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

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MEMORANDUM

OFFICE OF
PESTICIDES AND TOXIC
SUBSTANCES

SUBJECT: Phytotoxicity Incidents Involving Benlate DF

FROM: Douglas J. Urban, Acting Chief
Ecological Effects Branch
Environmental Fate and Effects Division (H7507C) 3/9/92

TO: Anne L. Barton, Director
Environmental Fate and Effects Division (H7507C)

On February 27, 1992 the Ecological Effects Branch (EEB) received copies of articles appearing in The New York Times (February 24, 1992) and The Wall Street Journal (December 16, 1991) concerning alleged phytotoxicity problems resulting from use of Benlate DF (benomyl). The articles were provided by Susanne Cerrelli, Special Review and Reregistration Division.

The newspaper articles describe phytotoxicity incidents resulting from the use of Benlate DF on strawberries, cucumbers, broccoli, orchids, and landscape ornamentals. Damage claims in Florida have exceeded \$180 million and are expected to increase. The fungicide is alleged to have caused problems in 40 states. Damage has only occurred with the dry-flowable product. The liquid formulation has not been implicated in any of the incidents. Several theories have been proposed, but the reasons for the effects are unknown at this time. DuPont is apparently working feverishly to resolve this problem in order to salvage what is described as a \$100 million a year market.

In Ms. Cerrelli's note (attached), she asked if phytotoxicity data should be imposed for this chemical and if she should be taking any specific actions on this matter. She will be provided the following information:

EEB is currently requiring aquatic plant data for fungicides if the solubility of the technical grade active ingredient (TGAI) is greater than 10 ppm and the typical end use product (TEP) is applied by ground equipment. This scenario is designed to address potential problems associated with runoff. The indicator species being used is the freshwater green alga Selenastrum capricornutum. Application of a TEP with aircraft,

air blast, or sprinkler irrigation requires submission of S. capricornutum data independent of solubility. Since benomyl is described in the "91" Farm Chemicals Handbook as practically insoluble, EEB would not be concerned with runoff and would not require aquatic plant testing based on solubility. However, the fungicide can be applied by air and sprinkler irrigation systems. Therefore, we normally would ask for the aquatic freshwater green algae study. EEB does not typically ask for terrestrial plant data for fungicides based on the broad range of species for which they are normally registered, our concerns are for nontarget plants, not target plants. However, it is standard procedure to ask for phytotoxicity data when there are phytotoxicity concerns that can not be addressed by existing data or from the open literature. The incidents involving Benlate DF certainly fit this criteria.

A potential problem with requiring plant data for benomyl is that the dry-flowable formulation, Benlate DF, is causing damage while use of the liquid formulation has yet to result in any plant damage. Subdivision J only requires testing of the TGAI at the Tier I level. Based on what has occurred, testing of the TGAI is unlikely to result in any significant degree of phytotoxicity and would provide no useful information. Therefore, because of the serious questions raised regarding the phytotoxic nature of Benlate DF to target plants, Tier I testing should be conducted for Benlate DF on all 5 aquatic plant species (S. capricornutum, Lemna gibba, Anabaena flos-aquae, Skeletonema costatum, and a freshwater diatom) rather than just the freshwater green algae. In addition, seed germination, seedling emergence, and vegetative vigor Tier I terrestrial plant testing should be conducted for this formulation.