

ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D. C. 20460

Mr. Cobley

Review 0

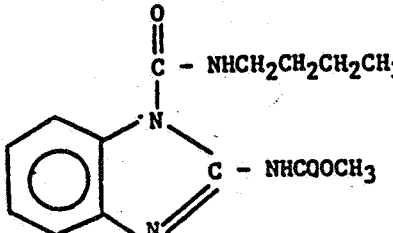
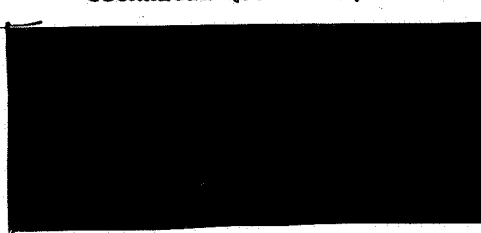
004678

Date: January 17, 1973

Reply to
Attn of:

Subject:

To: Mr. Lee TerBush, Acting Chief
Coordination Branch
Registration Division

Registration No.	:	352-EXP-73G
Chemical Name	:	Methyl 1-(butylcarbamoyl)-2-benzimidazolecarbamate
Common Name	:	Benomyl
Action Requested	:	Experimental Permit
Registrant	:	E.I. DuPont De Nemours & Co. Wilmington, Delaware 19898
Structure	:	$ \begin{array}{c} \text{O} \\ \parallel \\ \text{C} - \text{NHCH}_2\text{CH}_2\text{CH}_2\text{CH}_3 \\ \\ \text{N} \\ \\ \text{C} - \text{NHC(=O)OCH}_3 \\ \parallel \\ \text{N} \end{array} $ 
Formulation	:	53% methyl 1-(butylcarbamoyl)-2-benzimidazolecarbamate, technical (95% min.)
Use	:	 Fungicide for preharvest and post harvest application site: crops (grapes, apples, pears, quinces, crabapples)

TOXICITY DATA OF FORMULATION

Acute Rabbit Eye Irritation - Haskell Lab - June 22, 1972

A dose of 27 mg was placed in the right eye of six rabbits. The eye was examined with a hand-slit lamp at 24, 48 and 72 hours post treatment. Material tested contained 53% benomyl;

Results

Corneal opacity was noted in 1/6, crisis in 1/6, and diffuse crimson redness in 1/6.

Material is judged to be a mild eye irritant.

TOXICITY DATA OF BENOMYL

The following tests were reviewed in memos of Dr. M.L. Quaife dated March 25, 1970 (OF0906, OG0936), May 3, 1971 (OF0906, OF1000, 1F1010, 1F1033, 1F1045), and January 3, 1972 (1F1145, 2F1192, 2G1197); 2F1289, 2F1290, 2F1291.

Acute oral - Rat	LD ₅₀ > 9590 mg/kg
Acute dermal - Rabbit	LD ₅₀ >10,000 mg/kg
Acute inhalation - Rat	LC ₅₀ >1.37 mg/liter air
90-day feeding study - Rat (72% W.P.)	Systemic NEL 500 ppm
90-day feeding study - Dog (51.5% W.P.)	Systemic NEL 500 ppm
*2-year feeding study - Rat (72% and 52%)	Systemic NEL 2500 ppm
*2-year feeding study - Dog (72% and 52%)	Systemic NEL 500 ppm
*3-generation reproduction - Rat (72% and 52%)	Systemic NEL 100 ppm
Teratology - Rat (53.5%)	Negative at 5000 ppm
Teratology - Rabbit (INT-1991-99)	Negative at 500 ppm
Acute oral - Rat (metabolite*)	LD ₅₀ >17 g/kg
90-day feeding study - Rat (metabolite*)	Systemic NEL 2500 ppm
3-generation reproduction - Rat (metabolite*)	Systemic NEL 2500 ppm

* The different samples used in this study were varied in the active ingredient concentration. Some contained 72.2% and others 51.5%.

§ 180.294 Benomyl; tolerances for residues

Tolerances are established for residues of the fungicide benomyl (methyl 1-(butylcarbamoyl)-2-benzimidazolecarbamate) in or on raw agricultural commodities as follows:

15 parts per million (from postharvest and/or preharvest application) in or on apricots, cherries, nectarines, peaches, and plums (including fresh prunes).

2 parts per million in or on snap beans (succulent).

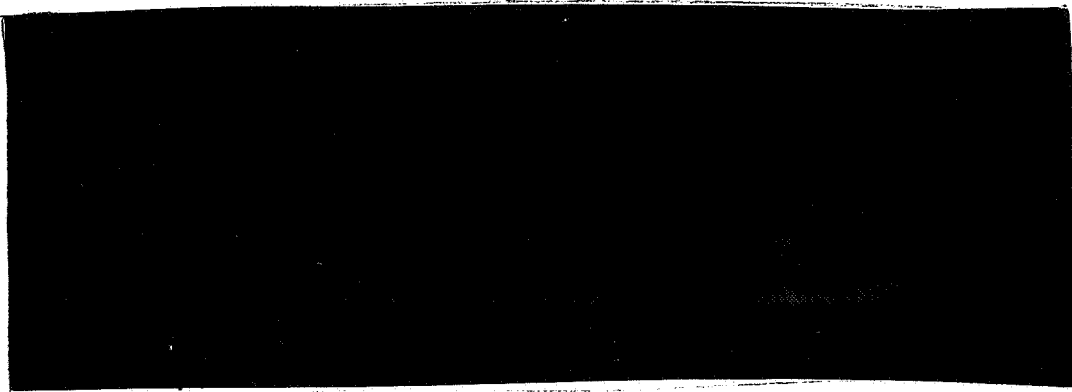
1 part per million in or on bananas, of which not more than 0.2 part per million (negligible residue) shall be present in the pulp after the peel is removed and discarded, from postharvest application.

0.2 part per million in or on peanuts and sugar beet roots.

SUMMARY

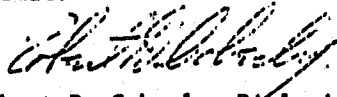
These data show extensive testing has been conducted on various formulations containing benomyl. These formulations are similar to but not identical to the formulation submitted for registration. Studies which were conducted with this formulation include an eye irritation (mild irritant) and a teratology study in rats (no effect at highest level tested, 5000 ppm).

An examination of the inert ingredients revealed the following:



CONCLUSION

The aforelisted information is sufficient to support the experiment permit.


Robert D. Coberly, Biologist
Toxicology Branch
Registration Division

cc:
Ecological Effects Branch
PCCritchlow
Division Reading File
Branch Reading File
GEWhitmore

RDCoberly:km 01-18-73