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

MAY 22 1995

MEMORANDUM:

OFFICE OF
PREVENTION, PESTICIDES AND
TOXIC SUBSTANCES

SUBJECT: Atrazine (080803), Reregistration Case No. 0062 and Special Review. Field Metabolism Studies in Corn and Sorghum, Additional Data.
CBRS No. 13059, DPBarcode No. D198106, MRID 43048501.

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In response to a reregistration Data Call-In of 10/90 and previous review (CBRS 10980, 6/3/93, J. Abbotts), registrant Ciba-Geigy Corporation submitted additional data on the nature of the residue in corn and sorghum. Conclusions and Recommendations below pertain only to the present submission.

Tolerances are established for residues of the herbicide atrazine, 2-chloro-4-ethylamino-6-isopropylamino-*s*-triazine, in or on agricultural commodities (40 CFR 180.220(a)), and for combined residues of atrazine and its metabolites 2-amino-4-chloro-6-ethylamino-*s*-triazine, 2-amino-4-chloro-6-isopropylamino-*s*-triazine, and 2-chloro-4,6-diamino-*s*-triazine, in or on specified plant commodities (40 CFR 180.220(b)). Atrazine is a List A Chemical.

The Residue Chemistry Chapter was issued 7/25/83; the Registration Standard (Guidance Document) was issued 9/85; a Second Round Review (SRR) Residue Chemistry Chapter was issued 10/18/88.

Present Submission

In response to a DCI of 10/90, registrant submitted field metabolism studies in corn and sorghum. Review concluded that before the data from these studies could be accepted, deficiencies related to storage conditions and the submission of protocols must be resolved. The review also concluded that no data for corn or sorghum were provided which alter the position of the HED Metabolism Committee that exposure assessment for atrazine should be conducted on the basis of the total radioactive residue (CBRS 10980, 6/3/93, J. Abbotts).

In response, registrant submitted the following document:

Supplement to Nature of the Residue in Corn and Sorghum, Ciba-Geigy Corporation, Greensboro, NC, transmitted 11/16/93 (MRID 43048501).

Previous review noted that protocols for the corn and sorghum field studies were not provided (CBRS 10980). In response, registrant has provided protocols that were omitted from the previous submission. There were no significant deviations from the protocols in the actual studies, and the submission of the protocols is satisfactory.

Conclusion 1: With the submission of protocols, Conclusions 1c and 2b of the previous review (CBRS 10980, 6/6/93, J. Abbotts) are satisfied.

Previous review noted that storage conditions, including times and approximate temperatures, were not described for corn and sorghum samples between harvest and shipment to the performing laboratory (CBRS 10980). In response, registrant has provided information on storage temperatures at the New York, Illinois, and Mississippi field sites. Unfortunately, the only storage time reported was for final harvest samples at the Mississippi site, which were collected on September 20, 1991 and shipped to the performing laboratory on October 23, 1991.

The previous submission (MRID 42547116) provided data that allow an estimate of the maximum times that samples may have been stored at the field sites. Corn and sorghum were planted in May 1991, atrazine was applied postemergence, and initial samples of corn and sorghum leaves were taken after application on day 0. Sample collection dates for the studies were the following:

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Sample Collection Dates, Corn and Sorghum.

Sample	Illinois	Mississippi	New York
0 Day leaves	6/10/91	6/13/91	6/12/91
Corn Mature Harvest	9/3/91	9/20/91	9/25/91
Sorghum Mature Harvest	10/17/91	9/20/91	9/25/91

According to the previous submission (MRID 42547116), sample analysis began on 7/11/91. It therefore seems likely that early samples were shipped to the performing laboratories before the final harvest samples, and estimating maximum storage times at the field sites should represent a conservative assumption.

The present submission reports that samples at the New York site were stored at an average temperature of 2°F, with a maximum recorded temperature of 4°F; and samples at the Illinois site were stored at a average temperature of 12°F, with a maximum recorded temperature of 40°F. For samples at the Mississippi site, average recorded temperature was approximately 22°F, with a maximum recorded temperature of 32°F. However, there are time periods at Mississippi for which records of storage temperatures could not be found.

The Second Round Review Residue Chemistry Chapter reported that residues of atrazine and its chlorometabolites G-30033, G-28279, and G-28273 (see Figure 1 for structures) were stable in solid corn matrices stored at less than 0°C (32°F) for approximately 200 days. The information in the present submission indicates that even if samples were stored at the Illinois and New York field sites until late October 1991, these residues should have been stable.

At issue is the variability in metabolic profiles observed across locations. In 30-day forage, atrazine represented nearly half of the TRR for both corn and sorghum at the New York site, but much smaller components of TRR at Illinois and Mississippi. However, the relative portions of TRR represented by atrazine and chloro metabolites, or by the hydroxy metabolites, were reasonably comparable across silage forage and mature samples taken at all three sites; variability across these later samples was much less than the variability across 30-day forage samples (refer to CBRS 10980, 6/6/93, J. Abbotts, Tables 3 and 7). Despite the lack of complete data from the Mississippi site, the data provided on storage conditions allow a conclusion that the variability in metabolite distribution should not be attributed to different storage conditions.

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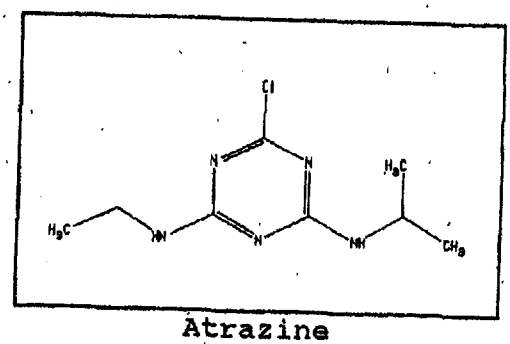
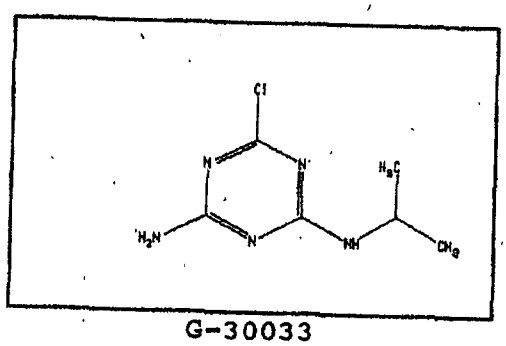
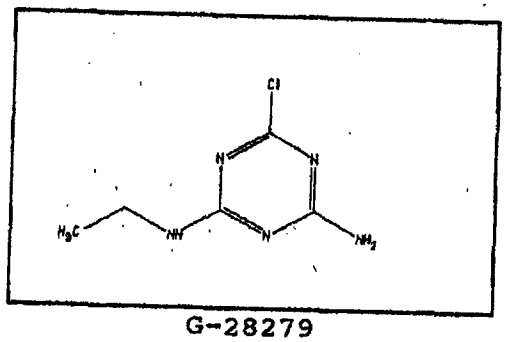


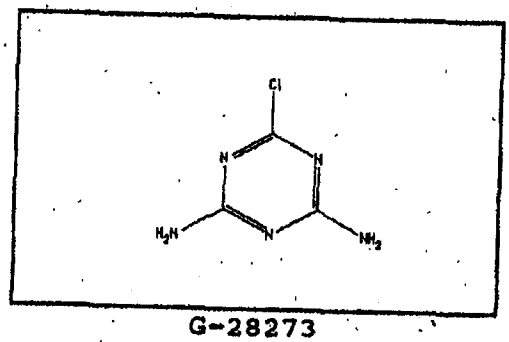
Atrazine



G-30033



G-28279



G-28273

Figure 1. Atrazine and chloro metabolites.

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Conclusion 2: The data provided on storage conditions at the field sites are sufficient to conclude that the variability in composition of the total residue in corn and sorghum with location and commodity should not be attributed to different storage conditions. Conclusions 1d and 2c of the previous review are resolved.

Conclusions/Recommendations

1. With the submission of protocols, Conclusions 1c and 2b of the previous review (CBRS 10980, 6/6/93, J. Abbotts) are satisfied.

2. The data provided on storage conditions at the field sites are sufficient to conclude that the variability in composition of the total residue in corn and sorghum with location and commodity should not be attributed to different storage conditions. Conclusions 1d and 2c of the previous review are resolved.

3. With the resolution of Conclusions 1c, 1d, 2b, and 2c of the previous review, the field metabolism data on corn and sorghum are acceptable. Other Conclusions of the previous review, including the determination that no data were provided which alter the position of the HED Metabolism Committee that exposure assessment for atrazine should be conducted on the basis of the total radioactive residue (Memo, 8/7/92, M.S. Metzger), remain in effect.

cc:Circ, Abbotts, RF, Atrazine List A File, SF
RDI:SVHummel:5/16/95:FBSuhre:5/19/95
7509C:CBII-RS:JAbbotts:CM-2:Rm805A:305-6230:5/22/95
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