MEMORANDUM

SUBJECT: Silver-Copper Zeolite Data Review
DP Barcode: D194115
ID No: 059824-00001

FROM: Anthony F. Maciorowski, Chief
Ecological Effects Branch
Environmental Fate and Effects Division (7507C)

TO: John Lee, PM 31
Antimicrobial Program Branch
Registration Division (7505C)

Background

Kanebo has been trying to concurrently register their three zeolite products: silver (Ag), silver-copper (AgCu), and silver-zinc (AgZn) zeolite. To avoid confusion, below is a brief history of the AgCu zeolite requirements for EEB.

In 1992 EEB reviewed the following five studies to support the registration of AgCu zeolite: 71-2 mallard duck LC50 (MRID No. 416158-11); 71-2 bobwhite quail LC50 (MRID No. 416158-12); 72-1 bluegill sunfish L50 (MRID No. 416158-13); 72-1 Rainbow Trout LC50 (MRID No. 416158-14); 72-2, Daphnia magna EC50 (MRID No. 416158-15). None of the studies fulfilled the guideline requirements and it was noted that a bobwhite LD50 and estuarine/marine testing were required.
In a submission that EEB reviewed in 1993, Kanebo made label modifications which eliminated the requirement for estuarine/marine testing.

Also in 1993, data was submitted that enabled EEB to upgrade the three aquatic studies to satisfy freshwater testing requirements. The studies indicated that AgCu zeolite is very highly toxic to aquatic invertebrates (EC$_{50}$ = 0.60 ppm), moderately toxic to warmwater fish (LC$_{50}$ = 3.4 ppm), and slightly toxic to coldwater fish (LC$_{50}$ = 100 ppm). Ag zeolite and AgZn zeolite were also shown to be very highly toxic to aquatic invertebrates (EC$_{50}$s = .0350 and .30 ppm, respectively).

Due to the lack of homogeneity in the feed mixture and/or difficulties in measuring, the avian LC$_{50}$ could not be upgraded.

In 1994, EEB reviewed the following bobwhite studies:


Both studies are scientifically sound and meet the guideline requirements for testing with a formulated product. The LD$_{50}$ > 2250 mg/kg indicates that AgCu zeolite is practically nontoxic to quail on an acute basis. The LC$_{50}$ > 5620 ppm indicates that AgZn zeolite is practically nontoxic to quail on a subacute basis. The AgZn LD$_{50}$ may be used to fulfill the requirement for the LC$_{50}$ with AgCu.
Conclusions

The testing requirements for AgCu zeolite have been fulfilled. Any change in the use pattern may necessitate further testing. It should also be noted that since testing was performed with the formulated product, raising the concentration of either copper or silver may necessitate additional testing.

Testing for indoor use chemicals is required to provide information in case of a spill and for environmental hazards labeling. Risk assessments are not performed for indoor use chemicals.

A table displaying the status of the three zeolite compounds is attached. If there are any questions, please contact Heather Mansfield at 305-5064.