Exhibit 76

AMVAC

November 22, 2016

Marquea D. King, Ph.D.
Toxicologist, CRM
U.S. Environmental Protection Agency
Document Processing Desk (DCI/PRD)
Pesticide Re-evaluation Division
Office of Pesticide Programs (7508P)
2777 South Crystal Drive,
Arlington, VA 22202

Re: DCPA GDCI Data Call In (Order Number: GDCI-0798701-1140)
Chemical # PC Code: 078701 CAS #: 1861-32-1
Revised Waiver Proposal for Chronic Sediment Guideline No: ss-1072
Response to EPA's Review Dated June 27, 2016

Dear Dr. King:

This is submitted in response to EPA's review (dated June 27, 2016) of AMVAC's proposed waiver for a chronic sediment study on *Leptocheirus plumulosus*, which is a special study data requirement (ss-1072) requested in the Generic Data Call-In (GDCI) Notice dated 31-Jan-2013.

In support of this submission, please find the following documents enclosed:

1. Application for Registration (EPA Form 8570-1) dated 22-Nov-2016.
2. Three copies of the following report:

Guideline No.	AMVAC Study No.	Study Title	MRID
ss-1072	100-AQU-031	Response to EPA's Memorandum of June 27, 2016 from EFED (7507P) Concerning AMVAC's Proposed Waiver for Dacthal (DCPA) Chronic Study Testing on *Leptocheirus plumulosus*	

Please don't hesitate to contact me at 949-221-6109 or email jonw@amvac-chemical.com if you have questions or need additional information.

Best regards,

Jon C. Wood
Sr. Product Manager
AMVAC Regulatory Affairs

20161122jcw.dcpa.us

Please read instructions on reverse before completing form. Form Approved, OMB No. 2070-0060, Approval expires 2-28-95

EPA

United States
Environmental Protection Agency
Washington, DC 20460

☐ Registration
☐ Amendment
☒ Other

OPP Identifier Number

Application for Pesticide - Section I

1. Company/Product Number	2. EPA Product Manager	3. Proposed Classification
5481-495	Marquea D. King, Ph.D.	☐ None ☐ Restricted
4. Company/Product (Name)	**PM#**	
Technical Chlorthal Dimethyl		

5. Name and Address of Applicant *(Include Zip Code)*

AMVAC Chemical Corporation
4695 MacArthur Ct.
Newport Beach, CA 92660

☐ *Check if this is a new address*

6. Expedited Review. In accordance with FIFRA Section 3I(3)(b)(i), my product is similar or identical in composition and labeling to:

EPA Reg. No. _____

Product Name _____

Section - II

☐ Amendment - Explain below
☐ Final printed labels in response to Agency letter dated _____
☐ Resubmission in response to Agency letter dated _____
☐ "Me Too" Application
☐ Notification - Explain below
☒ Other - Explain below

Explanation: Use additional page(s) if necessary. (For Section I and Section II.)

DCPA GDCI Data Call In (Order Number: GDCI-0798701-1140); Chemical # PC Code: 078701 CAS #: 1861-32-1
Proposed waiver of Chronic Sediment study on *Leptocheirus plumulosus* (Guideline No: ss-1072)

Section - III

1. Material This Product Will Be Packaged In:

Child-Resistant Packaging	Unit Packaging	Water Soluble Packaging	2. Type of Container
☐ Yes* ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Metal ☐ Plastic ☐ Glass ☐ Paper ☐ Other (Specify) _____
* *Certification must be submitted*	If "Yes" Unit Packaging wt. / No. per container	If "Yes" Package wt. / No. per container	

3. Location of Net Contents Information	4. Size(s) Retail Container	5. Location of Label Directions
☐ Label ☐ Container		☐ On Label ☐ On Labeling accompanying product

6. Manner in Which Label is Affixed to Product ☐ Lithographed ☐ Paper glued ☐ Stenciled ☐ Other _____

Section - IV

1. Contact Point *(Complete items directly below for identification of individual to be contacted, if necessary, to process this application.)*

Name	Title	Telephone No. (Include Area Code)
Jon C. Wood	Sr. Product Manager	949-221-6109

Certification

I certify that the statements I have made on this form and all attachments thereto are true, accurate and complete.

I acknowledge that any knowingly false or misleading statement may be punishable by fine or imprisonment or both under applicable law.

8. Date Application Received (Stamped)

2. Signature	3. Title
Jon C. Wood	Sr. Product Manager
4. Typed Name	**5. Date**
Jon C. Wood	November 22, 2016

STUDY TITLE

Response to EPA's Memorandum of June 27, 2016 from EFED (7507P)
Concerning AMVAC's
Proposed Waiver for Dacthal (DCPA) Chronic Study Testing on *Leptocheirus plumulosus*

Response to EPA's Generic Data Call-In
Order Number: GDCI-0798701-1140
Chemical #PC Code: 078701
DP Barcode: 432677
CAS #: 1861-32-1

TEST GUIDELINE:

None

AUTHORS:

Dick Freedlander, Ph.D.

STUDY COMPLETION DATE:

November 22, 2016

PERFORMING COMPANY:

AMVAC Chemical Corporation
4695 MacArthur Court, Suite 1200
Newport Beach, CA 92660

PROJECT NUMBER:

AMVAC Report 100-AQU-031

TOTAL PAGES:

15

NO CLAIM OF CONFIDENTIALITY

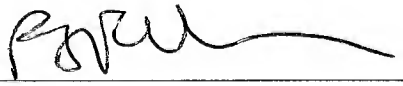
No claim of confidentiality, on any basis whatsoever, is made for any information contained in this document. I acknowledge that information not designated as within the scope of FIFRA sec. 10(d)(1)(A), (B), or (C) and which pertains to a registered or previously registered pesticide is not entitled to confidential treatment and may be released to the public, subject to the provisions regarding disclosure to multinational entities under FIFRA 10(g).

Company: AMVAC Chemical Corporation

Company Agent: Dick Freedlander, Ph.D.

Director, Environmental Sciences

AMVAC Chemical Corporation

Signature: 

Date: 11/22/2016

GOOD LABORATORY PRACTICE COMPLIANCE

This document does not fall under EPA FIFRA Good Laboratory Practice (GLP) Standards set forth in Title 40, Part 160 of the Code of Federal Regulations.

Submitter:

Signature: _____ Date: 11/22/2016

Dick Freedlander, Ph.D.

Director, Environmental Science
AMVAC Chemical Corporation

EXECUTIVE SUMMARY

This document is a response to EPA's June 27, 2016 memorandum titled. "DCPA: Response to Waiver Request for the Chronic Sediment Toxicity Study with Leptocheirus plumulosus". This response provides additional data to support our contention that the conduct of this study would be of no practical value in assessing the aquatic risk of sediment dwelling invertebrates to Dacthal.

This waiver is being sought on the basis of both previous information supplied in our initial waiver request (AMVAC March 7, 2016 document titled, "Proposed Waiver for Dacthal (DCPA) Chronic Study Testing on *Leptocheirus plumulosus*") and new information herein provided that demonstrates the finding that *L. plumulosus* has not proven to be significantly more sensitive than *H. azteca* when evaluating the potential effect of a pesticide compound on sediment dwelling amphipods.

AMVAC has provided to the EPA its own studies on *L. plumulosus* and *H. azteca* for four of our registered compounds (i.e., bifenthrin, permethrin, tebupirimphos, tribufos). The two amphipod species are within an order of magnitude in terms of sensitivity with *H. azteca* generally more sensitive than *L. plumulosus*, the estuarine/marine amphipod. Also, based on a literature search, we were not able to find instances where *L. plumulosus* has demonstrated significantly greater sensitivity than H. azteca. Should the Agency seek to provide a risk assessment for all sediment dwelling organisms without further testing, it would be possible to provide a conservative ecological assessment by applying a sensitivity factor of 10X to the current findings, which is in character with other risk assessments that the EPA has performed where data is lacking.

AMVAC has also obtained information that indicates that Dacthal residue concentrations in estuarine watersheds associated with highly intensive agricultural regions occur at very low levels, orders of magnitude below concentrations that would impact sediment dwelling organisms.

Further, the current EPA proposal that a 10-day study be conducted on *L. plumulosus* will provide no information of merit as Dacthal has only been found to be "slightly toxic" in certain early studies with no acute effects in later studies for more sensitive invertebrates. The potential for assessing more sensitive effects associated with reproduction would be lacking in the proposed study.

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1.0 Background

On January 31, 2013, EPA issued the Generic Data Call-In (Order Number: GDCI-0798701-1140; Chemical #PC Code: 078701; CAS #: 1861-32-1; 90-Day Response) for Dacthal (DCPA). One of the study requirements was for conducting chronic sediment testing on the estuarine/marine invertebrate species *Leptocheirus plumulosus.* Since the DCI was issued, the initiation of this study has been significantly delayed because of study validation issues of which AMVAC has notified and updated EPA. On March 7, 2016, AMVAC provided EPA with the document titled, "Proposed Waiver for Dacthal (DCPA) Chronic Study Testing on *Leptocheirus plumulosus*". This proposal was based on the recent completion of Dacthal toxicity testing on two other sediment dwelling organisms (i.e., *Chironomus dilutus*, *Hyalella azteca*). The Agency in turn responded that modeling and monitoring data has shown Dacthal concentrations in water near its solubility limit (i.e., 0.5 mg/L) and that risks had exceeded the level of concern for certain aquatic invertebrates; thus EFED found it unreasonable to make the assumption that *L. plumulosus* would not be impacted by levels of Dacthal that could occur in the environment.

2.0 Response

In response, AMVAC does not dispute the Agency's contention that lower tier modeling and monitoring data indicates that Dacthal concentrations may infrequently occur at near water solubility levels. This can be placed into context by noting information provided in EPA's "Risks of CCPA Use to Federally Threatened California Red-legged Frog (*Rana aurora draytonii*) Pesticide Effects Determination" dated February 19, 2009. The Agency's citation is based on findings within the NAWQA data set for the years ranging from 1992-2007 from which only 6% of the samples exceeded the limit of detection of 0.000,002 mg/L. Our review of NAWQA records finds only one sample with a Dacthal concentration exceeding 0.1 mg/L. A sampling in 1999 at a freshwater site within Hester Creek, north of Huntsville, Alabama purportedly had this single high residue concentration. Much lower Dacthal concentrations are associated with coastal water samplings, which provide information on chemical concentrations in estuarine waters. As higher Dacthal concentrations have only been reported in freshwater sites, only freshwater species would likely be impacted; thus developing toxicological data on an estuarine species such as L. *plumulosus* lacks merit at this time.

AMVAC supports the general intention of the guidelines where for certain chemicals it would be appropriate to develop a more detailed understanding of sediment dwelling organisms. We have adopted this study rationale for our insecticide products. However, Dacthal in keeping with its mode of action as an herbicide, it is not particularly active on invertebrates in general. As such, ecologically-based regulatory decisions for Dacthal products are likely to focus on consideration of effects on plant species, not animal species. Therefore, there seems to be no practical value for further refining information concerning the toxicity of DCPA to sediment dwelling organisms by providing a study on a third species. AMVAC contends that this should not be a requirement

for an herbicide where only minor effects are evident on the two other species of sediment dwelling organisms that have been tested.

In this document, AMVAC provides new information pertinent to its position that toxicity testing of *L. plumulosus* can be waived without being detrimental to a general assessment on the potential effects of Dacthal on sediment dwelling invertebrates. The Dacthal study conducted on the freshwater amphipod *H. azteca* already demonstrates that the compound is not significantly toxic to this species and certainly much less so than to water column invertebrates. Information herein provided establishes the finding that *L. plumulosus* has not proven to be significantly more sensitive than *H. azteca* when evaluating the potential effect of a pesticide compound on sediment dwelling amphipods (section 5.0); therefore the conduct of a new study on *L. plumulosus* is not critical to an assessment on sediment dwelling organisms.

In this regard, AMVAC has provided to the EPA its own studies on *L. plumulosus* and *H. azteca* for four of our registered compounds (i.e., bifenthrin, permethrin, tebupirimphos, tribufos) and in each case, both the freshwater amphipod *H. azteca* and the estuarine/marine amphipod *L. plumulosus* demonstrate similar chemical sensitivity. Also, based on a literature search, we were not able to find instances where *L. plumulosus* has demonstrated significantly greater sensitivity than H. azteca. Should the Agency seek to be protective of sediment dwelling organisms in general, AMVAC proposes that a sensitivity factor be applied in the ecological assessment of *L. plumulosus*, which is in character with other risk assessments that the EPA has performed where data is lacking.

Further, as EFED has stated, the chronic study design for *L. plumulosus* is not sufficiently rugged; thus only indicative acute testing is being requested by EPA at this time. Acute testing of Dacthal on the most sensitive aquatic invertebrates *Americamysis bahia* has already demonstrated no effects at the highest tested dose levels near the solubility limit, while chronic testing has demonstrated a LOEC of 39 µg ai/L for growth and 76 µg ai/L for reproduction. Similarly, Dacthal has only been found to be "slightly toxic" on an acute basis in *D. magna* Therefore, testing the effect of Dacthal on *L. plumulosus* for establishment of a 10 day EC50 especially lacks merit as this data indicates that adverse toxicological effects would not be manifested in the 10-day test.

Also, AMVAC has also obtained limited information that indicates that concentrations in estuarine waters are expected to only occur at very low levels, significantly below concentrations reported in the highest freshwater samplings (section 6.4). Therefore, there is a basis for expecting that Dacthal concentrations will be at levels significantly below that at which acute effects within the currently proposed EPA study would be noted.

3.0 Dacthal Chemical and Ecotoxicological Properties

DCPA is a herbicide that has a water solubility of approximately 0.5 ppm at 25°C. Overall, the compound is not considered very toxic to most aquatic animals even at concentrations that approach this solubility limit. DCPA strongly adsorbs to soils with K_{oc}s in silty loam, loamy

sand, sandy loam, and silty clay loam ranging from 2185 to 4444 and desorption Kocs in these soils ranging from 2760 -6292 (Shelby 1995). Therefore, predicted runoff concentrations would typically be at levels far below the solubility limits of the compound. Spray drift has the potential for loading the aquatic ecosystem; but again DCPA water concentrations are unlikely to reach levels associated with aquatic effects.

Fish are especially insensitive to DCPA. Acute testing at levels that exceeds the solubility limit does not elicit any toxicological effects. By exceeding the solubility limit, these tests provide a worse case situation, as over-saturation better ensures that testing of the active is at its water solubility limit. These studies demonstrate that DCPA is not acutely toxic. The EC_{50}s are not reached at its solubility limit for Bluegill sunfish (*Lepomis macrochirus*), Rainbow trout (*Oncorhynchus mykiss*) and Sheepshead minnow (*Cyprinodon variegatus*). Similarly, acute toxicity to aquatic invertebrates *D. magna* (freshwater amphipod), *A. bahia* (estuarine/marine midge), *Crassostrea virginica* (Eastern oyster), and *Penaeus aztecus* (Brown shrimp) only occurs at higher environmental concentrations.

Information herein provides for the assessment of the relative sensitivity to DCPA between sediment-dwelling invertebrates (*C. dilutus* and *H. azteca*) and water column-dwelling invertebrates (*D. magna* and *M. bahia*). This information provides a basis for establishing whether EPA's risk assessment for DCPA on aquatic invertebrates would likely be based on data associated with sediment-dwelling organisms; and whether expanding that dataset to include testing on a third sediment-dwelling organism is appropriate.

An assessment is also provided on the relative sensitivity between sediment-dwelling amphipods (*H. azteca*) and sediment-dwelling midges (*C. dilutus*). This information can further support the need or lack thereof for further testing on a second sediment-dwelling midge for purposes of improving the aquatic risk assessment for invertebrates.

4.0 Chronic Study Results for DCPA and Sediment-Dwelling Organisms

4.1 DCPA Testing on *H. azteca*

Past DCPA testing has been conducted on the sediment-dwelling, freshwater amphipod, *H. azteca* under static-renewal conditions for a period of 42 days (Picard 2014a). The primary endpoints used for determination of significant effects include survival and growth of adult amphipods. Reproductive effects were also assessed during the study, which include cumulative young produced per female on day 28 through day 42 and male:female ratio.

Study observations for these endpoints provide for mean measured sediment and pore water No-Observed-Effect Concentrations (NOECs) of 92 mg/kg and 0.34 mg/L., respectively. These concentrations are near the solubility limit of the DCPA; therefore it can be concluded that sediment-dwelling amphipods are highly unlikely to be affected in the environment.

4.2 DCPA Testing on *C. dilutes*

Past DCPA testing has been conducted on the sediment-dwelling, freshwater dipteran midge *C. dilutus* under static-renewal conditions for a period of 60 days (Picard 2014b). The primary endpoints used for determination of significant effects include survival and growth. Reproductive effects were also assessed during the study, which include number of egg masses, eggs per mass, eggs per mated female, percent hatch and days until oviposition.

Although there were statistical differences in the percent emergence among midges associated with the 12 mg/kg sediment treatment level, this reduction is not considered to be toxicant related due to the lack of an observed effect at the two higher dose levels. There were also statistical differences observed in the mean number of days to death for exposed females associated with the 30 mg/kg treatment level. This finding is also not considered to be toxicant related due to the lack of an observed effect at the highest dose level, and because there was no effect associated with this endpoint for exposed males.

Statistical analysis determined a significant difference in the mean number of eggs per egg mass in the 12 and 86 mg/kg treatment levels. The reduction at the 12 mg/kg is not considered to be toxicant related due to the lack of a clear dose response as there was no statistical difference noted at the 30 mg/kg treatment level. At the 86 mg/kg dose level, the observed effect was <10% of the control value. The NOEC for this effect was at the 30 mg/kg treatment level.

Statistical analysis determined a significant difference in the mean number of eggs per mated female in the 4.8, 12 and 86 mg/kg treatment. The reduction at the 4.8 mg/kg and 12 mg/kg level were not considered to be toxicant related due to the lack of a clear dose response as there was no statistical difference noted at the 30 mg/kg treatment level. At the 86 mg/kg dose level, the observed effect was <5% of the control value. The NOEC for this effect was at the 30 mg/kg treatment level.

Overall, none of the tested endpoints yielded EC_{50} values, which indicates that acute environmental effects are unlikely to occur. Minor though statistically significant effects were noted for two of the reproductive parameters, which occurred at the highest dose rate; therefore the mean measured sediment and pore water NOECs were at 30 mg/kg and 0.21. mg/L, respectively.

4.3 DCPA Testing on *D. magna*

The most recent acute study on the amphipod species *D. magna* employed static test conditions for a period of 48 hours (Shaw 2013a). The primary endpoint used for determination of significant effects by statistical evaluation was immobilization (i.e., survival).

Since none of the test concentration resulted in amphipod immobilization, the NOEC was determined to be 0.55 mg/L, the highest concentration tested. Previous studies that did not fully meet current guidelines yielded comparable results.

Chronic testing of DCPA was conducted on *D. magna* under static renewal conditions for a period of 21 days (Shaw 2013b). The primary endpoints used for determination of significant effects by statistical evaluation were immobilization (i.e., survival), reproduction, and growth. The 21-day NOEC for immobilization was at a concentration of 0.54 mg/L, which was the highest tested concentration and reflects the solubility limit of DCPA. The 21-day NOECs for total body length and dry body weight were established at the lower dose concentration of 0.27 mg/L. The magnitudes of these effects were approximately a 10% and 30% reduction, respectively. Similarly, there was a reproductive effect at the 0.54 mg/L test concentration. The 21-day NOEC was established at 0.27 mg/L. This was the most sensitive indication of DCPA toxicity as the magnitude of the effect at the highest dose level was approximately a 60% reduction.

4.4 DCPA Testing on *A. bahia*

The most recent acute study on the estuarine midge species *A. bahia* employed static test conditions for a period of 48 hours (Claude 2013). The primary endpoint used for determination of significant effects by statistical evaluation was mortality.

Since none of the test concentration tested resulted in mortality, the NOEC was determined to be 0.391 mg/L, the highest concentration tested. Previous studies that did not fully meet current guidelines yielded comparable results.

Chronic testing of DCPA was conducted on *A. bahia* under flow-through conditions for a period of 28 days (Claude 2014). Survival, growth, and reproductive parameters were studied on 1st generation organisms for the entire study period and survival of the 2nd generation organisms for approximately 96 hours following the release from the brood pouch.

The mean number of young produced per reproductive day was reduced by approximately 50% at the dose level of 0.076 mg/L. Much more severe effects were noted at the higher dose level of 157 mg/L. Other severe effects that were also noted at this concentration include the percent of surviving females producing young and the mean number of young per surviving female. The 21-day NOEC for these reproductive effects was determined to be 0.039 mg/L. Growth retardation proved to be the most sensitive indicator of toxicity as a statistically significant effect was also noted at 0.039 mg/L. The 21-day NOEC based on growth retardation was determined to be 0.021 mg/L.

5.0 Chronic Study Results Comparing the Sensitivity of the Amphipod Sediment-Dwelling Organisms *L. plumulosus* and *H. azteca*

AMVAC has provided to the EPA its own studies on *L. plumulosus* and *H. azteca* for four of our registered compounds (i.e., bifenthrin, permethrin, tebupirimphos, tribufos). A comparison of the findings is provided below:

Table 5.0

	L. plumulosus		*H. azteca*	
	LC_{50} acute effects	EC_{50} reproduction	LC_{50} acute effects	EC_{50} reproduction
Bifenthrin	160 µg/kg sediment	NA	33 µg/kg sediment	19 µg/kg sediment
Permethrin	680 µg/kg sediment	NA	270 µg/kg sediment	270 µg/kg sediment
Tebupirimphos	120 µg/kg sediment	NA	>620 µg/kg sediment	>620 µg/kg sediment
Tribufos	>773 µg/kg sediment	NA	>693 µg/kg sediment	NA

6.0 ASSESSMENT

6.1 Relative Sensitivity for Dacthal between Sediment-Dwelling Invertebrates and Water Column-Dwelling Invertebrate Test Species

The chronic studies for the water column-dwelling *D. magna* and *A. bahia test species* demonstrate a much higher level of sensitivity to DCPA than is evident with the sediment-dwelling organisms of *H. azteca* and *C. dilutes*. Significant reproductive effects were also evident for both *D. magna and A. bahia;* whereas effects on *H. azteca* and *C. dilutes* were at most, very minor (i.e., <10% of control) at higher dose levels. Overall the NOECs for these sediment-dwelling organisms could be established at water concentration levels that were greater than 40% the solubility limit of DCPA, indicating that the environmental impact of DCPA on these species would be *de minimus*.

On this basis, we have concluded that DCPA testing of a third sediment-dwelling organism for a compound of such limited toxicity is highly unlikely to yield a noteworthy effect or modify the conclusion of a lack of significant effects relating to sediment-dwelling organisms.

6.2 Relative Sensitivity for Dacthal between Sediment-Dwelling Midges and Amphipods

Although DCPA had no statistically significant effects on *H. azteca*, minor reproductive effects were noted for the midge *C dilutes*. This suggests that sediment-dwelling midges are more sensitive to DCPA than are sediment-dwelling amphipods. Similarly, the 21-day NOEC established at 0.27 mg/L for the water column-dwelling amphipod *D. magna* is approximately 10-fold more sensitive than the 21-day NOEC of 0.021 mg/L established for the water column-dwelling midge *A. bahia.*

These findings support the assertion that there is little value in conducting new testing on *L. plumulosus,* a sediment-dwelling amphipod, that is unlikely to elicit any significant toxicological effects.

6.3 Relative Sensitivity for Pesticidal Compounds between the Sediment-Dwelling Midges and Amphipods

The freshwater amphipod *H. azteca* has consistently shown much greater chemical sensitivity compared with *L. plumulosus*, the estuarine/marine amphipod for the four compounds studies by AMVAC. Further, although within the literature, we were able to find some numerically lower toxicity values associated with *L. plumulosus* compared with *H. azteca* for a pesticidal compound, those differences were not significant and reflect comparable toxicity.

6.4 Case Studies for Determination of Dacthal in Estuarine Sediments

Monitoring data developed within the U.S. indicates that higher concentrations of Dacthal are only associated with freshwater, as the few higher concentration values have been linked to those sources. Studies in the Santa Maria estuarine watershed along the California coast contain year-round intensively-cultivated agricultural land, which has been monitored for Dacthal and other frequently used pesticides. This estuary and its associated lagoon comprise 486,840 hectares and the major contributing source is the Orcutt Creek, which drains approximately 20,230 hectares of land. The estuary reportedly provides a critical nursery and foraging habitat for marine and estuarine fish and invertebrates. The prevalent use of Dacthal in this area is validated by the high frequency of detection in water (89%), sediment (78%), and fish samples (25%) (Smalling 2013). Sampling through the estuary yielded bed sediment samples whose concentration did not exceed 1.1 µg/l.

A similar assessment was made at the Salinas River estuarine watershed, which is the largest on the central coast with an area of 4,230 square miles (Smalling 2011). The watershed contains approximately 233,000 acres of intensively cultivated agricultural land that is responsible more much of the nation's salad greens and crucifer crops. Also, the Pajaro River estuarine watershed has been assessed (Smalling 2011). It covers approximately 1,300 square miles and includes approximately 76,400 agricultural acres. It includes the important farming communities of Watsonville, Aromas, and Pajaro. As with the reports from Santa Maria estuarine watershed, Dacthal has been detected in a high proportion of water samples with >50% in the Pajaro River estuarine watershed and >80% in the Salinas River estuarine watershed. The highest concentrations associate with storm evens were 0.38 and 0.61 µg/l. Bed sediment samples did not contain Dacthal residues at concentrations that exceeded 5 µg/kg. Suspended sediment samples typically contained no detectable residues, although one sample collected in Lower Orcutt Creek contained Dacthal residues at a concentration of 155 µg/kg. That sample was collected in February of 2008 while a subsequent sample collected in September of that year contained no detectable residues, indicating that buildup of residues along the banks would be at much lower levels.

Comparing these actual sediment samples in sensitive estuarine watersheds associated with intensive agriculture, yields even at the highest concentration, sediment residue levels that are orders of magnitude lower that the NOECs for the tested sediment dwelling invertebrates *H. azteca* and *C. dilutes*. This information clearly demonstrates that sediment dwelling organisms

in estuarine environments are highly unlikely to be impacted by the use of Dacthal. Therefore, further investigating the sensitivity of other sediment dwelling organisms would not be a useful endeavor in terms of the protection of aquatic organisms.

7.0 CONCLUSIONS

Based on the assessment provided in this document, chronic testing on *Leptocheirus plumulosus* is not warranted for six reasons.

1. Water column-dwelling invertebrates are much more sensitive to DCPA compared with sediment-dwelling invertebrates and therefore the results from the column-dwelling invertebrates are protective for sediment-dwelling invertebrates. Ecological assessments of invertebrate effects due to possible DCPA exposure should be based on water-column species.

2. Sediment-dwelling amphipods are less sensitive to DCPA than sediment-dwelling midges.

3. Only minor DCPA toxicological effects have been noted for the two sediment-dwelling organisms that have been tested. These effects occur at relatively high concentration levels that approach the solubility limit of DCPA; and are unlikely to occur in the environment.

4. The tested amphipod species *H. azteca* is more sensitive to pesticidal compounds than *L. plumulosus.*

5. Currently there is no rugged procedure for testing for chronic effects on *L. plumulosus* and acute effects as would be provided by the proposed EPA study would only cover acute effects where only "slight toxicity" has been seen in early studies and no effects in later studies for more sensitive invertebrates by Dacthal.

6. Dacthal concentrations in estuarine waters would appear to be lower than that associated with freshwater; thus protective measures are not warranted for estuarine/marine species.

8.0 REFERENCES

Claude, M. B.; Martin, K. H.; Gallagher, S. P.; Bodle, E. S.; Krueger, H. O. (2013) A 96-Hour Static Acute Toxicity Test with the Saltwater Mysid (*Americamysis bahia*), Project No. 246A-115, Unpublished report by Wildlife International for AMVAC Chemical Corporation, Newport Beach, CA, MRID 49307505.

Claude, M. B.; Martin, K. H.; Gallagher, S. P.; Krueger, H. O. (2014) Dacthal: A Flow-Through Life-Cycle Toxicity Test with the Saltwater Mysid (*Americamysis bahia*), Project No. 246A-116A, Unpublished report by Wildlife International for AMVAC Chemical Corporation, Newport Beach, CA, MRID 49307512

Picard, C. R. (2016a) Dacthal Technical –42-Day Toxicity Test Exposing Freshwater Amphipods (*Hyalella azteca*) to a Test Substance Applied to Sediment under Static-Renewal Conditions Following EPA Test Methods, Study No. 11857.6111, Unpublished report by Smithers Viscient for AMVAC Chemical Corporation, Newport Beach, CA.

Picard, C. R. (2016b) Dacthal Technical – Life-Cycle Toxicity Test Exposing Midges (*Chironomus dilutus*) to a Test Substance Applied to Sediment Under Static-Renewal Conditions Following EPA Test Methods, Study No. 11857.6110, Unpublished report by Smithers Viscient for AMVAC Chemical Corporation, Newport Beach, CA.

Shelby, D. J. (1995) Adsorption and Desorption of Dimethyl Tetrachloroterephthalate (DCPA) to Soil, Project No. 246A-116A, Unpublished report by Ricerca Inc. for ISK Biosciences Corporation, Mentor. OH, MRID 43661101.

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