

M e m o r a n d u m

HSM-94010

[HSM assigned after original issuance of memo]

To: James Herota, Registration Specialist
Pesticide Registration Branch

Date :October 27, 1994

Place :Sacramento

Phone :4-0455

From: Department of Pesticide Regulation - Environmental Research Scientist
David Haskell, Associate
Worker Health and Safety Branch

Subject: PRODUCT NAME: Baytan[®] 30 Flowable
ACTIVE INGREDIENT: Triadimenol
COMPANY NAME: Gustafson, Inc
I.D. NUMBER: 147710-N
EPA REGISTRATION NUMBER: 7501-91
TITLE: Estimate of Worker Exposure to Triadimenol When Seed Treatments Are Made With Closed Seed Treatment System

The Gustafson, Inc company has submitted an application with the Department of Pesticide Registration to register a new active ingredient, triadimenol, under the product name Baytan[®] 30 Flowable Fungicide. In the letter to Gary Sprock, dated June 21, 1994, Gustafson has requested a conditional registration for Baytan[®] 30 Flowable Fungicide to be granted for the duration of the time needed to conduct a mouse oncogenicity study. Concerning the mouse oncogenicity study, Gustafson, Inc. and Miles Inc. have agreed to split the cost of redoing the study. Miles, Inc. has upgraded toxicity studies and produced a risk assessment which indicate the exposure to workers wearing protective equipment and using a closed system is very low.

Miles Inc submitted a study in 1993 to DPR which monitored the occupational exposure to triadimenol from seed treatments made with Baytan[®] 312 FS Seed Treatment Fungicide (Dean, 1993). This product is comparable-to Baytan[®] 30 Flowable Fungicide. The study was reviewed by Tareq Formoli and the results of the review were noted in a memo to Gary Sprock dated June 25, 1993. Triadimenol exposure to workers was observed during seed treatment operations at three locations in Canada, representing small, medium and large treatment facilities. Wheat seed was treated at the rate of 0.30 grams of triadimenol per kilogram of seed. The workers in the study wore long-sleeved shirts, long pants, rubber gloves and a hat. Workers were monitored for dermal and inhalation exposure while bagging, tagging and stacking the treated seed, or operating a forklift. Two additional workers were monitored at each site while making the treatment mix and calibrating the system and during the disassembly of the treatment system. In Table 1 of the memo, the absorbed daily dosage (ADD) for the various work tasks ranged from 1.5 to 98 µg/kg/day without the benefit of a closed system.

Triadimenol is marketed as Baytan[®] 30 Flowable Fungicide, a liquid formulation that contains 2.65 lbs of a.i. per gallon. Baytan[®] 30 Flowable Fungicide is used as a seed treatment to control various seed and soilborne diseases in barley, corn, cotton, oats, rye, and wheat. Seed treated with a pesticide is required by federal regulations to be dyed with a bright color to warn persons the seed is not for human consumption or for use as animal feed. The label has the additional

requirement that the seed treatments must be made by commercial seed treaters only utilizing a closed treatment system. A Gustafson Inc closed seed treatment system, installed at Cal-West Seed in Galt, California, was inspected by Branch staff to evaluate it's capacity to mitigate exposure to persons operating the seed treatment equipment. The design of the system was determined by myself, John Ross and Roy Rutz to meet California's closed system criteria. The only locations where direct exposure might occur to the operator are when the inspection plates are opened. At the dye mixing tank, the operator opens an inspection plate and pours the dye in the dye mixing tank that already contains a mixture of water and pesticide. A second inspection plate is present on the metering device that allows the operator to calibrate the seed treatment rate and monitor the actual application of the treatment mixture to the seed flow. A third plate allows the operator to view the seed stream after the treatment mixture has been applied. The inspection sites are not under pressure that could cause the treatment mixture to be ejected out of the opening. These activities are similar to adding an adjuvant to the traditional closed systems used for category I liquids and should not compromise the protection to the worker. During the demonstration of the closed mixing/loading system, the integrity of the system was confirmed by the lack of red dye particulates in the air or residues present on the floor, in the seed treatment machinery or around the vents in the roof.

The current Baytan[®] 30 Flowable Fungicide label requires a closed treatment system that would eliminate the exposure incurred from weighing and pouring the pesticide by hand. A closed system is estimated to provide 95% protection for the worker (Ross and Thongsinthusak, 1994). The manager at the Cal West plant estimates that 75,000 lbs of seed can be treated with the Gustafson seed treatment system during one 8-10 hour shift (Martin, 1994). If cotton seed were treated at the maximum, label rate of 3 ozs. per 100 lbs, 20.5 kg of triadimenol would be applied during one workday. Baytan[®] 30 Flowable Fungicide is marketed in 200 and 400 gallon returnable bulk containers. At the maximum label rate for cotton, one 200 gallon container can treat almost 900,000 lbs of seed. This is equivalent to about 12 workdays. During the treatment season (December-January), the bulk containers will only be changed a few times. The 95% protection value provided by a closed mixing/loading is a very conservative value to use for estimating the exposure mitigation from the closed seed treatment system. With category I liquid pesticides, several containers are usually handled during each workday, entailing some exposure from changing containers. With the bulk container seed treatment system, only a few containers will be handled during one season of use.

The memo authored by Tareq Formoli indicated the occupational exposure incurred by workers wearing long pants, long-sleeved shirt, chemical resistant apron and chemical resistant gloves and handling triadimenol with a closed seed treatment system designed to handle bulk containers, is considered to be insignificant. In Table 2 of the memo, the estimated ADD is 4.91 $\mu\text{g}/\text{kg}/\text{day}$ for the worker mixing the seed treatment and calibrating the seed treatment system. In view of the conservative estimate (95%) of protection provided by the closed seed treatment-system and the

few pesticide containers that will be handled during the treatment season, the chemical resistant apron is not needed for additional exposure mitigation. As a consequence, workers wearing the required clothing (long pants, long-sleeved shirt and chemical resistant gloves) on the Baytan[®] 30 Flowable Fungicide and utilizing the required closed mixing/loading system to make the seed treatment, will not be exposed to levels of triadimenol that are of significance. Although not required, it was observed that workers wear coveralls over their work clothing to avoid any incidental contact with the dye used on the seed.

The daily operation of the seed treatment system would entail the worker activating the pump system to measure the triadimenol through an enclosed sight gauge and move enough triadimenol from the bulk container to mix one-two batches of the treatment mixture per day, pumping the triadimenol to the dye mixing tank, adding dye to the dye mixing tank, pumping the treatment mixture to the metering device and activating the auger mixing system. The workday would include periodic checks of the system's operation by opening the inspection plates. The majority of the exposure is expected to occur when the integrity of the closed treatment system is broken by changing the bulk pesticide container. This process would entail breaking the threaded fitting at the top of the container and the quick couple connection of the hose that leads to the pump. The empty container is then removed with a forklift and replaced with a full one that is reconnected to the closed treatment system. This operation would be expected to occur about 4 days per treatment season and incur 4.91 µg/kg/day of exposure to triadimenol for the worker. To derive the average annual daily dosage (AADD) of 0.5 µg/kg/day, the ADD value was multiplied by four and then divided by 365. With a lifetime expectancy of performing these work tasks for 10 years or less, the lifetime average daily dosage (LADD) is 0.07 µg/kg/day. These AADD and LADD values are considered insignificant for the purpose of assessing subchronic and chronic risk.

REFERENCES

Dean, V. C. 1993. *Exposure of workers to triadimenol during treatment of grain seeds with Baytan 312 FS Seed Treatment Fungicide*. DPR, Pesticide Registration Branch Library Doc. no. 50512-036.

Martin, D. 1994. Plant manager for Cal West Seeds. Personal conversation on October 13, 1994.

Ross, J. and Thongsinthusak, T. April 8, 1994. Memo entitled "Protection Provided by Closed Mixing/Loading System". DPR, Worker Health and Safety Branch.

cc: Joshua Johnson (1 original, 5 copies)

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