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

OFFICE OF
PREVENTION, PESTICIDES AND
TOXIC SUBSTANCES

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MEMORANDUM

SUBJECT: BEAD Estimate of Length of Time Corn Grain is Spent in Channels of Trade

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Summary

This memo is in response to your question: How long is the corn supply is likely to have these levels of Cry9C (from StarLink Corn) and how long will finished foods made from the 2000 corn crop are likely to be in the market place? Based on my analysis, I believe that raw corn grain is likely to remain in storage for 2 to 3 years and corn products will reside in processing and storage for an additional 2 years. I estimate that 90% of U.S. corn is consumed within 2.3 years after harvest and 99 percent within 4.6 years. See the following discussion and Table 1 for my rationale.

Analysis and Discussion

According to USDA/NASS (2000), there is a 13.4% carry over of corn grain stocks from year to year. By extension (i.e. 13.4% x 13.4%) there is a 1.8% carry over after 2 years. Corn grain may be stored for several months in food processing storage bins before being manufactured into intermediate (e.g. flour) food products. Corn flour may be stored or transported for several

months before being manufactured into finished food products (e.g.corn flakes) and many finished food products have a shelf life (based on pull dates) of 12 months. Based on the computations in Table 1, I estimate that 90% of U.S. corn is consumed within 2.3 years after harvest and 99 percent within 4.6 years.

At the minimum, I recommend establishing a tolerance for 2 years (from December 1, 2000) for corn grain and 4 years for finished products. These tolerances would expire on December 1, 2002 and December 1, 2004, respectively. A 3 year corn grain tolerance and 5 year finished product tolerance would be protective of the 1.8% of the corn grain carrying over into 2002

Table 1. Estimated Time Required for 90 and 99 percent of Field Corn to pass through Channels of Trade.

Event	Years required to pass to next event		Source
	90%*	99%*	
Raw grain in elevator or bulk storage	1.3	2.6	1
Corn grain stored food processing storage bins before processing into intermediate products (e.g. flour)	0.25	0.5	2
Corn flour stored or transported before being manufactured into finished food products	0.25	0.5	2
Finished food products in warehouses and on store shelves prior to purchase	0.25	0.5	3
Finished food products in consumer pantries prior to consumption	0.25	0.5	3
Totals	2.3	4.6	4

* percent of corn passing to next event within specified time.

Sources:

1. USDA. 2000. Grain Stocks; Corn: By Position, State, and United States, December 1, 1998-1999. USDA/NASS Agricultural Statistics Board. January 2000.

[* EPA estimates based on following statistics: 1998 corn production: 9.76 billion bushels, carryover stocks (as of September 1, 1999) of 1.31 billion bushels = 13.4%. Disappearance rate is 86.6% annually; 7.22% monthly]

2. EPA estimate

3. EPA estimate based on pull dates for corn containing products such as corn flakes. The Agency estimates that finished corn products products spend an equal amount of time in wholesale/retail storage and consumer storage

4. Calculated by summing all the events in the column.

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