



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

OFFICE OF
PREVENTION, PESTICIDES AND
TOXIC SUBSTANCES

February 28, 2006
PC Code: 012801

MEMORANDUM

SUBJECT: Environmental Fate and Ecological Effects New Chemical Screen for Bayer AE 0172747
(Bayer 747)

TO: Joanne Miller, Risk Manager, RM 23
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Registration Division (7505C)

FROM: Michelle Embry, Ph.D., Biologist
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for T.B.

DATE: February 28, 2006

The Environmental Fate and Effects Division (EFED) has reviewed environmental fate and effects studies submitted by Bayer CropScience in support of new chemical registration for AE 0172747 herbicide (Bayer 747). This chemical is described as a triketone postemergence herbicide for control of annual broadleaf and grass weeds in field and silage corn, seed corn, sweet corn, and popcorn. The chemical name for the active ingredient is 2-[2-Chloro-4-(methylsulfonyl)-3-[2,2,2-trifluoroethoxy)methyl]benzoyl]-1,3-cyclohexanedione.

This screen included:

- A check of the submission to ensure that all studies triggered by the use pattern are included in the package

Each study is reviewable, i.e., has no fatal flaws rendering the study scientifically invalid

Please note that this screen is not intended to be a comprehensive evaluation of the overall quality of specific studies, but an assurance that a reasonably complete package has been submitted. Also, studies that pass the screen are not automatically assured of acceptance in support of the respective data requirement.



The conclusions of this screen are tabulated below. Although we found that several of the studies have issues associated with the design or conduct that may result in deficiencies, the overall package is complete and adequate to support an ecological risk assessment and a drinking water exposure assessment. We therefore conclude that **this package passes the new chemical screen in EFED**, and await further instruction from you on initiating any additional work on this chemical.

New Chemical Screening Summary – Ecological Effects

Guideline	MRID	Study Title	Issues	Pass/Fail (Yes/No)
850.2100; 71-1	466955-01	An Acute Oral Toxicity Study with the Northern Bobwhite AE 0172747; Substance, Technical; Product Code: AE 0172747 00 1C97 0001.	No issues affecting the acceptability of the study were identified.	Yes
850.2100; 71-1	466954-45	An Acute Oral Toxicity Study with the Mallard AE 0172747; Substance, Technical; Product Code: AE 0172747 00 1C97 0001.	Data were limited due to significant regurgitation of the test substance at ≥ 486 mg ai/kg bw.	Yes
850.2200; 71-2b	466955-03	A Dietary LC50 Study with the Mallard: AE 0172747; Substance Technical; Product Code: AE 0172747 00 1C94 0002.	The photoperiod (16 hours light/8 hours dark) slightly exceeded recommendations (14 hours light/10 hours dark); a brooder temperature gradient was not provided; and it was determined often enough at the second lowest and second highest treatment levels.	Yes
850.2200; 71-2a	466955-02	A Dietary LC50 Study with the Northern Bobwhite: AE 0172747; Substance Technical; Product Code: AE 0172747 00 1C94 0002.	The photoperiod (16 hours light/8 hours dark) slightly exceeded recommendations (14 hours light/10 hours dark); a brooder temperature gradient was not provided; and it was unclear if food consumption was determined often enough at the second lowest and second highest treatment levels.	Yes
850.2300; 71-4a	466955-04	AE 0172747; Substance Technical; Product Code: AE 0172747 00 1C94 0002: A Reproduction Study with the Northern Bobwhite.	Adult birds were younger (22 weeks) than recommended (≥ 28 weeks), and maintained in cages much smaller ($688.5 \text{ cm}^2/\text{bird}$) than recommended ($5000 \text{ cm}^2/\text{bird}$). A brooder temperature gradient for offspring was not provided. It was unknown if the concentration levels included an actual or expected field residue exposure level.	Yes

Guideline	MRID	Study Title	Issues	Reviewable (Yes/No)
850.2300; 71-4b	466955-05	AE 0172747; Substance Technical; Product Code: AE 0172747 00 1C94 0002: A Reproduction Study with the Mallard.	Adult birds were younger (21 weeks) than recommended (≥ 28 weeks), and maintained in cages much smaller (3375 cm ² /bird) than recommended (10000 cm ² /bird). A brooder temperature gradient for offspring was not provided. It was unknown if the concentration levels included an actual or expected field residue exposure level.	Yes
850.2300; 71-4b	466955-06	AE 0172747; A Subchronic Toxicity Study with the Mallard.	Deviated from acceptable avian repro study design: exposure phase began following the onset of egg production and continued for 8 weeks, and eggs were counted and discarded. Cages were much smaller (3375 cm ² /bird) than recommended (10000 cm ² /bird) for mallards.	Yes
850.1075; 72-1a	466954-36	Acute Toxicity of AE 0172747 technical substance to fish (<i>Lepomis macrochirus</i>)	No issues affecting the acceptability of the study were identified.	Yes
850.1075; 72-1c	466954-37	Acute Toxicity of AE 0172747 technical substance to fish (<i>Oncorhynchus mykiss</i>)	No issues affecting the acceptability of the study were identified.	Yes
850.1075; 72-1c	466954-38	Acute Toxicity of AE 0172747 & Isoxadifen-ethyl SC 420+210 to fish (<i>Oncorhynchus mykiss</i>) under static conditions	No issues affecting the acceptability of the study were identified.	Yes
850.1075; 72-1c	466954-39	Acute Toxicity of AE 0456148 to fish (<i>Oncorhynchus mykiss</i>) under static conditions	No issues affecting the acceptability of the study were identified.	Yes
850.1010; 72-2	466954-30	Acute toxicity to <i>Daphnia magna</i> (Waterflea) under static testing conditions AE0172747; substance, technical	No issues affecting the acceptability of the study were identified.	Yes
850.1010; 72-2	466954-31	Acute Toxicity of AE 0172747 & Isoxadifen-ethyl SC 420+210 to the Waterflea <i>Daphnia magna</i> in a Static Laboratory Test System	No issues affecting the acceptability of the study were identified.	Yes
850.1010; 72-2	466954-32	Acute Toxicity of AE 0456148 to the Waterflea (<i>Daphnia magna</i>) Under Static Conditions	No issues affecting the acceptability of the study were identified.	Yes

Guideline	MRID	Study Title	Issues	Reviewable (Yes/No)
850.1075; 72-3a	466954-35	AE 0172747 – Acute Toxicity to Sheepshead Minnow (<i>Cyprinodon variegates</i>) Under Static-Renewal Conditions.	“Old” test solutions were not analyzed for test substance at each renewal period, and the pH fell below 7.5 at the two highest concentration levels.	Yes
850.1025; 72-3b	466954-33	AE 0172747-Acute Toxicity to Eastern Cootie (<i>Crucianella virginica</i>) Under Flow-Though Conditions	No issues affecting the acceptability of the study were identified.	Yes
850.1035; 72-3c	466954-34	AE 0172747-Acute Toxicity to Mysids (<i>Americamysis bahia</i>) Under Flow-Though Conditions	No issues affecting the acceptability of the study were identified.	Yes
850.1400; 72-4a	466954-43	Early-life Stage Toxicity of AE 0172747 Technical Substance to Fish (<i>Pimephales promelas</i>) (Product Code AE 0172747 00 1C94 0003).	No issues affecting the acceptability of the study were identified.	Yes
850.1300; 72-4b	466954-40	Influence of AE 0172747 (tech.) on Development and Reproductive Output of the Waterflea <i>Daphnia magna</i> in a Static Renewal Laboratory Test System.	No issues affecting the acceptability of the study were identified.	Yes
850.1300; 72-4b	466954-41	Chronic Toxicity of AE 0456148, a Metabolite of AE 0172747, to the <i>Daphnia magna</i> Under Static Renewal Conditions.	No issues affecting the acceptability of the study were identified.	Yes
850.1350; 72-4c	466954-42	AE 0172747 – Life-Cycle Toxicity Test with Mysids (<i>Americamysis bahia</i>).	Organisms did not originate from laboratory cultures, and the health of the brood stock was not reported. The average number of offspring/female/reproductive day was only 1.47 for the negative control level and 0.73 for the solvent control level. Mortality at 7, 14, and 21 days (with concentration response curves, LD ₅₀ s, and 95% C.I.s), and length of each mysid at the time of sexual discernment were not assessed. In addition, second generation mysids were counted and discarded. The photoperiod (16 hours light/8 hours dark) and salinity range (25-26 ppt) slightly exceeded requirements.	Yes

Guideline	MRID	Study Title	Issues	Reviewable (Yes/No)
850.4225; 123-1a	466955-11	Tier II Seedling Emergence Nontarget Plant Study using AE 0172747 SC52	The photoperiod for corn, radish, cucumber and sunflower fluctuated between 16 hour light:8 hour dark photoperiod and 12 hours light: 12 hours dark; corn and radish plants were grown under greenhouse conditions during October, whereas cucumber and sunflower plants were grown during May.	Yes
850.4250; 123-1b	466955-12	Tier II Vegetative Vigor Nontarget Plant Study using AE 0172747 SC52	The photoperiod for corn, radish, cucumber and sunflower fluctuated between 16 hour light:8 hour dark photoperiod and 12 hours light: 12 hours dark; with the exception of radish (which was grown during May), these plants were grown under greenhouse conditions during October.	Yes
850.4400; 123-2	466955-13	Duckweed (<i>Lemna gibba</i> G3) Growth Inhibition Test with recovery phase AE 0172747; substance, technical	No issues affecting the acceptability of the study were identified.	Yes
None; 123-2; OECD 221	466955-14	<i>Lemna gibba</i> G3 Growth Inhibition Test with AE 00456148	No issues affecting the acceptability of the study were identified.	Yes
850.5400; 123-2	466955-15	AE 0172747-Acute Toxicity Test with Freshwater Blue-green Alga (<i>Anabaena flos-aquae</i>)	No issues affecting the acceptability of the study were identified.	Yes
850.5400; 123-2	466955-16	AE 0172747-Acute Toxicity to the Marine Diatom, <i>Skeletonema costatum</i> , Under Static Conditions	No issues affecting the acceptability of the study were identified.	Yes
850.5400; 123-2	466955-17	Algal Growth Inhibition- <i>Pseudokirchneriella subcapitata</i> AE 0172747; substance, technical	No issues affecting the acceptability of the study were identified.	Yes
850.5400; 123-2	466955-18	Algal Growth Inhibition- <i>Navicula pelliculosa</i> AE 0172747; substance, technical	No issues affecting the acceptability of the study were identified.	Yes
850.5400; 123-2	466955-19	<i>Pseudokirchneriella subcapitata</i> Growth Inhibition Test with AE 0172747 & Isoxadifen-ethyl SC 420+210	No issues affecting the acceptability of the study were identified.	Yes

Guideline	MRID	Study Title	Issues	Reviewable (Yes/No)
None; 123-2; OECD 201	466955-20	<i>Pseudokirchneriella subcapitata</i> Growth Inhibition Test with AE 0456148	No issues affecting the acceptability of the study were identified.	Yes
850.3020; 141-1	466955-07	Contact toxicity test (LD50) to honey bees (<i>Apis mellifera L.</i>) Substance technical	No issues affecting the acceptability of the study were identified.	Yes
850.3020; 141-1	466955-09	Contact toxicity to honey bees, <i>Apis mellifera L.</i>	No issues affecting the acceptability of the study were identified.	Yes
850.3020; None	466955-08	Oral toxicity test (LD50) to honey bees (<i>Apis mellifera L.</i>) Substance technical	No issues affecting the acceptability of the study were identified.	Yes
850.3020; None	466955-10	Oral toxicity (LD50) to honey bees (<i>Apis mellifera L.</i>)	No issues affecting the acceptability of the study were identified.	Yes
850.1790; None; OECD 219	466954-44	<i>Chironomus riparius</i> 28-Day Chronic Toxicity Test with AE 0172747 (tech.) in a Water-Sediment System using Spiked Water.	Followed proposed OECD Guideline 219, which differed in the following ways: the study was 28 days in length (instead of 14 days) and generally followed only the third part of the tri-phase experiments (overlying water spike with sediment); first instars were used; different endpoints than required were assessed (emergence and development rate were assessed in lieu of survival, growth, and BCF); and sediment and midge tissue were not analyzed for test substance levels. In addition, the temperature was slightly less than recommended for this species.	Yes

New Chemical Screening Summary – Environmental Fate

Guideline	MRID	Study Title	Issues	Reviewable (Yes/No)
161-1	46695410	Hydrolysis Study	No issues affecting the acceptability of the study were identified.	Yes
161-2	46695411	Photodegradation in Water	No issues affecting the acceptability of the study were identified.	Yes
161-3	46695412 46695413	Photodegradation on Soil	No issues affecting the acceptability of the studies were identified.	Yes
161-4	---	Photodegradation in Air	---	---

Guideline	MRID	Study Title	Issues	Reviewable (Yes/No)
162-1	466954114 466954115 466954116 466954117 466954118	Aerobic Soil Metabolism	No issues affecting the acceptability of the studies were identified.	Yes
162-2	466954119 466954120	Anaerobic Soil Metabolism	No issues affecting the acceptability of the studies were identified.	Yes
162-3	466954121 466954122	Anaerobic Aquatic Metabolism	No issues affecting the acceptability of the studies were identified.	Yes
162-4	466954123 466954124	Aerobic Aquatic Metabolism	No issues affecting the acceptability of the studies were identified.	Yes
163-1	466954104 466954105 466954106 466954107 466954108 466954109	Mobility - Adsorption/Desorption	No issues affecting the acceptability of the studies were identified.	Yes
164-1	46695425	Terrestrial Field Dissipation	No issues affecting the acceptability of the study were identified.	Yes
164-2	---	Aquatic Sediment Dissipation	---	---
164-3	---	Forestry Dissipation	---	---
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165-5	---	Accumulation in Aquatic Non-target Organisms	---	---
166-1	---	Groundwater	---	---
N/A	---	<i>Other Special Studies</i>	---	---