NAPHTHALENEACETIC ACID

Task 4: Exposure Profile

Contract No. 68-01-5830

Final Report

March 20, 1981

SUBMITTED TO:

Environmental Protection Agency
Arlington, Virginia 22202

SUBMITTED BY:

Enviro Control, Inc.
One Central Plaza
11300 Rockville Pike
Rockville, Maryland 20852

Exposure Profile - Naphthaleneacetic acid

Introduction

1-Naphthaleneacetic acid (NAA) is registered for use on orchard crops and ornamentals as a growth regulator. Its total annual use is less than 1.0×10^5 lbs, primarily on apples (30-50%) and pears (20-30%). Ornamental uses account for 10-30%, and citrus, olive, and pineapple crops account for less than 10% each. On apples and pears, NAA is applied to chemically thin the fruit or to prevent preharvest drop. Ornamental uses are mainly to stimulate root growth and to delay leaf drop.

Formulations of NAA are: dust (D; 0.2% ai), wettable powder (WP; 3.5% ai), emulsifiable concentrate (EC; 0.016 lb ai/gal), and soluble concentrate/liquid (SC/L; 0.04% ai-0.28 lb ai/gal). Formulations of the salts of NAA are: sodium salt, WP (2 and 7.11% ai), crystals (Cr; 98%), and soluble concentrate/solid (SC/S; 3.5-98% ai); ammonium salt, SC/L (0.44 and 1.76 lb ai/gal); potassium salt, SC/L (0.044-1.76 lb ai/gal); ethyl ester, ready-to-use (RTU; 1% ai), pressurized liquid (PrL; 1% ai); and acetamide, D (0.4% ai), WP (8.4% ai), and SC/L (0.176 lb ai/gal).

NAA formulations (D, WP, EC, SC/L, SC/S, and Cr) are applied as foliar sprays to fruit crops, either aerially or using ground equipment that directs the spray up into the trees. Applications for ornamental used include soil drench (SC/L), manual spraying (WP and SC/L), and dipping plant cuttings (D and SC/L).

All Formulations

No data are available to assess the environmental fate of NAA and subsequent potential for exposure to humans and wildlife. The necessary information includes: soil-mobility data for predicting potential groundwater contamination; volatility data that would indicate potential inhalation exposure; bioaccumulation data on the octanol/water partition coefficient; and data showing dissipation of dislodgeable residues on plant surfaces. Similarly, no data are available to quantify the exposure that applicators and their helpers may experience in the handling and application of NAA.

Foliar Applications

All formulations except the RTU and PrL formulations are registered for use as foliar sprays. Spray drift from high-pressure spray equipment and aerial applications may expose humans, livestock, and wildlife outside of the application site. However, the major exposure will be to workers mixing, loading, and applying NAA. Respiratory and dermal exposure may result from "puff back" of the dry formulations during mixing; ocular exposure could occur during mixing of the liquid formulation.

A lightweight oil is sometimes (frequency not known) added to the NAA dilution before spraying, which alters adsorptive properties.

Soil Drench and Dip Applications

Ornamental uses of NAA include a soil drench to stimulate rooting and a dip for plant cuttings. Dermal exposure would result to workers during these procedures. However, such exposure could be greatly reduced by the practice of wearing gloves. The half-life of NAA in potting soil and on cut plant surfaces is not known.