Reg No. 1258-1213.

As per discussion with
 D. Jones & D. Farrar
 on 06.15.94, above should
 be 106 ppb.

M Cook
 06.15.94

cc: Harry Craven
 Norm Cook
 Curtis Laird
 David Ferrar
 reading file

DP Barcode : D199051
 PC Code No : 088004
 EEB Out : 06/15/94

To: Linda Propst
 Product Manager 73
 Special Review and Reregistration Division (7508W)

From: Anthony F. Maciorowski, Chief
 Ecological Effects Branch/EFED (7507C)

Attached, please find the EEB review of...

Reg./File # : 088004
 Chemical Name : Sodium Omadine
 Type Product : Microbiocide
 Product Name : Sodium Omadine Products
 Company Name : Olin Corporation
 Purpose : Amended review of RED package based on recal-
 culation of EECs.

Action Code : 623 Date Due : 06/15/94
 Scientist : C. Laird Date In : 02/09/94

EEB Guideline/MRID Summary Table: The review in this package contains an evaluation of the following:

GDLN NO	MRID NO	CAT	GDLN NO	MRID NO	CAT	GDLN NO	MRID NO	CAT
71-1 (A)			72-2 (A)			72-7 (A)		
71-1 (B)			72-2 (B)			72-7 (B)		
71-2 (A)			72-3 (A)			122-1 (A)		
71-2 (B)			72-3 (B)			122-1 (B)		
71-3			72-3 (C)			122-2		
71-4 (A)			72-3 (D)			123-1 (A)		
71-4 (B)			72-3 (E)			123-1 (B)		
71-5 (A)			72-3 (F)			123-2		
71-5 (B)			72-4 (A)			124-1		
72-1 (A)			72-4 (B)			124-2		
72-1 (B)			72-5			141-1		
72-1 (C)			72-6			141-2		
72-1 (D)						141-5		

Y=Acceptable (Study satisfied Guideline)/Concur
 P=Partial (Study partially fulfilled Guideline but
 additional information is needed
 S=Supplemental (Study provided useful information but Guideline was
 not satisfied)
 N=Unacceptable (Study was rejected)/Nonconcur

DP BARCODE: D199051

REREG CASE # 0209

CASE: 819311
SUBMISSION: S457767

DATA PACKAGE RECORD
BEAN SHEET

DATE: 02/04/94
Page 1 of 1

* * * CASE/SUBMISSION INFORMATION * * *

CASE TYPE: REREGISTRATION ACTION: 623 INITIATE RED CHAPTER
CHEMICALS: 088004 1-Hydroxy-2-(1H)-pyridinethione, sodium salt 100.00 %

ID#: 088004

COMPANY:

PRODUCT MANAGER: 73 LINDA PROPST 703-308-8165 ROOM: CS1 2L5
PM TEAM REVIEWER: MARIO FIOL 703-308-8049 ROOM: CS1 2A6
RECEIVED DATE: 02/04/94 DUE OUT DATE: 07/04/94

* * * DATA PACKAGE INFORMATION * * *

DP BARCODE: 199051 EXPEDITE: N DATE SENT: 02/04/94 DATE RET.: / /
CHEMICAL: ~~088004~~ 1-Hydroxy-2-(1H)-pyridinethione, sodium salt
DP TYPE: 001 Submission Related Data Package

CSF: N LABEL: Y

ASSIGNED TO	DATE IN	DATE OUT	ADMIN DUE DATE: 07/04/94
DIV : MPD	02/08/94	/ /	NEGOT DATE: / /
BRAN# EEB	52/09/94	/ /	PROJ DATE: / /
SECT:	/ /	/ /	
REVR :	/ /	/ /	
CONTR:	/ /	/ /	

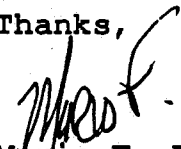
* * * DATA REVIEW INSTRUCTIONS * * *

Kindly direct these packages to Rob Kyle.

Rob, please find attached 3 copies of the Sodium Omadine RED Deliverable.

Please call me if there are any problems/issues.

Thanks,


Mario F. Fiol
308-8049

* * * DATA PACKAGE EVALUATION * * *

No evaluation is written for this data package

* * * ADDITIONAL DATA PACKAGES FOR THIS SUBMISSION * * *

DP BC	BRANCH/SECTION	DATE OUT	DUE BACK	INS	CSF	LABEL
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MAY 19 1994

MEMORANDUM

SUBJECT: EEB RED Document for Sodium Omadine (Case 0209,
Chemical 088004, DP Barcode D199051)

FROM: *for* Anthony F. Maciorowski, Chief *Joseph J. Laird*
Ecological Effects Branch
Environmental Fate and Effects Division (7507C) *5/19/94*

TO: David B. Farrar
Science Analysis and Coordination Staff
Environmental Fate and Effects Division (7507C)

Attached is the EEB RED review for sodium omadine. The document contains a risk assessment for industrial microbiocide uses based on receipt of EEC's from EFGWB.

There are no outstanding data requirements for EEB.

Any questions or comments on this memo should be referred to Curtis E. laird at 305-5636.

Attachments

SODIUM OMADINE

REREGISTRATION ELIGIBILITY DOCUMENT

A. Ecological Hazard for Sodium Omadine

1. Formulations and Uses

The following formulation and use data was obtained from the LUIS report for sodium omadine, dated September 22, 1993.

Sodium Omadine is a broad spectrum antimicrobial compound used as a preservative in certain manufactured materials and as an additive in cutting fluids. They are as a bacteriostat, fungicide, microbiocide/microbiostat (slime-forming bacteria), microbiocide/microbiostat (slime-forming fungi), to control fungi and/or bacteria growth. All uses fall under the indoor use category. The technical grade material is 90% ai. All end use products are soluble concentrates/liquids ranging from 4% to 42.0% ai. The fish and wildlife studies used in the sodium omadine RED were conducted with end use products ranging from 40% to 41.9% ai.

2. Data Requirements

EEB has no outstanding data requirement.

The three avian studies (bobwhite quail, MRID No. 403634-01; bobwhite quail, MRID No. 0073656; and mallard duck, MRID No. 00073657) were determined to be acceptable to support reregistration of sodium omadine. Two of the three aquatic studies (bluegill sunfish, MRID No. 403585-01; and Daphnia magna, MRID No. 00103228) meet guideline requirements in support of reregistration. The rainbow trout study (MRID No. 404945-01) was considered supplemental.

3. Disciplinary Review

ECOLOGICAL EFFECTS PROFILE

Fish and Wildlife Data

EEB has reviewed and categorized the following studies submitted by the registrant:

Guideline MRID Ref. No. No.	Test Species	Percent a.i.	Test Type	Test Results	Study Status
71-1 403634-01	bobwhite quail	41.9	Acute Oral	LD50=441 mg prod/kg	Core

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71-2 00073657	Mallard	40	Avian Dietary	LC50 9119 ppm prod	Core
-1-					
71-2 0073656	Bobwhite quail	40	Avian Dietary	3247 ppm prod	Core
72-1 404945-01	Rainbow trout	41.9	Fish Acute	LC50 <7.3 ug ai/L	Suppl.
72-1 403585-01	Bluegill	41.9	Fish Acute	LC50=8.1 mg ai/L	Core
72-2 00103228	Daphnia	40	Invert. Acute	LC50=23 ug prod/L	Core

Terrestrial Studies

Based on the three avian studies, sodium omadine is considered moderately toxic to birds.

Freshwater Aquatic Studies

Based on the three aquatic studies, this chemical is considered very highly toxic to both freshwater fish and freshwater aquatic invertebrates.

Estuarine/Marine Studies

No data were available on the toxicity of sodium omadine to estuarine and marine organisms. For the presently registered uses of sodium omadine these data are not required.

Nontarget Insects

Nontarget insect testing is not required based on the use patterns for sodium omadine.

Nontarget Plants

Nontarget plant testing is not required based on the use patterns for sodium omadine.

B. Ecological Risk Assessment

1. Label Statements

This pesticide is toxic to fish and aquatic invertebrates. Do not discharge effluent containing this pesticide into lakes,

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ponds, streams, estuaries, oceans or public waters unless this product is specifically identified and addressed in an NPDES permit. Do not discharge effluent containing this product into sewer systems without previously notifying the sewage treatment plant authority. For guidance contact your State or Regional Office of the EPA.

At the present time the Agency is working with the U.S. Fish and Wildlife Service and other federal and state agencies to develop a program to avoid jeopardizing the continued existence of listed species by the use of pesticide. When ^{the} Endangered Species Protection Program is implemented and subsequent guidance is given, endangered species labeling amendments may be required on affected end-use products. Labeling statements will likely refer users to county specific bulletins specifying detailed limitations on use to protect endangered species.

2. Data Requirements

There are no outstanding data requirements for sodium omadine.

3. Ecological Risk Assessment

Sodium omadine is considered moderately nontoxic to birds and is not expected to be found in the environment at levels of concern. Therefore, risk to birds is expected to be minimal.

Sodium omadine is considered very highly toxic to freshwater fish, and aquatic invertebrates. The EFGWB determined Tier 1c EEC's (estimated environmental concentrations) for aquatic residues occurring immediately downstream from industrial discharge sites. A stream flow screening model was used by EFGWB to determine "high exposure case" and "typical exposure case" EEC's for metal working fluids. Sodium omadine is an industrial biocide used for controlling fungal and bacterial growth in metal working fluids, paints, inks, adhesives, plastics, laundry rinse additives, detergents, polymers, and floor finishes. Metal working fluids, laundry additives, and detergents can have discharges into the aquatic environment. However, EFGWB indicated that the Agency does not have an adequate method for calculating EEC's for laundry rinse additives and detergents. Therefore, the metal working fluids use was chosen.

For the acute risk characterization, the risk quotient (RQ) = EEC/LC_{50} , the High Risk Level of Concern (HR LOC) = 0.5, and when $RQ > 0.5$ (HR LOC), high risk is presumed. The available acute aquatic toxicity data for sodium omadine are: rainbow trout $LC_{50} = < 7.3$ ppb active ingredient (ai), bluegill sunfish $LC_{50} = 8.1$ ppm ai, and Daphnia magna $LC_{50} = 23$ ppb (40% product; 9.2 ppb ai when adjusted to TGAI). (Although the rainbow trout study is considered not fully acceptable to support reregistration, it

does supply some useful information by indicating the LC₅₀ is in the order of 7.3 ppb ai or less). The EECs from EFGWB (copy of review attached) range from 10,900 ppb to 133,300 ppb for the "high exposure case" and from 8.7 ppb to 10.6 ppb for the "typical exposure case."

See
06.16.94
Addendum

Using the above data, RQ values for rainbow trout, bluegill sunfish, and Daphnia magna using the lower "high exposure case" EEC are: $10,900/7.3 = 1493.2$, $10,900/8100 = 1.3$, and $10,900/9.2 = 1184.8$, respectively. RQ values for rainbow trout, bluegill sunfish, and Daphnia magna using the higher "high exposure case" EEC are: $133,300/7.3 = 18260.27$, $133,300/8100 = 16.46$, and $133,300/9.2 = 14489.13$ respectively.

Using the above data, RQ values for rainbow trout, bluegill sunfish, and Daphnia magna using the lower "typical exposure case" EEC are: $8.7/7.3 = 1.2$, $8.7/8100 = 0.001$, and $8.7/9.2 = 0.9$, respectively. RQ values for rainbow trout, bluegill sunfish and Daphnia magna using the higher "typical exposure case" EEC are: $10.6/7.3 = 14.5$, $10.6/8100 = 0.0013$, and $10.6/9.2 = 1.15$, respectively.

See
06.16.94
Addendum

The above RQ values exceed the HR LOC of 0.5 for all metal working use scenarios except for bluegill sunfish at the lower and higher "typical exposure cases." Thus, EEB concludes high acute risk is likely to aquatic organisms under most metal working/sodium omadine effluent situations.

4. Endangered Species

The LOC for aquatic endangered species is 0.05. Based on the RQs above, this LOC is exceeded for all metal working use scenarios except for bluegill sunfish at the lower and higher "typical exposure cases."

Sodium omadine is expected to be discharged into the aquatic environment based on the proposed use pattern. Endangered species can be exposed to sodium omadine through effluents. Based on the above discussions, effluents containing sodium omadine should not be discharged into aquatic habitats where endangered species are known to live.

C. Value of Information

The purpose of this section is to discuss the uncertainty regarding the use of data from the available freshwater fish and one aquatic invertebrate study to assess hazard to freshwater organisms.

Our uncertainty in this assessment results from a number of variables. These include the uncertainties associated with: the variations in sodium omadine use sites and formulations; the

variability in EECs from different formulations and use rates; the lack of EECs for certain uses (e.g., laundry rinse additives, detergents); the reliability of the 96-hour LC₅₀ value for rainbow trout (e.g., whether it is 7.3 ppb ai or lower); and the variability in response among the freshwater organisms acutely tested in ecotoxicity studies (e.g., are Daphnia magna the most sensitive or rainbow trout and will other nontarget freshwater organisms react differently). Given these variables, a "generic" (e.g., for reregistration) characterization of acute risk to nontarget aquatic organisms is difficult. A characterization addressing specific use sites, formulations, EECs, and exposed nontarget organisms could help to decrease uncertainty.

PHASE IV
ECOLOGICAL EFFECTS BRANCH

Date: 05/09/94
Case No: 819311 DATA REQUIREMENTS FOR
Chemical No: 088004

Data Requirements	Composition ¹	Use Pattern ²	Does EPA Have Data To Satisfy This Requirement? (Yes, No)	Bibliographic Citation	Must Additional Data Be Submitted under FIFRA3(c)(2)(B)?
6 Basic Studies in Bold					
71-1(a) Acute Avian Oral, Quail/Duck	(TGAI)		No		No
71-1(b) Acute Avian Oral, Quail/Duck	(TEP)	M	Yes	403634-01	No
71-2(a) Acute Avian Diet, Quail	(TEP)	M	Yes	00073656	No
71-2(b) Acute Avian Diet, Duck	(TEP)	M	Yes	00073657	No
71-3 Wild Mammal Toxicity	(TGAI)				
71-4(a) Avian Reproduction Quail	(TGAI)				
71-4(b) Avian Reproduction Duck	(TGAI)				
71-5(a) Simulated Terrestrial Field Study	(TEP)				
71-5(b) Actual Terrestrial Field Study	(TEP)				
72-1(a) Acute Fish Toxicity Bluegill	(TGAI)				
72-1(b) Acute Fish Toxicity Bluegill	(TEP)	M	Yes	403585-01	No
72-1(c) Acute Fish Toxicity Rainbow Trout	(TGAI)				
72-1(d) Acute Fish Toxicity Rainbow Trout	(TEP)	M	Yes	404945-01 (partial)	No
72-2(a) Acute Aquatic Invertebrate Toxicity	(TGAI)				
72-2(b) Acute Aquatic Invertebrate Toxicity	(TEP)	M	Yes	00103228	No
72-3(a) Acute Estu./Mari Tox Fish	(TGAI)				
72-3(b) Acute Estu./Mari Tox Mollusk	(TGAI)				
72-3(c) Acute Estu./Mari Tox Shrimp	(TGAI)				

* In Bibliographic Citation column indicates study may be upgradeable

Date: 05/09/94

Case No: 819311 DATA REQUIREMENTS FOR
Chemical No: 088004

PHASE IV
ECOLOGICAL EFFECTS BRANCH

Data Requirements	Composition ¹	Use Pattern ²	Does EPA Have Data To Satisfy This Requirement? (Yes, No)	Bibliographic Citation	Must Additional Data Be Submitted under FIFRA3(c)(2)(B)?
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- | | | | | | |
|---|--------|--|--|--|--|
| 72-3(d) Acute Estu/Mari Tox Fish | (TEP) | | | | |
| 72-3(e) Acute Estu/Mari Tox Mollusk | (TEP) | | | | |
| 72-3(f) Acute Estu/Mari Tox Shrimp | (TEP) | | | | |
| 72-4(a) Early Life-Stage Fish | (TGAI) | | | | |
| 72-4(b) Life-Cycle Aquatic Invertebrate | (TGAI) | | | | |
| 72-5 Life-Cycle Fish | (TGAI) | | | | |
| 72-6 Aquatic Org. Accumulation | (TGAI) | | | | |
| 72-7(a) Simulated Aquatic Field Study | (TEP) | | | | |
| 72-7(b) Actual Aquatic Field Study | (TEP) | | | | |
| 122-1(a) Seed Germ./Seedling Emerg. | (TGAI) | | | | |
| 122-1(b) Vegetative Vigor | (TGAI) | | | | |
| 122-2 Aquatic Plant Growth | (TGAI) | | | | |
| 123-1(a) Seed Germ./Seedling Emerg. | (TGAI) | | | | |
| 123-1(b) Vegetative Vigor | (TGAI) | | | | |
| 123-2 Aquatic Plant Growth | (TGAI) | | | | |
| 124-1 Terrestrial Field Study | (TEP) | | | | |
| 124-2 Aquatic Field Study | (TEP) | | | | |
| 141-1 Honey Bee Acute Contact | (TGAI) | | | | |
| 141-2 Honey Bee Residue on Foliage | (TEP) | | | | |
| 141-5 Field Test for Pollinators | (TEP) | | | | |

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* In Bibliographic Citation column indicates study may be upgradeable

1. Composition: TGA1 = Technical grade of the active ingredient; PAIRA = Pure active ingredient, radiolabeled; TEP = Typical end-use product

2. Use Patterns: A = Terrestrial Food Crop; B = Terrestrial Feed Crop; C = Terrestrial Non-Food Crop; D = Aquatic Food Crop; E = Aquatic Non-Food Outdoor; F = Aquatic Non-Food Industrial; G = Aquatic Non-Food Residential; H = Greenhouse Food Crop; I = Greenhouse Non-Food Crop; J = Forestry; K = Outdoor Residential; L = Indoor Food; M = Indoor Non-Food; N = Indoor Medical; O = Indoor Residential; Z = Use Group for Site 00000

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DP BARCODE: D201509

DATA PACKAGE RECORD
BEAN SHEET

DATE: 04/29/94
Page 1 of 1

* * * FREE STANDING DATA PACKAGE * * *

THERE IS NO CASE OR SUBMISSION DATA

* * * DATA PACKAGE INFORMATION * * *

DP BARCODE: 201509 EXPEDITE: Y DATE SENT: 04/07/94 DATE RET.: / /
CHEMICAL: 088004 1-Hydroxy-2-(1H)-pyridinethione, sodium salt
DP TYPE: 001 Submission Related Data Package

CSF: N LABEL: N

ASSIGNED TO	DATE IN	DATE OUT	ADMIN DUE DATE: 04/19/94
DIV : EFED	04/08/94	/ /	NEGOT DATE: / /
BRAN: EFGB	04/08/94	/ /	PROJ DATE: / /
SECT: SWS	04/08/94	/ /	
REVR : DJONES	04/21/94	04/28/94	
CONTR:	/ /	/ /	

* * * DATA REVIEW INSTRUCTIONS * * *

Please provide EECs for this microbiocide which is a RED candidate. EEB's due date is 05/04/94. Please forward EECs to Norm Cook or Curtis Laird. Thanks.

* * * DATA PACKAGE EVALUATION * * *

No evaluation is written for this data package

THERE ARE NO ADDITIONAL DATA PACKAGES



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

OFFICE OF
PESTICIDES AND
TOXIC
SUBSTANCES

MEMORANDUM

SUBJECT: Addendum to "Tier 1c EEC's for sodium omadine" with corrections
Reregistration Case: 0209
PC Code: 201509
DP Barcode: D201509
Registration No. 1258-843 1258-990
1258-1205 1258-1213
4808-3

TO: Tony Maciorowski, Chief
Ecological Effects Branch
Environmental Fate and Effects Branch

FROM: R. David Jones, Ph.D., Agronomist *R David Jones*
Surface Water Section
Environmental Fate and Ground Water Branch

THROUGH: Henry Nelson, Ph.D., Section Chief *H Nelson*
Surface Water Section
Environmental Fate and Ground Water Branch
Henry Jacoby, Branch Chief *Henry Jacoby*
Environmental Fate And Ground Water Branch 6/9/94
Environmental Fate And Effects Division

The memo "Tier 1c EEC's for sodium omadine had an error in Table 1. The Table 1 in that memo should be replaced by the Table 1 in this memo. The EEC for the high exposure case for the group D pesticides was in error and should be $133,300 \mu\text{g} \cdot \text{L}^{-1}$, not $13,300 \mu\text{g} \cdot \text{L}^{-1}$.

Table 1. Tier 1c EEC's for sodium omadine from use in metal working fluids.		
Pesticide	High Exposure Case	Typical Exposure Case
Group A	10,900 $\mu\text{g} \cdot \text{L}^{-1}$	8.7 $\mu\text{g} \cdot \text{L}^{-1}$
Group B	19,200 $\mu\text{g} \cdot \text{L}^{-1}$	15 $\mu\text{g} \cdot \text{L}^{-1}$
Group C	34,100 $\mu\text{g} \cdot \text{L}^{-1}$	27 $\mu\text{g} \cdot \text{L}^{-1}$
Group D	133,300 $\mu\text{g} \cdot \text{L}^{-1}$	10.6 $\mu\text{g} \cdot \text{L}^{-1}$
Group A: Cimcool Additive SO, Reg No. 4808-3 Group B: Triadine 20% Industrial Microbiostat, Reg. No. 1258-1205 Group C: Triadine 10 Bactericide-Fungicide, Reg. No. 1258-990 Group D: Sodium Omadine 40% Aqueous Solution, Reg. No. 1258-843; Sodium Omadine 10% Aqueous Solution, Reg No. 1258-1213.		

cc: Harry Craven
Norm Cook
Curtis Laird
David Ferrar
reading file