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Methyl-1-(butylcarbamoyl)-2-benzimidazole carbamate 004678

Acute Oral Toxicity (Rat) 100-66
1-74-65 (Haskell Labs)

Adult male Charles River-CD strain albino rats were divided into groups and given graded doses of technical methyl-1-(butylcarbamoyl)-2-benzimidazole carbamate. The material was given as a single dose orally by intubation as a suspension in peanut oil. The animals were observed for 14 days for mortality and/or signs of toxicity.

The approximate lethal dose of methyl-1-(butylcarbamoyl)-2-benzimidazole carbamate in male albino rats was found to be greater than 9590 mg/KG. This was the maximum feasible dose.

Subacute Oral Toxicity (Rat) 100-66

12 adult male Charles River-CD strain rats were divided into 2 groups and administered 3400, or 200 mg/KG methyl-1-(butylcarbamoyl)-2-benzimidazole carbamate orally 5 times a week for 2 weeks. The material was administered by intubation as a suspension in peanut oil. The animals were returned to their cages and observed for 14 days for mortality and/or signs of toxicity.

In the 3400 mg/KG dosage level 4/6 animals died. In the 200 mg/KG dosage level 0/6 animals died. Lethal doses produced weight loss and diarrhea. There were histologic changes in the stomach liver, and testis. At 200 mg/KG no clinical signs of toxicity or significant histologic changes were observed.

90 Day Feeding Study (Rat) 100-67

64 (32 male, 32 female) Charles River-CD strain rats were divided into 4

(Should be 16^m, 16^f/group)
MPC 8/12/64.

groups and received 0, 100, 500, and 2500 ppm methyl-1-(butylcarbamoyl)-2-benzimidazole carbamate (as the 70% wettable powder) in their diets for 00467: 90 days.

The animals were housed individually and observed for weight changes, pharmacologic signs of toxicity, behavioral changes, and mortality. Clinical studies including complete hematology, clinical blood chemistry and urinalysis were run on ^{64/9x} all rats.

At the end of the 90 days all animals were sacrificed and complete gross and microscopic histologic studies were performed. Organ weights and organ to body weight ratios were recorded for all animals.

All controlled and test animals survived, except 1 male at 100 ppm. The latter death was unrelated to the feeding of the test compound.

The growth of all animals in the test groups were comparable to control.

The food consumption and efficiency of all test groups was comparable to controls.

There were no medical signs of toxic effects.

The hematology which was determined at pre-test and at 30, 60, and 90 days revealed no changes attributable to the test material.

The urinalysis which was conducted at 30, 60, and 90 days revealed no changes attributable to the test material.

The plasma alkaline phosphatase and glutamic-pyruvic transaminase determined at 30, 60, and 90 days for control and 2500 ppm groups were within normal limits.

*MPC 3/13/82

All organ weight values were comparable to control except there were higher liver weights for females at the 2500 ppm level. The latter finding is not believed to be of biological significance as the heavier livers were histologically normal.

The histopathology revealed no changes that could be attributable to feeding of the test compound.

Acute Dermal Toxicity (Rabbit)

Adult albino rabbits were given dermal applications of methyl-1-(butylcarbamoyl)-2-benzimidazole carbamate as the 50% wettable powder to the intact and abraded abdominal skin at dosages ranging from 464-10,000 mg/KG. The sites of application were wrapped with rubber damming so as to hold the compound in contact with the skin for 24 hours.

The animals were housed individually and observed for 14 days for mortality, signs of toxicity, and irritation.

The LD₅₀ was found to be >10,000 mg/KG. There were no deaths. Except for dermal irritation, there were no signs of toxicity.

Skin Irritation and Sensitization (Guinea Pig) 174-66

For the primary irritation, 30 male guinea pigs were divided into 3 groups and received 0.05 gms of the test material as the technical chemical rubbed into the intact shaved skin as a 10, 25, and 40% paste in dimethyl phthalate.

For the sensitization tests, 5 animals received 9 applications of 40% paste on abraded skin during a 3 week period. 5 guinea pigs received intradermal injections of 0.1 ml of a 1% solution of methyl-1-(butylcarbamoyl)-2-benzimidazole carbamate in dimethyl phthalate. After a 2 week rest period a

challenge test was done on intact and abraded skin, which was repeated 2 and 5 weeks later.

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The test showed no skin irritation. Moderate sensitization was produced. There were stronger reactions in animals receiving the intradermal injections. The compound is not a dermatitis hazard.

Eye Irritation (Rabbit) 81-66 5/24/66

1 albino rabbit received 10 mgs of methyl-1-(butylcarbamoyl)-2-benzimidazole carbamate instilled into the conjunctival sac of both eyes. 1 rabbit received 10 mgs. of methyl-1-(butylcarbamoyl)-2-benzimidazole carbamate as a 10% solution in propylene glycol in both eyes. 1 eye of each rabbit was washed with water 20-25 seconds after treatment; the other eyes were not washed. The animals were returned to their cages and observed 2, 4, 8, 24 and 72 hours after treatment.

There was a mild transitory conjunctivitis with minor corneal effects and slight iritic congestion. Prompt washing minimized the ocular reactions; all eyes were clinically normal 7 days after treatment.

Acute Inhalation Toxicity (Rats)

6 albino rats were placed in an inhalation chamber and exposed for 4 hours to an atmospheric dust of methyl-1-(butylcarbamoyl)-2-benzimidazole carbamate at a concentration of 1.37 mg/Liter. The animals were observed for behavioral reactions while in the chamber and for 14 days after removal.

The LC₅₀ of methyl-1-(butylcarbamoyl)-2-benzimidazole carbamate was found to be >1.37 mg/Liter. All of the animals survived without clinical signs of toxicity.

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CONCLUSIONS

Methyl-1-(butylcarbamoyl)-2-benzimidazole carbamate is a fungicide used in the control of fungus diseases of ornamentals, fairways, athletic fields, etc.

The compound has a moderate oral inhalation and dermal toxicities. It is only a mild eye and skin irritant.

The product "Benlate" Fungicide is adequately labeled and should produce no undue human health hazard.

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DATA SUMMARY

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- 14-65 Acute Oral Toxicity (Rat) : Approximate lethal dose 9590 mg/KG
(maximum feasible dose)
- 10-66 Subacute Oral Toxicity (Rat) : 14 days - no deaths at 200 mg/KG/day
4/6 at 3400 mg/KG/day
- 11-67 90 Day Feeding Study (Rat)
(70% WP) : 0, 100, 500 and 2500 ppm. No toxic
effects. "No-effect level" > 2500 ppm.
- 11-66 Acute Dermal Toxicity (50% WP)
(Rabbit) : $LC_{50} > 10,000$ ^{mg} gm/KG. Slight
dermal irritation.
- 174-66 Skin Irritation and Sensitization
(Guinea Pig) : 10, 25 and 40% paste in dimethyl
phthalate. No skin irritation; moderate
sensitization, no dermatitis hazard.
- 61-66 Eye Irritation (Rabbit) : Mild transitory conjunctivitis; minor
corneal effects and slight iritic con-
gestion. Washing minimized ocular
reactions.
- Acute Inhalation Toxicity (Rats)
(50% WP) : $LC_{50} > 1.37$ mg/l.