2-23-81

V. ECOLOGICAL EFFECTS

ECOLOGICAL EFFECTS TOPICAL DISCUSSIONS

EFFECTS ON AVIAN SPECIES (163.71-1,2,4,5)

Nine studies were submitted in support of registration. One was not pertinent, the other eight were all acceptable to support registration.

Author	ID
Idle, J.R.; Millburn, P.; Williams, R.T.; Zini, G. (1976)	05008070
Truslow Farms (1976)	54
Truslow Farms (1976)	55
Truslow Farms (1976)	60
Truslow Farms (1976)	61
Truslow Farms (1976)	56
Truslow Farms (1976)	57
Truslow Farms (1976)	59
Truslow Farms (1976)	58

Acute Effects: The minimum data required for establishing the acute toxicity of naphthalene acetic acid are results from an avian single dose oral LD_{50} study using technical NAA acid. Test species should be either wild waterfowl (preferably the mallard duck) or an upland gamebird (preferably the bobwhite quail or the ring-necked pheasant).

Four valid studies on the acute effects of NAA in mallards and bobwhite quail were available for review. Table 1 summarizes the results of these studies.

Table 1. Acute Toxicity Studies on Avian Species with Naphthelene Acetic Acid.

Author	Species	Test Substance	Results	EEB Validation Status
Truslow Farms, 1976	Bobwhite Quail	Technical	LD_{50}>2510mg/kg	Core
Truslow Farms, 1976	Bobwhite Quail	72-A112	LD_{50}>2510mg/kg	Suppl.
Truslow Farms, 1976	Mallard Ducks	Technical	LD_{50}=1750mg/kg	Suppl.
Truslow Farms, 1976	Mallard Ducks	72-A112	LD_{50}>2510mg/kg	Suppl.

The first study listed above fulfills the proposed USEPA guidelines requirement for the avian single dose oral LD_{50}. NAA acid technical can be categorized as practically non-toxic to avian species.

Subacute Effects: The minimum data required for establishing the subacute toxicity of naphthalene acetic acid are results from two avian dietary LC_{50} studies of duration not shorter than 8 days. One study must be run on a wild waterfowl (preferably the mallard duck) and one must be

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run on an upland gamebird (preferably the bobwhite quail or ring-necked pheasant).

Four valid studies on the subacute effects of NAA in mallards and bobwhite quail were available for review. Table 2 summarizes the results of these studies.

Table 2. Subacute Toxicity Studies on Avian Species with Napthalene Acetic Acid

Author	Species	Test Substance	Results	EEB Validation Status
Truslow Farms, 1976	Bobwhite Quail	Technical	LC_{50}>10,000 ppm	Core
Truslow Farms, 1976	Bobwhite Quail	72-A1112	LC_{50}>10,000 ppm	Suppl.
Truslow Farms, 1976	Mallard Ducks	Technical	LC_{50}>10,000 ppm	Core
Truslow Farms, 1976	Mallard Ducks	72-A1112	LC_{50}>10,000 ppm	Suppl.

These tests satisfy the USEPA guidelines requirements for tests of the subacute toxicity of the technical to a wild waterfowl and an upland gamebird. Technical NAA can be categorized as practically non-toxic to avian species.

Effects on Freshwater Fish (163.72-1,2,3,4,5,6)

Effects on freshwater fish are measured by a variety of tests, including acute LC_{50}'s, embryolarvae and life cycle studies. The types of tests required depend on the pesticide use pattern and the results of two basic tests: the 96-hr acute toxicity test (LC_{50}) to one coldwater and one warmwater fish species.

Two studies on the acute effects of NAA acid on fish were available for review. Table 3 summarizes the results of these studies.

Table 3. Acute Toxicity Studies on Freshwater Fish with Naphthalene Acetic Acid

Author	Species	Test Substance	Results	EEB Validation Status
Union Carbide, ES 1979	Rainbow Trout (*Salmo gairdneri*)	72-A112	14.1 ppm	Suppl.
Union Carbide, ES 1979	Bluegill Sunfish (*Lepomis macrochirus*)	72-A112	23.7 ppm	Suppl.

These tests do not satisfy the USEPA guidelines requirements for tests of the acute toxicity to freshwater fish, because they were run on a formulated product whose percentage active ingredient was unknown. Based on these tests alone, EEB cannot categorize the toxicity of technical NAA acid to freshwater fish. The formulated product (72-A112) can be categorized as slightly toxic to freshwater fish.

Effects on Freshwater Invertebrates

Effects on freshwater invertebrates are measured by a variety of tests, including acute LC_{50}s and life-cycle tests. The types of tests required depend on the pesticide's use pattern and persistence, and on the results of a 48-hr acute toxicity test (EC_{50}) on a freshwater invertebrate.

One study on the acute effects of NAA acid on a freshwater invertebrate was available for review. This study is described below.

Author	Species	Test Substance	48-hr EC_{50}	EEB Validation Status
Union Carbide, ES (1979)	Water flea (*Daphnia magna*)	72-A112	23.8 ppm	Suppl.

This study does not satisfy the USEPA guidelines requirement for a test of the acute toxicity to a freshwater invertebrate, because it was run on a formulated product whose percentage active ingredient was unknown. Based on this test alone, EEB cannot categorize the toxicity of technical NAA acid to freshwater invertebrates. The formulated product (72-A112) can be categorized as slightly toxic to freshwater invertebrates.

Ecological Effects Profile

Naphthalene acetic acid (NAA acid) is practically non-toxic to birds, whether taken as a single large dose or ingested along with their regular diet. Data on file in the Toxicology Branch of HED show that NAA acid is only slightly toxic to mammals.

LC_{50} values for the two freshwater fish and the aquatic invertebrate show that the formulated product 72-A112 is slighly toxic to aquatic life. The percentage of active ingredient (NAA) in 72-A112 was not given, and no studies on the technical grade of NAA have been submitted.

Ecological Effects Hazard Assessment

The use pattern for NAA (once per growing season) and its low toxicity to birds and mammals should mean that NAA use on orchards and ornamentals will not result in harm to avian or mammalian populations. Likewise, use of the formulated product 72-A112 should not result in harm to aquatic populations. EEB cannot estimate the hazards to aquatic life posed by other formulations, or by the technical, because the proper toxicity tests have not been submitted.

Data Gaps

The following studies are needed in order to fully assess the effects of NAA acid and its formulations on nontarget aquatic organisms:

1. Acute 96 hr LC_{50} on one coldwater fish (preferably rainbow trout).

2. Acute 96-hr LC_{50} on one warmwater fish (preferably bluegill sunfish).

3. Acute 48-hr EC_{50} on one aquatic invertebrate (proferably Daphnia magna)

These studies must be run using the technical grade of NAA acid, in order to fulfill USEPA registration guidelines (Sections 163.7-1, 163.72-2).

Labeling

The following labeling requirements are made on the basis of the available ecological effects data:

Manufacturing NAA acid

Do not discharge into lakes, streams, ponds, or public waters unless in accordance with a NPDES permit. For guidance, contact your regional office of EPA.

For All Formulations:

Do not contaminate water by cleaning of equipment or disposal of waste.

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and

EEB:T.Johnston:DCR#15828-file(1):hmw510@TEXT11:Raven:479-2018:02-23-81: