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Resources, Community, and  
Economic Development Division  
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Dr. Lynn R. Goldman  
Assistant Administrator, Office of  
Prevention, Pesticides and Toxic  
Substances  
Environmental Protection Agency

Dear Dr. Goldman:

At the request of Senator John Glenn, we recently reviewed the process leading to EPA's February 1992 decision to retain 45 crop uses for a group of fungicides known as EBDCs (ethylene bisdithiocarbamates), while canceling 11 uses. Although we found no significant weaknesses in the decision process, we did find weaknesses in EPA's determination of average residue estimates for EBDCs and ethylenethiourea (ETU), the metabolite product common to all EBDCs.

During our review, we observed that EPA made numerous calculations in determining residue values and risk factors. Because many of the computations were computed manually and were not independently verified, we checked the calculations for some of the residue estimates. Using EPA's criteria and formula for determining average residues, we tested the agency's computation of the mean residue estimates for 17 foods and/or food forms (raw, frozen, paste, puree, etc.). We found 15 discrepancies in 34 EBDC and ETU residue estimates. These discrepancies, which were discussed with EPA staff, appeared to be fairly minor--in that they generally involved decimal numbers that were off by one or more digits at the fourth decimal place.

For example, we calculated a mean ETU residue estimate of 0.0013 parts per million (ppm) for frozen broccoli, while EPA used 0.0021 ppm; and we calculated a mean of 0.0074 ppm for tomato paste, while EPA used 0.0073 ppm. Eight discrepancies were due to using an incorrect figure (for the percentage of the crop treated, for instance), four

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were transcription errors (all for the same crop, tomatoes), while three were due to truncating a digit instead of rounding. In eight of the cases in which we found a discrepancy, the actual residue estimate was higher than that used by EPA, while in seven cases the residue estimate was lower than that used by the agency.

EPA officials reviewed our calculations and told us that the differences were insignificant and would not significantly change the ultimate risk assessment numbers. We subsequently asked EPA to recalculate the risk estimates for the food forms for which we found discrepancies. The recalculated residue estimates resulted in only minor changes in the carcinogenic risk estimates, and we agree that the changes are insignificant. For example, EPA had estimated that the risk for cucumbers was about 3.4 additional cases of cancer per 100 million people while our calculation resulted in a risk of about 3.5 additional cases of cancer per 100 million people.

Although the discrepancies we found may not have had a significant effect on EBDC risk estimates, the number, or significance, of discrepancies in residue calculations for other pesticides is unknown. Because the types of discrepancies found in the calculations of EBDC residues could also be occurring in residue calculations for other pesticides, we recommend that you institute procedures to strengthen internal controls to prevent these types of discrepancies.

We appreciate the courtesy and cooperation extended to our staff during the review. Because of our continuing interest in this area, we would also appreciate being informed of any action you take in this matter.

Sincerely yours,



Peter F. Guerrero  
Director, Environmental Protection Issues

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