

US EPA ARCHIVE DOCUMENT



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

OFFICE OF PREVENTION,
PESTICIDES AND
TOXIC SUBSTANCES

Chemical: Propazine
PC Code: 080808
DP Barcode: ~~D310326~~ 0310326
D249944, D249945

MEMORANDUM

DATE: November 3, 2006

SUBJECT: Transmittal of the Environmental Fate and Effects Division's (EFED) Registration Science Chapter for the Ecological Risk Assessment of Propazine New Use on Sorghum

FROM: Pamela Hurley, Senior Toxicologist
Mark Corbin, Senior Environmental Scientist
Environmental Risk Branch 3
Environmental Fate and Effects Division (7507C)

THRU: Daniel Rieder, Branch Chief
Environmental Risk Branch 3
Environmental Fate and Effects Division (7507C)

TO: Hope Johnson, RM Team 25
Herbicide Branch
Registration Division (7505C)

Attached please find the Environmental Fate and Effects Division's (EFED) environmental risk assessment for the proposed registration of propazine, 2-chloro-4,6-bis(isopropylamino)-s-triazine for weed control on sorghum (grain and sweet). This risk assessment covers technical propazine, PC Code 080808 with 98% active ingredient (a.i.), and one formulated end use product, Propazine 4L containing 43% active ingredient. Propazine is currently registered for use on container grown ornamentals in greenhouses (Propazine 4L; EPA Reg. No. 1812-352). Propazine is formulated as flowable concentrate and proposed applications are via ground or aerial equipment. The proposed application rate is 1.2 lbs ai/A, 1 application/year. In addition, the use of propazine on sorghum as specified on the proposed label prohibits use on sand, loamy sand, heavy clay, and high organic matter soils. As such, the risk conclusions contained in this assessment would not apply to these soil types.



US EPA ARCHIVE DOCUMENT

Risk Conclusions

This screening risk assessment indicates that at the maximum proposed propazine application rate for sorghum, there is potential risk to freshwater invertebrates following chronic exposure. There are also potential risks to endangered vascular and non-vascular aquatic plants and non-endangered non-vascular aquatic plants. Although there are currently no listed non-vascular plants, there is concern for indirect effects on organisms dependent upon non-vascular plants for survival. Potential risk to freshwater and marine/estuarine fish following acute exposure could not be estimated due to lack of valid toxicity data.

For the proposed applications of propazine at the maximum application rates, there is concern for risk to monocots and dicots located in adjacent areas, in semi-aquatic areas primarily as a result of runoff and as a result of spray drift. There is also concern for risk to mammals consuming short grasses, tall grasses, broadleaf plants and small insects following chronic exposure. Finally, although a quantitative estimate of risk following acute exposure was not conducted for birds because the acute LD₅₀/LC₅₀ values were greater than highest dose/concentration tested, a qualitative assessment indicates a concern for acute sublethal effects. No chronic avian toxicity data are available; therefore, no risks were estimated. Lack of toxicity data do not rule out the possibility of risk to birds following chronic exposure.

As noted above, propazine may not be applied to selected soils and as such the risk conclusions do not apply to locations where sorghum is grown on these soils. More details on the risk conclusions can be found in the Executive Summary of the Ecological Risk Science Chapter for propazine.

Suggestions for Hazard Labeling

Environmental Hazards

Manufacturing Use:

This pesticide is toxic to aquatic invertebrates. Do not discharge effluent containing this product into lakes, streams, ponds, estuaries, oceans or other waters unless in accordance with the requirements of a National Pollutant Discharge Elimination System (NPDES) permit and the permitting authority has been notified in writing prior to discharge. Do not discharge effluent containing this product to sewer systems without previously notifying the local sewage treatment plant authority. For guidance contact your State Water Board or Regional Office of the EPA. Do not contaminate water when disposing of equipment washwaters.

End Use Products:

This pesticide is toxic to aquatic invertebrates, plants and mammals. Do not apply directly to water, to areas where surface water is present, or to intertidal areas below the mean high water mark. Drift and runoff may be hazardous to aquatic organisms in water adjacent to treated areas. Do not contaminate water when disposing of equipment wash waters or rinsate.

Statement to minimize the potential for surface water contamination for all end-use products:

This product may contaminate water through drift of spray in wind. This product has a potential for runoff for several months or more after application. Poorly draining soils and soils with shallow water tables are more prone to produce runoff that contains this product. A level, well maintained vegetative buffer strip between areas to which this product is applied and surface water features such as ponds, streams, and springs will reduce the potential for contamination of water from rainfall-runoff. Runoff of this product will be reduced by avoiding applications when rainfall is forecasted to occur within 48 hours. Sound erosion control practices will reduce this product's contribution to surface water contamination.

Data Gaps

The environmental fate profile is sufficient to conduct a risk assessment and estimate potential exposures due to the use of propazine. In general, the environmental fate data provide the necessary information to estimate exposures. Data on anaerobic aquatic metabolism, aerobic aquatic metabolism and terrestrial field dissipation will reduce uncertainty in the risk assessment. Several studies are missing in the ecotoxicity data set for propazine; especially chronic/reproduction testing in birds and acute toxicity studies in freshwater and marine estuarine fish. Again, data from these studies will reduce uncertainty in the risk assessment.

Selected uncertainties and data gaps are summarized in the following tables.

Environmental Fate Data Requirements for Propazine		
Guideline #	Data Gap	Value of Additional Testing
162-3	Anaerobic Aquatic Metabolism	Medium. Lack of data led to assumption of half life in aquatic exposure modeling. Submission of data can remove uncertainty in this assumption
162-4	Aerobic Aquatic Metabolism	Medium. Lack of data led to assumption of half life in aquatic exposure modeling. Submission of data can remove uncertainty in this assumption
164-1	Terrestrial Field Dissipation	Low. Data classified as supplemental. Additional data, or anew study, needed to confirm leaching potential of compound. Lack of storage stability data and fact that propazine was found in controls is problematic.

Ecological Toxicity Data Requirements for Propazine		
Guideline #	Data Gap	Value of Additional Testing
71-4	Avian reproduction (bobwhite quail) (mallard duck)	High. No study is available. Other chemicals in this class indicate reproductive effects to birds. Sublethal effects in the acute avian studies coupled with similar effects observed in the mammalian reproduction study increase the uncertainty for effects observed in birds following chronic exposure.
72-1	Freshwater fish acute LC ₅₀ (rainbow trout) (bluegill sunfish)	Medium. No valid studies available. Chronic toxicity NOAEC/LOAEC from fathead minnow study plus a comparison with chemicals from similar class indicate that LC ₅₀ is likely sufficiently high not to exceed acute LOC for endangered species.
72-2	Freshwater invertebrate acute EC ₅₀ (daphnia)	Pending. A study has been reviewed but not finalized by the Agency (MRID 442873-05). The study is scientifically sound but does not fulfill guideline requirements because daphnids were not exposed up to 100 ppm ai. Consequently, the acute toxicity of propazine to freshwater invertebrates cannot be categorized. If it can be shown that the test was conducted up to the limit of solubility, the study could be upgraded to acceptable. However, for these requested uses, a comparison of the highest concentration tested in the daphnid study with the peak EEC for the proposed uses shows that there were no effects in daphnids at concentrations 61 times higher than the highest peak EEC.
72-3a	Estuarine/marine fish acute LC ₅₀ (sheepshead minnow)	Medium. No studies available. Chronic toxicity NOAEC/LOAEC from sheepshead minnow study plus a comparison with chemicals from similar class indicate that LC ₅₀ is likely sufficiently high not to exceed acute LOC for endangered species.
72-4a	Freshwater fish early life stage (fathead minnow)	Low. The study was classified as supplemental because pH and hardness exceeded recommended levels, potentially affecting solubility.
72-4d	Estuarine/marine invertebrate life cycle (mysid)	Low. The study was classified as supplemental due to deviations in study design.