Sec 2, Ref 1

AP-42 Section 9.9.1
Reference 1
Report Sect.
Reference

CORN REFINERS ASSOCIATION, INC.

January 18, 1994

Mr. Dallas W. Safriet
Environmental Engineer
Environmental Protection Agency
Emission Inventory Branch (MD-14)
Research Triangle Park, NC 27711

RE: Emission Factor Documentation for AP-42
Section 6.9.1; Grain Elevators and Grain Processing Plants

Dear Mr. Safriet:

We appreciate the opportunity to review the new draft Section 6.9.1, Grain Elevators and Grain Processing Plants. We hope our comments will be helpful in the Agency's work in publishing a supplement to AP-42, Compilation of Air Pollution Emission Factors.

The Corn Refiners Association, Inc., is the national trade association representing the corn wet milling industry. Members of the Association produce starches, sweeteners, alcohol, feed ingredients and vegetable oil using the corn wet milling process. A list of Association members is enclosed.

Our comments focus specifically on the portions of the new draft supplement text that relate directly to corn wet milling. We understand that Dave Ailor, National Oilseed Processors Association, has contacted you and expressed their Association's concerns about the quality of data in the AP-42 document for vegetable oil processing. Mr. Ailor is requesting a meeting with John Seitz, Director, Office of Air Quality Planning and Standards, to discuss the issue. As we share some of the same concerns, we will participate at that meeting.

I. Section 2: Industry Description

1. Page 2-13, table 2-3: The Table should be revised to reflect the following changes to the number of corn wet milling facilities in each state. The number of facilities is overstated and may have included potato starch and wheat starch facilities which are also in SIC 2046. We have listed all corn wet milling facilities, including those with 150 employees or fewer.

1701 Pennsylvania Avenue, N.W. Washington, D.C. 20006 Telephone: (202) 331-1634 Facsimile: (202) 331-2054

State	No. of Facilities
US Total	27
Iowa	7
Illinois	4
Indiana	4
Tennessee	2
Colorado	1
Ohio	1
Missouri	1
Texas	1
Alabama	1
California	1
Minnesota	1
Nebraska	1
New York	1
North Carolina	1

2. Page 2-14, table 2-4: CRA member companies and corn wet milling plan locations are as follows:

Plant Name	Plant Location
ADM Corn Processing	Cedar Rapids, Iowa Clinton, Iowa Decatur, Illinois Montezuma, New York
American Maize-Products Company	Decatur, Alabama Dimmitt, Texas Hammond, Indiana
Cargill, Incorporated	Cedar Rapids, Iowa Dayton, Ohio Eddyville, Iowa Memphis, Tennessee
CPC International Inc.	Argo, Illinois Stockton, California Winston-Salem, NC
Minnesota Corn Processors	Marshall, Minnesota Columbus, Nebraska
National Starch and Chemical Company	Indianapolis, Indiana North Kansas City, Missouri
Penford Products Company	Cedar Rapids, Iowa

Roquette America, Inc.	Keokuk, Iowa
A.E. Staley Manufacturing Company	Decatur, Illinois Lafayette, Indiana (2 plants) Loudon, Tennessee

Non-CRA member corn wet milling plants and locations to be included in the table are as follows:

Pekin Energy Co.	Pekin, Illinois
Golden Technologies	Johnstown, Colorado
Grain Processing/Kent Feeds, Inc.	Muscatine, Iowa

The Dimmitt, Texas plant is no longer owned by Amstar Corporation, but is now part of American Maize-Products Co. Similarly, the Anheuser Busch Inc. plant in Lafayette, Indiana is now owned by A.E. Staley Manufacturing Company, and the Clinton Corn Processing Co. plant in Montezuma, New York is now owned by ADM Corn Processing.

Plants listed on the table that have either been dismantled or are not corn wet mills include the Great Western Sugar, Colorcon, Holly Sugar, Lincoln Grain/General Life Co. Inc., Alembic and Chemstar Products plants.

3. Page 2-46: The first paragraph in the process description should be changed to read:

> The corn refining or wet milling industry has grown in its 150 years of existence into the most diversified and integrated of the grain processing industries. The corn refining industry produces hundreds of products and byproducts, such as high fructose corn syrup (HFCS), corn syrup, starches, animal feed, oil and alcohol.

4. Page 2-47, paragraph 2, line 5: The sentence should be changed to read:

> Each steep holds about 70.5 to 458 m^3 (2,000 to 13,000 bu) of corn, which is submerged in a dilute sulfurous acid solution flowing countercurrently at a temperature of about 52°C (125°F).

5. Page 2-47, paragraph 4, line 5: The sentence should be changed to read:

> Such recovery is affected by concentrating the steepwater to 30 percent to 55 percent solids in multiple-effect evaporators. The resulting steeping liquor, or heavy steepwater, is usually added. . .

6. Page 2-50, paragraph 1: The second sentence should read, "The resultant pulpy material is pumped through liquid cyclones to extract the germ from the mixture of fiber, starch and gluten."

7. Page 2-50, paragraph 1, line 5: the last part of the sentence should read: ". . .and the spent germ can be sold as corn oil meal or as part of corn gluten feed."

8. Page 2-51, paragraph 1: The first sentence of the paragraph should be changed to read:

> Across the corn wet milling industry, about 80% of the starch slurry is diverted to corn syrup, sugar and alcohol production. The relative amount of starch slurry used for corn syrup, sugar and alcohol production varies widely by plant.

9. Page 2-51, paragraph 3: The process description for corn syrup solids should be changed to:

> A smaller portion of the syrup refinery is devoted to the production of corn syrup solids. In this operation, refined corn syrup is further concentrated through evaporation to a high dry substance level. The syrup is then solidified by rapid cooling and subsequently milled to form an amorphous crystalline product.

10. Page 2-69, paragraph 3: The first sentence should be changed to: "The corn wet milling process uses about 0.06 to 0.11 pounds of SO_2 per bushel of corn."

11. Page 2-70, paragraph 1: The drying temperatures listed throughout this paragraph should be changed to 427°C (800°F).

12. Page 2-70, paragraph 2: The first part of the third sentence should read "However, another approach is thermal oxidation at. . ."

13. Page 2-70, paragraph 2, line 9: The sentence should read "The limitations are potential fouling of the boiler air intake system with PM etc., and derating the boiler capacity

due to low oxygen content and these limitations severely restrict the possibility of this practice."

14. Page 2-70, paragraph 2, line 10: The first part of the sentence should read: "At least one facility has attempted to use a regenerative system, in which dampers. . ."

II. Section 4: AP-42 Section Development

Page 4-36; table 4-15: The last part of this table lists average measured filterable PM emission factors in corn wet milling for "Rotary dryers (direct- and indirect-fired)." Because of placement just after grain handling, it appears the values are for "grain handling - drying." Grain is not dried at any corn wet milling facilities.

III. Section 5: Proposed AP-42 Section 6.9.1

1. Page 6.9.1-10, paragraph 2, line 4: The last part of the third sentence should read ". . . by submerging the corn in a series of tanks containing a dilute sulfurous acid solution flowing countercurrently at a temperature of about 52°C (125°F)."

2. Page 6.9.1-10, paragraph 3: The second sentence should read, "The resultant pulpy material is pumped through liquid cyclones to extract the germ from the mixture of fiber, starch and gluten."

3. Page 6.9.1-10, paragraph 3, lines 4-5: add to the end of the sentence ". . .and the spent germ can be sold as corn oil meal or as part of corn gluten feed."

4. Page 6.9.1-10, paragraph 6: The first sentence of the paragraph should be changed to read:

> Across the corn wet milling industry, about 80% of the starch slurry is diverted to corn syrup, sugar and alcohol production. The relative amount of starch slurry used for corn syrup, sugar and alcohol production varies widely by plant.

5. Pages 6.9.1-30 and 6.9.1-35, tables 6.9.1-5 and 6.9.1-6: The last part of this table lists average measured filterable PM emission factors in corn wet milling for "Rotary dryers (direct- and indirect-fired)." Because of placement just after grain handling, it appears the values are for "grain handling - drying." Grain is not dried at any corn wet milling facilities.

IV. Definitions

Page A-3: The definitions for Corn Starch, Corn Syrup and Dextrose should be changed as follows:

Corn Starch: A polymer from corn consisting of long chains of linked glucose molecules obtained following removal of gluten, fiber and germ.

Corn Syrup: Products derived from the partial acid or enzyme hydrolysis of corn starch. These starch conversion products are normally liquids of varying glucose (dextrose) content. The initial product can be processed further to yield a higher level of fructose (levulose).

Dextrose: A monosaccharide, also called glucose, having the chemical formula $C_6H_{12}O_6$, obtained by complete hydrolysis of starch.

We appreciate the opportunity to provide these comments. Please let me know if I can provide you with any further information.

Sincerely,

Monique Kosse

Monique Kosse
Director of Technical Affairs

Enclosure

MEMBER COMPANIES
Corn Refiners Association, Inc.
1701 Pennsylvania Avenue, N. W.
Washington, D. C. 20006

ADM Corn Processing (A division of Archer Daniels Midland Company) P. O. Box 1470 Decatur, Illinois 62525	Plants: Cedar Rapids, Iowa Decatur, Illinois Clinton, Iowa Montezuma, New York
American Maize-Products Company 250 Harbor Plaza Drive Box 10128 Stamford, Connecticut 06904	Plants: Hammond, Indiana Decatur, Alabama Dimmitt, Texas
Cargill, Incorporated P. O. Box 9300 Minneapolis, Minnesota 55440	Plants: Cedar Rapids, Iowa Eddyville, Iowa Dayton, Ohio Memphis, Tennessee
CPC International Inc. International Plaza P. O. Box 8000 Englewood Cliffs, New Jersey 07632	Plants: Argo, Illinois Stockton, California Winston-Salem, North Carolina
Minnesota Corn Processors 400 West Main, Suite 201 Marshall, Minnesota 56258	Plant: Marshall, Minnesota Columbus, Nebraska
National Starch and Chemical Company P. O. Box 6500 Bridgewater, New Jersey 08807	Plants: Indianapolis, Indiana North Kansas City, Missouri
Penford Products Co. (A company of PENWEST, LTD.) P. O. Box 428 Cedar Rapids, Iowa 52406	Plant: Cedar Rapids, Iowa
Roquette America, Inc. 1417 Exchange Street Keokuk, Iowa 52632	Plant: Keokuk, Iowa
A. E. Staley Manufacturing Company (A subsidiary of Tate & Lyle, PLC) P. O. Box 151 Decatur, Illinois 62525	Plants: Decatur, Illinois Lafayette, Indiana (2) Loudon, Tennessee