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

OFFICE OF
PESTICIDES AND TOXIC SUBSTANCES

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MEMORANDUM:

SUBJECT: NE-900004; 24(c). BRAVO®-720 (chlorothalonil) for use on dry beans. EPA Reg. No. 50534-188. [DEB No.: 7578; No MRID No.]

FROM: Dennis McNeilly, Chemist *Dennis McNeilly*
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THRU: Francis B. Suhre, Section Head *Francis B. Suhre*
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TO: S. Lewis/J. Stone PM-21
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The State of Nebraska has submitted residue data to support a Section 24(c) registration for the use of BRAVO®-720 on dry beans with a 14 day PHI. Previously CBRS had recommended against this Section 24(c) registration (See D. McNeilly Memorandum, 10/23/90) because there was insufficient residue data to determine if the existing tolerance for chlorothalonil (tetrachloroisophthalonitrile) and its 4-hydroxy metabolite (4-OH-2,5,6,-trichloroisophthalonitrile) in or on dry beans would be exceeded as a result of the proposed use.

This request is very similar to another Section 24 (c) registration request, ND-84-02 (See Linda S. Propst Memos, 7/9/84 and 12/18/84). CB recommended against that request because the 0.1 ppm tolerance on dry beans would be exceeded as a result of unlimited applications and a 14 day PHI.

BRAVO®-720 contains 54% chlorothalonil (6 lbs a.i./gal).

_____ were analyzed for in the residue data submitted with this Section 24(c) request. No HCB (<0.004 ppm) or PCBN (<0.01 ppm) was found in any sample analyzed.

A Chlorothalonil Registration Standard and Reg. Std. FRSTR have been issued. The FRSTR is dated Feb 19, 1988.

A Tolerance has been established for the combined residue of the parent, chlorothalonil [2,4,5,6-tetrachloroisophthalonitrile] and its metabolite [4-OH-2,5,6-trichloroisophthalonitrile] in or on dry beans at 0.1 ppm [40 CFR 180.275].

Proposed Use

The proposed use calls for an initial treatment during the early bloomstage using 1 3/8 to 2 pints of BRAVO®-720 (1.03 to 1.50 lb a.i./A) per application, treatment may be repeated at 7 to 10 day intervals. Use would be restricted to beans harvested with the pods removed. Do not apply within 14 days before harvest. Do not allow livestock to graze in treated areas or feed treated plant parts to livestock.

The currently registered use for chlorothalonil on dry beans (harvested dry with pods removed) allows for 2 pts. of Bravo®-720 (1.5 lb a.i./A) per application. Applications can begin during early bloom stage and repeat at 7 to 10 day intervals. Do not apply within 42 days of harvest. Do not graze treated areas or feed treated plant parts to livestock.

In summary, the State of Nebraska wants to reduce the PHI to 14 days from the currently authorized 42 day PHI for chlorothalonil in or on dry beans. The stated reason for this request is that a 42 day PHI does not provide adequate protection against late-season epidemics of rust (*Uromyces phaseoli*) and other foliar diseases of dry beans.

Magnitude of the Residue

The State of Nebraska submitted data from two different residue trials with their 24(c) request. The first report Diamond Shamrock Corp., Document Number 463-3CR-81-0154-001, entitled "Residues of 2,4,5,6-tetrachloroisophthalonitrile (Chlorothalonil, DS-2787), 4-Hydroxy-2,5,6-trichloroisophthalonitrile (DS-3701), Hexachlorobenzene (HCB) and Pentachlorobenzonitrile (PCBN) on dry beans". This report is dated 12/8/81. The assay of the dry beans was performed at Analytical Bio Chemistry Laboratories Inc., (ABC), Columbia, MO.

Manufacturing Process Information is not Included

Residue trials were conducted in Illinois, Minnesota, and North Dakota. The fungicide was applied using standard commercial tractor and boom sprayers or with a backpack hand sprayer. The beans were separated from the pods by hand or combine.

The samples were shipped and maintained under frozen conditions until assay. The analytical method has been previously reviewed (e.g., Reg. Std.). The following is a brief summary. The residues of chlorothalonil, its 4-hydroxy metabolite, HCB, and PCBN are extracted from the dry beans and partitioned into an organic solvent. The residues of the 4-hydroxy metabolite was derivatized to its methyl ether using 3-methyl-1-p-tolyltriazene. Samples are then "cleaned-up" using a florisil column. The samples are analyzed with a Gas Chromatograph equipped with a electron capture detector.

The data submitted with this report are summarized in the following table.

Table #	PHI (days)	Number of Applications	Number of pints applied/application	Residue Range in ppm
5	43	2	2 (0.7X)	ND-0.08
6	43	2	3 (1.04X)	ND-0.09
6	43	2	4 (1.4X)	ND-0.19
7	40	3	2 (0.7X)	ND-0.08
8	40	3	4 (1.4X)	ND-0.08
9	28	3	4 (1.4X)	ND
10	47	1	3 (1.04X)	ND

Table 1. Residues of Chlorothalonil and its 4-Hydroxy Metabolite in or on Dry Beans (pods removed). Note: Table # refers to the original Table in Report 463-3CR-81-0154-001.

Examining the Table above there are four instances where the residue is approaching the tolerance level. Due to the long PHIs of these studies they cannot support lowering the PHI to 14 days. However, the chlorothalonil residue is a surface residue and therefore would be expected to decrease with time. Therefore, the residue at a PHI of 14 days is very likely to exceed the 0.1

ppm tolerance for chlorothalonil and its 4-hydroxy metabolite in or on dry beans.

Examining these data in further detail we find the following: some of the data represent a higher dosage, 3 or 4 pints per treatment of product rather than at the proposed 2 pint/treatment level. However, they applied BRAVO®-500, which has a lower percentage of a.i./pint than BRAVO®-720. As indicated in the Table above, 3 pints of BRAVO®-500 yields approximately the same amount of a.i. as 2 pints of BRAVO®-720 (1.04).

Residue data previously submitted for tomatoes (See Reg. Std. FRSTR, Feb 19, 1988) indicates that, in general, residues increase with an increase in chlorothalonil concentration in the spray and decrease with longer PHIs (time subsequent to the last application date). Therefore, the residue levels would be expected to be even higher with a 14 day PHI.

In addition to the PHIs being considerably longer than the proposed 14 days, the data also reflects a maximum of 3 applications, not the unlimited number of applications proposed.

The second residue chemistry data package, Diamond Shamrock Corp. Document Number 612-3CR-82-0181-001, is entitled Residues of 2,4,5,6-tetrachloroisophthalonitrile (chlorothalonil, DS-2787), 4-hydroxy-2,5,6-trichloroisophthalonitrile (DS-3701), Hexachlorobenzene (HCB) and Pentachlorobenzonitrile (PCBN) on dry beans - extended application - 1982. This report is dated 2/18/83. The assay of the dry beans was performed at Environmental Sciences, Painesville, OH. Residue trials were conducted in Colorado, Delaware, Nebraska, North Dakota, Michigan, and Tennessee. The fungicide was applied using standard commercial tractor and boom sprayers or with a backpack hand sprayer. The beans were separated from the pods by hand or combine.

The samples in this report were analyzed by the same analytical method as previously described.

This Residue Chemistry data report was more representative of the PHI requested. Table 2 summarizes the data generated in this study.

Table #	PHI (days)	Number of Applications	Number of pints applied/application	Residue Range in ppm
5	14	3	2 (0.7X)	ND-0.03
5	14	3	3 (1.04X)	ND-0.03
6	0	5	3 (1.04X)	ND-0.07
6	8	4	3 (1.04X)	ND-0.03
7	13	4	3 (1.04X)	ND
9	7	5	3 (1.04X)	ND-0.04
9	14	4	3 (1.04X)	ND-0.01
10	9	4	3 (1.04X)	ND-0.03

Table 2. Residues of Chlorothalonil and its 4-Hydroxy Metabolite in or on Dry Beans (pods removed).
Note: Table # refers to the original Table number in Report 612-3CR-82-0181-001.

The data summarized in Table 2 suggest that the tolerance would not be exceeded. From the table, seven data points reflect the proposed use, i.e., a 14 day PHI or shorter and approximately the same dosage (1.5 lbs a.i./A per application). Inspection of the submitted data indicates that each of these data points consists of one sample and its duplicate. Whereas the previous study, although it represents longer PHIs, contains significantly more data points. The data in the first report indicate that the tolerance may be exceeded.

Data submitted in conjunction with PP#8E2065 indicate that the 0.1 ppm tolerance will not be adequate to cover all residues of chlorothalonil which may result by reducing the PHI from 42 days to 14 days. From that data, CB recommended for the 0.1 ppm tolerance (See P.V. Errico 5/15/81 and 2/16/81) provided the petitioner limit the use to 3 applications of 1.56 lbs. a.i./A/application and increase the PHI from the originally proposed 14 days to 42 days.

CBRS does not consider the limited residue data submitted in support of this 24(c) request sufficient to support lowering the PHI from 42 to 14 days.

Conclusions and Recommendation

The 0.1 ppm tolerance for chlorothalonil and its 4-hydroxy metabolite in or on dry beans may be exceeded as a result of unlimited treatments and a PHI of 14 days. The residue data

submitted do not change our concern that the tolerance may be exceeded as a result of the proposed use.

Notes: (1) This request is very similar to another Section 24 (c) registration request, ND-84-02 (See Linda S. Propst Memos, 7/9/84 and 12/18/84). CB recommended against that request because the 0.1 ppm tolerance on dry beans would be exceeded as a result of unlimited applications and a 14 day PHI.

(2) CBRS estimates that at least a 0.3 ppm tolerance would be required to support a 14 day PHI.

Therefore, CBRS continues to recommend against this 24(c) registration

CBIIRS will reconsider this recommendation upon receipt of residue data clarifying the discrepancies between the two data sets (dry beans) discussed in this review.

CC: DMcNeilly;RF;24(c)File;SF;FOD/PIB(C.Furlow);Circulation
RDI: FBS, 02/25/91.
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