



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

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OFFICE OF
PESTICIDES AND TOXIC SUBSTANCES

MEMORANDUM

SUBJECT: Mecoprop Registration Standard Draft Corrections

TO: Richard S. Bright
Registration Standard Project Support Team
SRRD/RB

THRU: Douglas J. Urban, Supervisory Biologist
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Environmental Fate and Effects Division (TS-769C)

Douglas J. Urban
10/31/88

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10/31/88

Attached are revised pages 14, 15, 16, and 20 from the draft MCPP Registration Standard pertaining to Ecological Effects. I have made organizational changes (within the established topic headings) in the text so that the discussion now follows a more logical sequence and missing/incorrect technical information has been included/corrected. Also note that a copy of Data Table A (Ecological Effects portions) is attached with corrections designated.

Regarding the question on the end-use product testing requirement raised during the post phase II meeting of 10/27/88, EEB will let the requirement stand as is and will consider any registrant's response on a case-by-case basis.

3. Ecological Effects

Formulated Products

The only studies received which tested MCPP formulated (end use) products were those in which the test compound was an MCPP end use product combined with other active ingredients. Therefore, these studies were not reviewed. End-use product testing is incomplete and must be completed for the MCPP formulations as discussed below and identified in the data table in Appendix__.

Technical Products

a. Avian Studies

In order to establish the toxicity of each form of MCPP to birds, the minimum data required on the technical grade of each active ingredient are: a) An avian single-dose oral LD₅₀ test using either one species of waterfowl (preferably the mallard) or one species of upland game bird (preferably the bobwhite quail); and b) 2 avian dietary LC₅₀ tests using one species of waterfowl (preferably the mallard) and one species of upland game bird (preferably the bobwhite quail). Avian toxicity data are complete for MCPP acid, partially complete for MCPP dimethylamine salt, and nonexistent for all other MCPP formulations.

1) Avian single-dose oral studies on MCPP acid indicate an acute oral LD₅₀ value of 700 mg/kg for the bobwhite quail. MCPP acid may therefore be considered slightly toxic to avian species on an acute basis. Based on available toxicity information, no precautionary labeling for MCPP acid is recommended. No acute oral studies were submitted for the salts or ester MCPP products; therefore, no acute toxicity determinations can be made at this time, nor can precautionary labeling be recommended.

2) Avian dietary studies on MCPP acid indicate LC₅₀ values of >5620 ppm for the mallard and 5000 ppm for the bobwhite. MCPP acid may therefore be considered practically non-toxic to avian species on a subacute basis. Dietary studies for MCPP dimethylamine salt indicate LC₅₀ values greater than 12000 ppm for the mallard and 14000 ppm for the Japanese quail. However, the Japanese quail is not considered representative of an upland game bird in the United States. The bobwhite quail is the preferred species. Thus, the Japanese quail study does not fulfill EPA requirements. Additional data are required on MCPP dimethylamine salt. Although Guidelines requirements are only partially fulfilled, the above data indicate that MCPP dimethylamine salt has very low toxicity to avian species on a subacute dietary basis. No determination of dietary toxicity to avian species can be made for the diethanolamine salt, the potassium salt, or the isooctyl ester because of a lack of

acceptable studies.

3) Avian Reproduction Testing. Data on avian reproductive effects are required when it is expected that birds may be subject to repeated or continuous exposure to the product, the product is stable in the environment, or the product is stored or accumulated in plant or animal tissues.

No avian reproduction studies were submitted for review. There is insufficient toxicity and environmental fate data available at this time to determine if this test is required for any of the forms of MCP. P.

b. Aquatic Studies

1) Acute Freshwater Fish Toxicity Testing. In order to establish the toxicity of each form of MCP. P. to freshwater fish, the minimum data required on the technical grade of each active ingredient are: 2 freshwater fish toxicity studies. One study should use a coldwater species (preferably the rainbow trout) and the other study should use a warmwater species (preferably the bluegill sunfish).

Freshwater fish toxicity studies indicate that MCP. P. acid has very low toxicity to freshwater fish on an acute basis (rainbow trout $LC_{50} = 124$ ppm); however, this data requirement is only partially satisfied. The data requirement for testing a warmwater species has not been fulfilled. No determination of acute toxicity to freshwater fish can be made for the dimethylamine salt, the diethanolamine salt, the potassium salt, or the isooctyl ester because of a lack of toxicity data. Therefore, no precautionary labeling can be recommended at this time.

Data from testing with a typical end-use product is required when a product is to be introduced directly into an aquatic environment when used as directed, the LC_{50} of the technical grade active ingredient is equal to or less than the estimated environmental concentration (EEC), or an ingredient in the end-use product (other than the active ingredient) is expected to enhance the toxicity of the active ingredient. This testing requirement is applicable, at a minimum, to the dimethylamine and potassium salts, as well as to the isooctyl ester of MCP. P.

2) Acute Freshwater Aquatic Invertebrate Testing. The minimum testing required to assess the hazard of each form of MCP. P. is a freshwater aquatic invertebrate toxicity test, preferably using first instar Daphnia magna or early instar amphipods, stoneflies, mayflies, or midges.

No acceptable data were received under this topic. Therefore, the Guidelines requirement for acute toxicity testing for all forms of MCP. P. on freshwater aquatic invertebrates has not

been fulfilled.

Data from testing with a typical end-use product is required when a product is to be introduced directly into an aquatic environment when used as directed, the LC₅₀ of the technical grade active ingredient is equal to or less than the estimated environmental concentration (EEC), or an ingredient in the end-use product (other than the active ingredient) is expected to enhance the toxicity of the active ingredient. This testing requirement is applicable, at a minimum, to the dimethylamine and potassium salts, as well as to the isooctyl ester of MCPP.

3) Effects on Estuarine and Marine Organisms. Testing on estuarine and marine organisms is required when a product is applied directly to an estuarine/marine environment or is expected to enter this environment because of its expected use or mobility. The minimum testing that may be required to assess the hazard of each MCPP formulation are 96-hour LC₅₀ studies for shrimp and for an estuarine or marine fish. A 48-hour EC₅₀ study with oyster embryo larvae or a 96-hour EC₅₀ oyster shell deposition study may also be required.

Given that MCPP formulations are used in drainage ditchbanks and that MCPP is a major herbicide used on turf (with golf courses in the mid-Atlantic region accounting for most of this use), significant runoff to estuarine/marine environments may be expected. No studies on estuarine and marine organisms were submitted for review. Therefore, the Guidelines/requirement for acute toxicity testing for the acid and all salts and the ester form of MCPP on estuarine and marine organisms has not been fulfilled. Pending the results of acute aquatic studies and environmental fate data, some or all of these materials may be subject to this testing requirement.

4) Fish Early Life-Stage and Aquatic Invertebrate Life-Cycle Testing. Fish early life-stage and aquatic invertebrate life-cycle tests are required when a product is applied directly to water or is expected to be transported to aquatic sites and a) exposure of aquatic organisms will be continual or recurrent; or b) the lowest LC₅₀ is 1 mg/L or less; or c) the EEC in water is equal to or greater than 0.01 any LC₅₀; or d) if the EEC is less than any LC₅₀ and the product has reproductive effects on, or cumulative effects in, aquatic organisms or has a half-life in water greater than 4 days.

No acceptable data were received under these topics and there is insufficient acute toxicity and environmental fate data available at this time to determine if this test is required.

c. Nontarget Plant Studies

There are no acceptable data for toxicity of any MCPP

formulation to nontarget plants. Therefore, no assessment of toxicity can be made at this time, and, no precautionary labeling can be recommended.

All MCPP formulations are labeled to control a variety of broadleaf weeds. Therefore, Tier I testing will not be required because, by definition, herbicides are hazardous to plants. In order to assess the potential hazard to nontarget plants, the Tier II nontarget plant studies as specified in the data table in Appendix___ are required for all forms of MCPP. Further, for those MCPP formulations for which drainage ditchbank application is identified (dimethylamine salt, potassium salt, isooctyl ester), Tier II aquatic plant testing must utilize all of the following species: 1) duckweed (Lemna gibba), 2) marine diatom (Skeletonema costatum), 3) blue-green alga (Anabaena flos-aquae), 4) freshwater green alga (Selenastrum capricornutum), and 5) a freshwater diatom. For those MCPP formulations not identified as having drainage ditchbank application (MCPP acid, diethanolamine salt), testing may be completed using Selenastrum capricornutum.

d. Endangered Species

There can be no determination that MCPP acid or any MCPP formulation may affect endangered animal or plant species until all data on required toxicity studies are received and evaluated. In the absence of data, endangered plants may be considered to be adversely affected by this herbicide use.

8. Endangered Species Concerns

There can be no determination at this time that MCPP acid or any MCPP formulation may affect endangered animal or plant species. Until all required toxicity studies are received and evaluated, and in the absence of data, endangered plants may be considered as adversely affected by this herbicide.

The Agency is developing a program to reduce or eliminate pesticide exposure to endangered species to a point where use does not result in jeopardy, and will issue notice of any necessary labeling revisions when the program is developed.