Date: 7-26-78

To: Product Manager 17 (Mitchell)
TS –

Through: Dr. Gunter Zweig, Chief
Environmental Fate Branch

Through: Mr. James Conlon, Acting Director
Hazard Evaluation Division

From: Review Section #1 RWC
Environmental Fate Branch

Attached please find the environmental fate review of:

File Symbol 201-UNR

Reg. No.

EUP No.

PP No.

EEB REVIEW REVIEW

DATE: IN _____ OUT _____ IN 5/11/78 OUT 6/23/78 IN _____ OUT _____

FISH & WILDLIFE ENVIRONMENTAL CHEMISTRY EFFICACY

FILE OR REG. NO. 201-UNR

PETITION OR EXP. PERMIT NO. 7F2013

DATE DIV. RECEIVED 5/9/78

DATE OF SUBMISSION

DATE DIVISION ACCEPTED 3C1D-NO

TYPE PRODUCT(S): (I), D, H, F, N, R, S

DATA ACCESSION NO. Mitchell (17)

PRODUCT NAME(S) Pydrin insecticide 2.4 emulsifiable concentrate

COMPANY NAME Shell Chemical Company

PURPOSE OF REVIEW Registration for use on cotton

CHEMICAL & FORMULATION Cyano (3-phenoxyphenyl) methyl-4-chloro-alpha-(1-methylethyl) benzeneacetate
(Pydrin, SD-43775)

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1.0 Introduction:

1.1 The following data were presented for review with the current submission (5/11/78) (Letter date 5/4/78).

Accession No. 096385, 7F2013
Volume III - Section C, Parts II and III

Accession No. 096386, 7F2013
Volume VI - Environmental Chemistry

Accession No. 096390, 7F2013
Volume I - Sections A.B.D,E,F and G

Accession No. 097000, 7F2013
(Two volumes with the same accession number)
Volume I, Section A, C-Part II and III,
D, and environmental chemistry (Additional reports supplemental to Shell's Oct. 4, 1977 Subject petition No. 7F2013

Accession No. 097083, 7F2013
Identified in Shell letter of May 4, 1978 as a 'volume of additional information to coincide with the comments in EPA letter of Feb. 14. This volume contains Tabs 1-27.

Data in Accession Nos. 096385, 096386 096390 have been previously reviewed 5/11/78
See previous review of 5/11/78

2.0 Directions for Use.

2.1 See previous review dated 5/11/78

3.0 Discussion of Data

The following is a list of data found in Accession No. 097083. Tab numbers 1-27 correspond to the same numbered tabs in P.P. No. 7F2013, Volume VI "Environmental Chemistry" submitted 10/4/77. Accession No. 096386.

TAB NO.	DESCRIPTION
1	Addendum to "Hydrolytic Stability of WL 43775" with methodology and chromatograms.
2	TIR-22-101-76 Addendum, with raw TLC plate photos. Hanford sand loam characteristics.
3	TIR-22-116-77 Addendum, with MS scans.
4	TIR-22-108-76 Addendum with raw chromatogram. Hanford sandy loan characteristics.
5	AM-70-0036 Addendum, spots of authentic standards marked on radioautograms of TLC plates, photographs of chromatograms and data to summarize percent recovered.
6	AM-70-0034 Addendum, methodology, see (5) above, photographs of chromatograms, data to summarize percent recovered.
7	Methodology for Non-rumen Anaerobec Growth Screen. TIR-75-047-75, with methods.
8	TIR-22-108-77 Part V. Includes methodology. Hanford sandy loan characteristics.
9	WKGR. 0130.76 Chromatograms and autoradiograms of TLC plates of Extracts of Soil Sections plus soil characteristics
10	No additional data required.
11	Typical chromatographic data for TIR-24-106-76. Hanford sandy loam characteristics.
12	TIR-22-103-75 Addendum

TAB No.	DESCRIPTION
13	TIR-14-101-77 Addendum with raw chromatograms and methodology. Hanford sandy loan characteristics.
14	MMS-R-425-1 (Analytical Methodology) Soil characteristics of plots at Wenatchee, Washington.
15	MMS-R-425-1 (Analytical Methodology) Soil characteristics of plots at Monroe, Louisiana.
16	MMS-R-425-1 (Analytical Methodology) Soil characteristics of plots at McAllen, Texas.
17	TIR-22-107-77 Addendum #3, with raw TLC plate photos.
18	TIR-22-113-77 Addendum, with MS scans. Hanford sandy loan characteristics.
19	Hanford sandy loam characteristics.
20	Soil characteristics of plots at Donna Texas.
21	Hanford sandy loam characteristics.
22	Typical chromatographic data for TIR-22-105-76. MMS-R-456-1 with revision (Analytical Methodology).
23	(See under Tab 22 above).
24	AW-70-0052 Addendum, same as under Tab 6 above.
25	Addendum to Experimental Record Sheet "SD 43775-76-14" giving chromatographic data. MMS-R-439-1 (Analytical Methodology) used also for water and mud. Hanford sandy loan characteristics.

TAB NO.	DESCRIPTION
26	No additional data required.
27	Hanford sandy loan characteristics.

Addendum to "Hydrolytic Stability of PL 43775" with methodology and chromatograms.
Accession No. 097083, Tab No. 1

A mass Spectrometric analytical method for SD-43775 is described. This method utilizes a Selective ion detection (SID) technique in a GC/MS system. Fragmentation mechanisms for SD 43775 are proposed. The mass No. of the ion monitored for detection in the hydrolysis study is indicated as 181. However, no data are given on recovery or sensitivity for this ion. Some data are given for the ion of mass No. 225. The proposed structure of the 225 fragment is a cyano methyl biphenyl ether; the 181 fragment is a biphenyl ether fragment. The recovery data and sensitivity given for ion No. 225 are for SD 43775 in cotton leaves. No data are given for aqueous solutions.

Some additional hydrolytic stability data points are given to support the half-lives previously reported (10% EtOH, 38°C, SID 181). Data appear to indicate that two peaks appeared on GC for SD-43775, but chromatograms are not given.

Conclusions:

(1) Additional data are needed to show conclusively that the monitoring of ion fragment 181 will allow accurate quantitation of SD 43775 in aqueous solution. It is noted that no recovery data or sensitivity data are given for this ion. Gas chromatograms and sample calculations are also needed.

(2) None of the comments in our review of 5/11/78 have been met.

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Photochemical Degradation of SD 43775 on silica gel, glass, soil and in water H.Y. Fan.

Supplementary data on 14C-SD 43775 on silica gel, glass, soil and in water are provided.
Accession No. 097083, TIR-22-101-76, Addendum #1, Tab #2.

Photographs of eight thin layer chromatograms and physical properties of Hanford Sandy loan soil are given.
Films 1 and 2 show chromatograms of photodegradation of 14C-SD 43775 on glass after sunlight exposure and correspond to data in Table 13 of the original report. Films 3 and 4 show chromatograms of photodegradation on thin-layer soil and correspond to data in Table 17 of the original report. Films 5,6,7+8 show chromatograms of photodegradation in water and 2% aqueous acetone and correspond to data in Table 19.

Physical properties of Hanford sandy loan soil are given below.

	Source: Nelson Lab.[b]	Source: USDA[a]
Organic Content, % (Walkley and Black)	0.7	0.5[c]
Soil pH (in 0.01 M $CaCl_2$ suspension) (Method of Soil Analysis, Amer. Agron., p 923)	6.1	5.9
Water Holding Capacity, %	24.5	10.7 (1/3 bar
Cation Exchange Capacity (Barium Acetate, U.C. Extension Procedure)	9.3 meq/100 g	—
Sand, % (Hydrometer (soil colloid)—	57.6	67.1
Silt, % U.C. Extension Procedure)	26.6	21.9
Clay, %	15.8	11.0

Predominant clay minerals in Hanford sandy loam are 50% kaolinite, 10% biotite mica, and 4% montmorillonite.

a) Documented in Soil Survey, East Stanislaus area, California, by USDA Soil Conservation Service in cooperation with California Agricultural Experiment Station, Sept., 1964. Methods used unknown.

b) The analysis was done by Nelson Laboratories, 1145 W. Fremont St., Stockton, California 95203, from the samples submitted by BSRC. The procedures used in each determination are referenced in parentheses. Water holding capacity was done as follows: Saturate soil, drain in saturated atmosphere, dry to constant weight at 95°C. H_2O loss/wet soil wt x 100 = WHC.

c) Calculated by multiplying Carbon/Nitrogen with total nitrogen content.

Solution Photochemistry of SD-43775 A. Ehmann.

Supplementary raw data on solution photochemistry of SD-43775 is provided.
Accession No. 097083, TIR-22-116-77, Addendum #1, Tab. No. 3

Computer-generated total ion current chromatograms and other mass spectra data are submitted in support of the original study (TIR-22-116-77). In the non-required study, SD-43775 was photolyzed in hexane at 350, 300 and 254 mm.

The mass spectra and GC retention times of authentic compounds are claimed to be identical with the following photoproducts:

SD 42453	Benzeneacetonitrile, 3-phenoxy
SD 54597	Benzeneproponenitrile, 4-chloro-beta-(1-methylethyl)-alpha-(3-phenoxyphenyl)
SD 53036	Benzoic acid, 3-phenoxy-, 1-(4-chlorophenyl) -2-methylpropylester.

Mass spectra data have been interpreted to indicate the presence of 'Compound 9' (1-Butanone, 2-(4-dichlorophenyl)-3-methyl=1-(3-phenoxyphenyl) as a photoproduct.

Conclusions:

(1) Three and probably four photoproducts of SD 43775 in Sexane under U.V. at 300 and 254 mm have been chemically identified.

(2) The original study on photodegradation in hexane is not required. Data are still needed on photolysis products in water and on soil.

Degradation of 14C-(chlorophenyl)-SD 43775 during exposure to soil under aerobic, anaerobic, and sterile conditions. A.C. Page and E.W. Rutherford.

Supplementary data on 14C-SD 43775 in soil is provided. Accession No. 097083, TIR-22-108-76, Addendum #1, Tab #4.

A sample scan from a Berthold 2760 counter was submitted. This was run on the acetone extract from the 90-day aerobic soil sample. Scanning conditions are included.
After scanning the plates were scraped and ultimately 14C was determined by liquid scintillation counting. A section of the original Packard scintillation counter tape has been reproduced and submitted.

The physical properties of Hanford Sandy loan soil were submitted. These are identical to those found in Tab #2. See review of Tab #2 of this report.

Addendum to the report AM-70-0034 + 0036. H. Ohkawa, K. Nambu, H. Kaneko and R. Kikuchi.
Accession No. 097083, Doc. Code AM-80, Ref. No. 0051
April 18, 1978 Tab. No. 5.

Analytical Methods for Fenvalerate and its Degradation Products in an Aquatic Model Ecosystem Study (AM-70-0034) - (The original study appeared in Tab 6 of Accession No. 096386).
The analytical methods used to determine residues in water, soil, carp, daphnids and algae are described and photographs of radioautograms are included in Tab. No. 6. The 14C content of aquerous layers was determined by LSC of an aliquat of filtered aquerous solution. For determination of fenvalerate in the aqueous layer an aliquat was hyophillized to dryness. The residue was dissolved in 0.1 ml of methanol and aliquats were spotted on precoated silica gel chrometoplates. Two different solvents were used for development. Radioautograms were then produced. Unlabeled standards were detected by U.V. florescence quenching. Quantitation was accomplished by scraping the plates and scintillation counting of radioactive zones.

Fenvalerate and its metabolites in organosoluble fractions from extraction from soil, carp, daphnids and algae were homogenized with two to three times volumes of methanol and the homogenates were each centrifuged for 10 min. The precipitates were extracted two additional times in the same manner. The methanol fractions were ultimately subjected to thinklayer chromatography as described above for the water samples. Some results are tabulated below.

Relative Amounts of Metabolites of ^{14}CN-(±)-Fenvalerate in an Aquatic Model Ecosystem

	Metabolite	Rf value[a)]	% of ^{14}C on plate	Identity
Soil	Fenvalerate	0.61	98.79	
	S-1	0.23	0.03	(1) -carbamoyl-3-phenoxybenzyl-2-(4-chlorophenyl) isovalerate
	S-2	0.21	0.95	(2) -cyano-3-(4-hydroxyphenoxy)benzyl-2-(4-chlorophenyl) isovalerate
	Others		0.23	(1) SD-47117 (2) SD-48838
	Total		100	
Aqueous Layer	Fenvalerate	0.61	30.56	
	W-1	0.56	13.89	(1) 3-phenoxybenzyl cyanide
	W-2	0.21	5.56	(2) -cyano-3-(4-hydroxyphenoxy)benzyl-2-(4-chlorophenyl isovalerate
	W-3	0.12	1.39	Unknown
	W-4	0.09	0.74	3-phenoxymandelic acid
	Others		47.86	(1) SD-42453 (2) SD-48838
	Total		100	
Fish	Fenvalerate	0.61	76.92	
	F-1	0.21	7.69	(1) -cyano-3-(4-hydroxyphenoxy)benzyl-2-(4-chlorophenyl) isovalerate
	F-2	0.19	4.83	Unknown
	Others		10.56	(1) SD-48838
	Total		100	

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Relative Amounts of Metabolites of ^{14}CN-(±)-Fenvalerate in an Aquatic Model Ecosystem - (Cont.)

	Metabolite	Rf value[a)]	% of ^{14}C on plate	Identity
Daphnids	Fenvalerate	0.61	100	
	Others		<0.01	
	Total		100	
Algae	Fenvalerate	0.61	95.73	
	A-1	0.23	1.90	(1) -carbamoyl-3-phenoxybenzyl-2-(4-chlorophenyl)isovalerate
	A-2	0.08	0.95	Unknown
	Others		1.42	(1) SD-47117
	Total		100	

Analytical Method in a Rat Metabolism Study and in a Soil degradation study (AM -70-0034)

The method used for soil analysis and soil characteristics are described in Report AM-70-0036.
Accession No. 096386, Tab No. 5.

Analytical methods for the rat metabolism study are claimed to be in report AM-80-0050.
Additional data are given for the rat metabolism study but these are not reviewed here since this is not a required study.

Soil metabolism study (including data of the report AM-70-0036)

Numerical data are given in support of Figures and Tables given in AM-70-0034 and AM-70-0036. (Soil Degradation STudies). The original studies are found in Tabs 5 and 6 of Accession No. 096386

Photographs of radioautograms (AM-70-0034, rat metabolism study) Accession No. 097083, Tab 6.

Radioautograms (AM-70-0034, soil metabolism study) Accession No. 097083, Tab 6.

Radioautograms (AM-70-0034, Aquatic Model Ecosystem study) Accession No. 097083, Tab 6.

Non-Rumen Anaerobe growth Screen Methods Shell Development Company, Biological Sciences Research Center Accession No. 097083, Tab 7.

Additional supporting data are given for the original Study (Tab #7 Accession No. 096386). These data do not substantially address our comments in the original review. Screen tests are for antibiotics (not SD-43775). Many of the organisms used are animal pathogens or indications of fecal pollution.

Impact of Commercial Shell Pesticides on Microorganisms in the soil. Part V - Details of Methods used in Part II of TIR-112-77 W.L. Rader and J.W. Love. TIR-22-112-77, Part V. Accession No. 097083, Tab 8.

A description of the method: Standard tube-dilution-bioassay for microbial toxicity determinations is given.

Details on the measurement of tensile strength of fabric or wood as a means of evaluating cellulose deterioration in the soil are given.

The physical properties of Hanford Sandy Laom Soil are given - See Review of Tab #2.

Chromatographs and autoradiographs of TLC plates of extracts of soil sections.
Accession No. 097083, Tab No. 9.

A compound indicated as WL 47133 appears to have separated on one of the TLC plates. No further information is given on the chemical identity of this material.

Soil characteristics are given as: Clay 32.7%, Silt 15.6 %, Sand 51.6%, Organic matter 2.21% and PH 7.3.

Typical Chromatographic Data for TIR-24-106-76.
Accession No. 097083, Tab No. 11.

Chromatograms of SD-43775 from standards and from filtered and unfiltered water analyses are given.

Physical properties of Hanford Sandy Loam Soil are given. See review of Tab #2 of this report.

Vaporization and Sorption of SD-43775 from water solutions. J. C. Potter TIR-22-103-75, Addendum #1 counting statistics, sample calculations, and typical counting results are summarized in this report. Accession No. 097083, Tab No. 12.

Information described above are given in support the study in Tab 12 of Accession No. 096386.

Sorption of SD-43775 on Soils. P. E. Porter TIR-14-101-77 Addendum #1
Accession No. 097083, Tab. No. 13.

An analytical method is described for the determination of SD-43775 in heptane extracts by HPLC. Mobile phase is 4% diethyl ether in n-heptane with UV detection at 210 nm.

Two peaks are obtained for SD-43775 under conditions of the analysis representing the two diosterioisomeric pairs. Total SD-43775 was expressed as the sum of the separately determined isomers. Sample chromatograms are given.

Physical properties of Hanford Sandy Loam Soil are given. These as described in detail in the review of Tab 2 of this report.

Determination of individual or combined residues
of the cyano pyrethroids on soil
Modesto Method Series MM5-R-425-1
Accession No. 097083, Tab. No. 14.

This analytical method is reviewed in Tab 27 of this report.

Characteristics of soil from the Bewick form, Monroe, Louisiana Shell Development Company, March 1973. Accession No. 097083, Tab No. 15.

Determination of individual or combined residues of the cyano pyrethroids on soil. MMS-R-425-1 April 1975. Accession No. 097083, Tab. No. 15.

Soil analysis: Texture silt loam, Sand: 33.2 to 43.2 %, Silt: 52.0 to 60.0%, Clay 4.8 to 6.8%.
Organic matter: 0.6 to 1.0%, PH 5.6-6.1.
Caption Exchange Capacity 3.8 to 5.1 meq/100 gr.

~~Analytical~~ method MMS-R-425-1 - This method is reviewed in Tab 27 of this report.

Soil analysis sheets for the cotton insecticide experiment. Accession No. 097083, Tab. No. 16.

Determination of individual or combined residues of the cyano pyrethroids on soil MMS-R-425-1. Accession No. 097083, Tab No. 16.

Soil analysis, McAllen, Texas, Classification - Sandy Clay - Sand 46.4%, Silt 13.1%, Clay 40.5%, Organic matter 2.75%, PH 7.4. Nitrogen, Phosphorous and Potassium content are also reported.

Analytical method MMS-R-425-1. This method is reviewed in Tab 27 of this report.

One-year study of the fate of ^{14}C-SD-43775 in soil. H.Y. Fan. TIR-22-107-77, Addendum #3. Supplementary raw data on ^{14}C-SD 43775 in soil is provided. Accession No. 097093, Tab No. 17.

Two X-ray-filmed chromatograms have been reproduced and submitted which correspond to data tabulated in Table 12, TIR-22-107-77.

No chromatograms are given for data in Table II.

Residue Studies on Rotation Crops Grown in 14C-SD 43775 treated soils. H.Y. Fan Supplementary data on residues of 14C-SD-43775 in rotation crops grown in 14C-SD-43775-treated soil are provided. TIR-22-113-77, Addendum #1. Accession No. 097083, Tab No. 18.

Sample mass spectra are given for GLC/MS analyses of SD-43775 residues in rotated crops. The ions monitored were at m/e 419 and m/e 225.

Physical properties of Hanford Sandy Loam Soil. See review of Tab #2 for these properties.

Physical Properties of Hanford Sandy Loam Soil
Shell Development Company, March 1973.
Accession No. 097083, Tab. No. 19

See review of Tab #2 for these properties.

Characteristics of soil from the Steidenger farm, Donna Texas. Shell Development Company, March 1978. Accession No. 097083, Tab. No. 20.

Determination of SD-43775 Residues in Crops MMS-R-456-1 Oct. 1976. Accession No. 097083, Tab. No. 20.

Soil characteristics: Sandy Loam, 1.0% O.M. (particle size analysis not given). PH 8.1, C.E.C. 16.7 meq/ 100 gr.

Analytical method: MMS-R-456-1 Oct. 1976 - Method was reviewed with original submission. Accession No. 096648, Tab. 4.

Physical Properties of Hanford Sandy Loan Soil Shell Development Company March 1978.
Accession No. 097083, Tab No. 21.

See Tab #2 of this review for the physical properties of Hanford Sandy Loam Soil.

Typical chromatographic data for TIR-22-105-76.

Determination of SD 43775 in Trout Tissues TIR-22-105-76.

Determination of SD 43775 Residues in Crops MMS-R-456-1, October 1976.
All of the above in Accession No. 097083, Tab No. 22.

Typical chromatograms are given for SD-43775 in trout and several plant materials including standards.

Analyses for SD-43775 in Trout Tissue: Procedure is a revision of MMS-R-456-1 (SD-43775 Residues in Crops, EC Gas Chromatographic Method). The revised extraction step is described: Blend representative fish homogenate in the presence of acetonitrile for two minales using a Waring blender at high speed. Rinse tissue with acetonitrile and filter into separatory funnel. Add hexane to separatory funnel and proceed as in MMS-R-456-1.

Method MMS-R-456-1 (Residues in Crops). This method was reviewed with original submission Accession No. 096648, Tab 4.

Addendum to the report AW-70-0052
H. Ohkawa and R. Kihuchi, Doc. Code AW-80
Ref. No. 0063
Accession No. 097083, Tab No. 24.

Analytical Methods for Fenvalerate in Fish Toxicity Studies (AW-70-0052).
14C-Fenvalerate labeled at the CN group was used for determination of fenvalerate in aqueous layers in aquariums containing soil. Aliquats were sampled for determination of 14C by liquid scintillation counting. In addition, samples were lyophylized to dryness and residues were taken up in 0.1 ml of methanol. Aliquats were spotted on silica gel plates along with authenic standards and developed with n-hexane/toluene/acetic acid. Developed chromatoplates are placed under industrial X-ray film. Unlabeled standards are detected by U.V. fluorescence quenching. Quantitation is conducted by scraping the radioactive gel regions into scintillation vials and counting by LSC. The detection limit for fenvalerate was 0.1 ppb. Recovery of 92% of 0.018 ppm fenvalerate immediately after addition to aqueous layers is claimed.

The characteristics of Kotano sandy loam soil are listed in Table 2 of the report AM-70-0036.

Addendum to experimental Record Sheet "SD-43775-76-14"
March 15, 1978, From G. F. Barber
Typical chromatographic data for Pond water and mud.
Determination of SD-43775 residues in cottonseed
Physical properties of Hanford sandy loan aoil.
All of the above in Accession No. 097083, Tab. No. 25.

Typical chromatograms of pond + mud samples are given.

Analytical Method MMS-R-439-1 January, 1976.
This method was reviewed with the original submission
under Tab 5, Accession #096648.

Physical properties of Hanford Sandy Loam Soil -
See review of Tab 2 of this review.

Physical Properties of Hanford Sandy Loam Soil
Shell Development Company, March 1978
Determination of Individual or combined residues of the cyano pyrethroids on soil MMS-R-425-1, April 1975.
Accession No. 097083, Tab No. 27

Physical properties of Hanford Sandy Loam soil are given - See Tab 2 for data on the soil.

Analytical method MMS-R-425-1. The method is applicable to determination of combined residues of three cyano pyrethroids on soil. Only the determination of SD 43775 is of interest for this review.

Soil samples are extracted with a 1:1 mixture of acetone and hexane using a Braun-Sonic 1510 (high energy ultrasound). An aliquat is cleaned up on an activated Florisil column. Quantitation is by GLC/AFID. Minimal detectable residues are claimed to be about 0.10 ppm for SD-43775.

Recoveries of 94% are claimed for the range 0.5 to 20.0 ppm.

Data state that "An insufficient number of recovery samples have been analyzed to date with the isothermal procedure to make a statistical evaluation of precision and accuracy."

4.0 Conclusions:

4.1 Hydrolysis: Data submitted would not cause our previous comments to change. In addition, data are needed to show conclusively that the monitoring of ion fragment 181 will allow accurate quantitation of SD-43775 in aqueous solution. Gas chromatograms and sample calculations are also needed.

4.2 Photolysis: Photoproducts formed in water and on soil surfaces are still not chemically identified. Products comprising 10% or more of applied radioactivity should be identified. Our previous comments Review of 5/11/78 still stand.

4.3 Soil Metabolism: Supporting data on analytical methods, soil types and TLC photos have been submitted. Comments not answered by data in this submission will still require response. Data are needed to adequately describe the fate of the phenoxyphenyl as well as the chlorophanyl moieties in soil under aerobic and anaerobic conditions.

4.4 Microorganism studies: Data submitted essentially do not address our comments of previous review of 5/11/78. These comments still stand.

4.5 Leaching studies: Soil characteristics have been reported. The chemical identity of compound NL-47133 apparently found during the leaching studies should be reported.

4.6 Field studies, rotational crop studies and fish residue accumulation studies. Supporting data on descriptions of analytical methods and soil characteristics of soils are given. Adequate data have not been submitted to support all of the analytical methods. Eg. It is indicated in Tab 27 for method MMS-R-425-1 that insufficient number of recovery samples have been analyzed to date...to make a statistical evaluation of precision and accuracy."

5.0 Recommendations:

5.1 No recommendations can be made based on the data contained in the current submission. This package did not include any substantially new material, only supporting data requested in RD letter of Feb. 14, 1978. All of the comments made in our previous review of 5/11/78 which were not satisfied in the current submission must be answered.

5.2 Some specific comments on the data submitted are made below:

(1) Tab #1 - Data are needed to show conclusively that the monitoring of ion fragment 181 will give an accurate quantitation of SD-43775 in aqueous solution. Gas chromatograms and sample calculations are also needed.

(2) Tab #9 - What is the chemical identity of compound WL-47133 which appears to have been extracted from soil?

(3) Tab 27 - It is noted that an insufficient number of recovery samples have been made to adequately support analytical method #MMS-R-425-1. All analytical methods used must be adequately described and supported by recovery data, standard curves, sample calculations, typical chromatograms if applicable, TLC photographs, etc.

Ney 7/13/78

Ronald E. Ney 6/23/78
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Environmental Chemistry Section
Arthur O. Sehlosser
Arthur O. Sehlosser 7/14/78