UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 5
77 WEST JACKSON BOULEVARD
CHICAGO, IL 60604-3590

AUG 2 7 2015

REPLY TO THE ATTENTION OF:

Raymond E. Pilapil
Acting Manager, Permit Section
Division of Air Pollution Control, Bureau of Air
Illinois Environmental Protection Agency
1021 North Grand Avenue East
Springfield, Illinois 62794-9276

Dear Mr. Pilapil:

The U.S. Environmental Protection Agency has reviewed the draft air pollution control construction permit number 15070024 (Draft Permit) for Archer Daniels Midland Company, Decatur, Illinois (ADM). The Draft Permit authorizes ADM to expand the processing capacity of the soybean processing operations at the Decatur West Soybean Plant by making a number of changes to numerous equipment at the plant including changes to upstream grain and downstream product handling equipment.

Based on our review, we do not believe the applicant has correctly evaluated applicability of the Prevention of Significant Deterioration (PSD) permitting requirements of 40 C.F.R. § 52.21 to the project. For example, we do not believe the applicant has correctly applied the "demand growth exclusion" provisions of 40 C.F.R. § 52.21(b)(41)(ii)(c). We have provided our detailed comments in the enclosed document.

We look forward to working with you to resolve each of the issues we have raised before you make a decision on this permit. If you have any questions, please feel free to contact me at (312) 353-4761 or David Ogulei, of my staff, at (312) 353-0987.

Sincerely,

Genevieve Damico
Chief
Air Permits Section

Enclosure

ENCLOSURE

EPA Comments on the Draft Construction Permit No. 15070024 for ADM Decatur West Soybean Plant Expansion

August 27, 2015

Project Description

ADM plans to expand the processing capacity of the soybean processing operations at the Decatur West Soybean Plant by making a number of changes to numerous equipment at the plant including changes to upstream grain and downstream product handling equipment. The Decatur West Soybean Plant capacity expansion will also affect utilization of the Decatur Cogen Plant since full utilization of the increased soybean processing capacity will result in a projected increase in steam demand by the Decatur West Soybean Plant.

EPA Comments

1. **The demand growth exclusion calculations appear to be faulty and inconsistent with federal regulations and guidance.**

    a. For each affected emission unit, the application excludes, pursuant to 40 C.F.R. § 52.21(b)(41)(ii)(c), emissions that ADM says "could have been accommodated" during the baseline period but those emissions can only be excluded if they are completely unrelated to the project. Because the project will cause a throughput increase at multiple units, the emissions resulting from the throughput increase at those units cannot be excluded. *See* New York v. EPA, 413 F.3d 3 (D.C. Cir. 2005) (the PSD rules exclude emissions due to demand growth only where it is "unrelated to the particular project.")

    b. To justify the excluded emissions for the coal-fired boilers, the application states, "*ADM projects that steam demand at the Decatur Complex <u>could increase</u> in the future irrespective of whether the Decatur West Soybean Plant expansion occurs. Any such increases are related to general improvements in business activity that will increase utilization of the existing units at the Decatur Complex … The increase in steam demand and the emissions associated with increased steam production that are unrelated to the capacity expansion are emissions that could have been accommodated during the selected baseline period. These unrelated emissions increases (i.e., excludable emissions) must be excluded from the post-project projected actual emissions in determining the emissions increases that are related to the capacity expansion project*." Application at C-9 & C-10 (emphasis added). However, there is no documentation that shows the projected demand

contemplated by ADM. It is not sufficient for ADM to speculate that steam demand "could increase" in the future regardless of the project, and subsequently specify what the increase "could" be, without identifying in the application the basis for that projection. The documentation needs to show that steam demand is projected to increase in the future solely due to market fluctuations.

c. While EPA has previously acknowledged the difficulty of separating demand growth increases from other increases resulting from a project, EPA has been clear that there are situations where the distinction clearly can be made, including:

- skyrocketing demand because the product becomes a fad;
- mishaps at a factory, causing production increases at remaining supplier sources;
- decrease in raw material prices;
- opening of new markets; and
- improved economic conditions.

[*See* 2002 Reform Rule Reconsideration Technical Support Document (TSD) at 18-19[1] and 67 Fed. Reg. 80203. Also *see* New York v. EPA, 413 F.3d 3 (D.C. Cir. 2005)]

Common examples of emissions that can be excluded from a company's estimate of projected actual emissions are (http://la-awma.org/files/2013-3-4.pdf):

- Low market demand during the baseline period;
- Natural disasters that occurred during the baseline period;
- Non-project related upsets due to equipment failures if the particular failure is not routine;
- Products and materials at a loading rack that are not impacted by the project;
- Process vents routed to a flare or thermal oxidizer that are not impacted by the project.

ADM's application does not indicate that the excluded emissions are consistent with any of the above examples. Further, there is no official documentation, such as a report to investors or other company publication, that compares current production activity to the projected activity apart from the project. As EPA has previously explained, even if the operation of an emissions unit to meet a particular level of demand could have been accomplished during the representative baseline period, but it can be shown that the increase is related to the changes made to the unit, then the emissions increases resulting from the increased operation must be attributed to the modification project, and cannot be subtracted from the projection of post-change actual emissions. *See* Dianne

[1] Available at http://www.epa.gov/NSR/documents/petitionresponses10-30-03.pdf

McNally, EPA Region 3 Letter to Mark Wejkszner, Pennsylvania Department of Environmental Protection Regarding Northampton Generating Company, April 20, 2010;[2] and PSD Reform Rule TSD at I-4-37.[3]

d. For the Cogen plant, the application states that ADM projected "steam demand for calendar years 2016 through 2025 (including the demand increase projected to result from the Decatur West expansion project) and applied steam production-normalized emissions factors to the projected steam demand rates." Application at C-12. What information did ADM submit to support the expected future steam demand growth?

2. **The Draft Permit states that the 8 new "flakers" qualify as replacement units within the meaning of 40 C.F.R. § 52.21(33)(b)(i) through (iv). *See* Condition 1.2(a)(ii). However, the application and the Project Summary do not include sufficient information to support this conclusion.**

a. In its application, ADM states that it intends to "replace 8 existing flaking rolls with 7 new flaking rolls" and that "[t]he total processing capacity of the new flaking rolls will be less than or equal to the seven replaced rolls." *See* Application at C-6. How can the *fewer* new units meet the criteria in 40 C.F.R. § 52.21(33)(b)(ii) and (iii) and still achieve the goals of the project (i.e., increase throughput)?

b. In its July 28, 2015 addendum to the application, ADM stated that the planned replacement flakers and the existing flakers "are produced by two different manufacturers" and that the "nominal" throughput capacities of the new and existing flakers "are approximately equivalent." What does "approximately equivalent" mean? And how does it satisfy the requirement in 40 C.F.R. § 52.21(33)(b)(ii) that the replacement unit be "identical" or "functionally equivalent" to the replaced emissions unit? *See* 7-28-15 email from ADM to Daniel Rowell.

c. ADM stated in its 7-28-15 email that "the achievable throughput rate of any flaker varies as a function of the end-product quality specifications, so a comparison of nominal throughput values will not necessarily produce an "apples-to-apples" comparison." However, ADM did not provide the throughput comparison for the *same* "end-product quality specifications." For example, what is the new unit's throughput capacity when producing flakes of the same thickness as the existing unit?

[2] Available at http://www.epa.gov/region07/air/nsr/nsrmemos/psdanalysis.pdf
[3] Available at http://www.epa.gov/NSR/documents/nsr-tsd_11-22-02.pdf

d. ADM stated in its 7-28-15 submittal that "In ADM's view, the most objective measure of flaker capacity is the design drive horsepower of the flaking roll motors" and that "the total design drive motor horsepower of the existing flakers and the proposed replacement flakers are identical at 200 horsepower per flaker." Consequently, ADM concluded that "the design drive motor capacity is the appropriate parameter to use to evaluate whether the replacement flakers qualify as replacement units as this term is defined at 40 C.F.R. § 52.21(b)(33)." However, I do not believe that the design drive motor capacity *alone* is the appropriate "basic design parameter" (see 40 C.F.R. § 52.21(33)(b)(ii) and 40 C.F.R. § 52.21(cc)(2)) for comparing flaking rolls. To the contrary, I believe that since the rolls themselves are the central part of a flaker, the design parameters should relate *directly* to the rolls. Based on a literature review, for two flaking rolls to be identical or functionally equivalent, *all* of the following parameters for the new and existing units need to be compared and found to be "identical or functionally equivalent":

- Roll length
- Roll diameter
- Roll hardness
- Roll build materials
- Design flake thickness
- Flaker capacity for same product thickness
- Motor drive capacity
- The gap between the rolls
- The speeds at which the front and rear rolls are rotated
- Energy required to run the rolls at normal flow rate settings
- Rotary vs. vibratory feeders for flaking roll stands
- Flaker cracking rate (the amount of cracks feeding into a roll stand)

[*See* Singh et. al. (1999), Effects of physical properties and operating parameters on soybean flaking, Journal of the American Oil Chemists' Society, 76(8): 981-987;[4] China Win Tone Machinery Product Brochure, Oat flakes machines and thickness (http://www.grain-processing.org/PRODUCTS/Oat-Processing-Equipment/622.html); Buhler Flaking Mill Brochure (http://www.buhlergroup.com/global/en/downloads/DOZC_OL22420_en.pdf)]

e. Although 40 C.F.R. § 52.21(cc)(2)(iii) allows the permitting authority to approve alternate parameters as basic design parameters (in lieu of the parameters listed in 40 C.F.R. § 52.21(cc)(2)(ii) – maximum rate of fuel or heat input, maximum rate of material input, or maximum rate of product output), the approved parameter must be included in a "legally enforceable" permit pursuant to 40 C.F.R.

[4]Available at http://link.springer.com/journal/11746.

§ 52.21(cc)(2)(iii) and the applicant must comply with the documentation requirements in 40 C.F.R. § 52.21(cc)(2)(iv) and (v). The Draft Permit does not include a permit condition that defines, and requires the Permittee to comply with, an alternate basic design parameter; and the application does not include the documentation required in 40 C.F.R. § 52.21(cc)(2)(iv) and (v).

3. **The application states that the project will increase the throughput capacity of the plant; however, it does not specify how the new capacity compares to the current capacity for each modified emission unit. This information is needed to estimate the emissions increase due solely to the project and to ensure that emission factors are appropriately applied.**

    a. For each modified unit, how much of the requested throughput increase is due to the project? What effect will the project make on individual emission units? [*See* Table 2-1, "Summary of Decatur West Soybean Affected Emission Units."]

    b. The application projects that the post-project soybean processing rate will be a maximum of 2.49 million tons/year. How much of the overall throughput increase is attributable to the project?

    c. The 2.49 million tons/year post-project soybean processing capacity is not limited by the permit suggesting that it would be the post-project capacity of the plant. If it is not the post-project capacity of the plant, what will be the post-project capacity of the plant? Note that if ADM used the post-project capacity (PTE) of individual units in its PSD applicability calculations as allowed by 40 C.F.R. § 52.21(b)(41)(ii)(d), ADM cannot at the same time employ any of the procedures in 40 C.F.R. § 52.21(b)(41)(ii)(a) through (c) for those units, including excluding demand growth emissions under 40 C.F.R. § 52.21(b)(41)(ii)(c).

    d. The application states that the project will increase the PTE of several emission units. What is the current PTE of these units? What is the PTE increase for each unit? [*See* Application at C-2]

4. **It is not clear if appropriate emission factors were used in the emissions calculations.**

    a. For many pollutants, ADM has used different emission factors than it used in previous applications. *See*, for example, Application at C-6 (Note that some of the baseline actual emissions rates presented herein may differ from previously submitted emissions inventory estimates. Such differences are a result of changes in emissions factors based [on] refined emissions factor information (*e.g.*, application of more representative or more conservative particulate emission size distribution data to certain sources)), Application at C-8 (Alternative factors are used where they are believed to more accurately represent actual emissions) and

Application at C-6 (The Cogen BAE for PM_{10} and $PM_{2.5}$ presented here differs from previously reported emission inventory values because a revised particulate size distribution was applied to the PM emissions factor to estimate PM_{10} and $PM_{2.5}$ emissions.) Did the Illinois EPA compare the new emission factors to the previously used emission factors? Is the change in emission factors justified? How does the change in emission factors affect previous PSD applicability calculations?

b. It appears that ADM used PM_{10} and $PM_{2.5}$ emission factors from AP-42 (Table 1.1-6) for the coal-fired boilers. Have the boilers not been stack tested for PM_{10} and $PM_{2.5}$? Are there more reliable PM_{10} and $PM_{2.5}$ emission factors from similar coal-fired boilers?

c. Did ADM use CEMS or stack test data to develop emission factors where such information is available for the modified or identical units? *See*, for example, Form 220 EU SP-06 (Soybean Preheater), Form 260 CE SP-06 (Soybean Preheater Cyclone): "Compliance with emission limits based on factors developed from stack test data obtained during testing of similar ADM source." However, this was not consistently done for other units; instead, the application appears to use AP-42 emission factors for several units. For those other units, why are AP-42 emission factors superior to data from a similar ADM source?

d. For the coal-fired boilers (and other units as applicable), did the emission calculations account for condensable particulate matter emissions?

e. When calculating "excluded emissions" for the boilers and other units, it appears that ADM used different emission factors for baseline actual emissions and for determining excludable emissions. The emission factors for baseline actual emissions and excludable emissions (to the extent that they are indeed excludable) should be identical unless the differences can clearly be justified.

f. For a number of units, ADM used emission factors derived from stack testing conducted in 2003 (*See*, e.g., Form 220 EU SP-01 (Fluid Bed Dryer), Form 260 CE SP-01 (Fluid Bed Dryer Baghouse), Form 220 EU SP-05 (Hull Grinding), Form 220 EU SP-09 Soybean Cleaning (Soybean Cleaning), Form 220 EU HP-01 (Pelletizers/Coolers), Form 220 EU SE-03 (Soybean DTDC (South)), Form 220 EU SE-05 (Soybean DTDC (North)). Are there more recent stack test data than these? Is there more recent data from a "similar ADM source"?

g. Please verify that the baghouse and cyclone control efficiency estimates are consistent with recent stack test data at the source or a similar ADM source (if test data from the same source are unavailable).

h. Form 260 CE SP-05 (Hull Grinding Dust Collector (5th Floor Dust Collector)) states, "Compliance with emission limits demonstrated by one time calculation of potential emissions based on AP-42 Emissions factor (Grain loading 0.01 gr/dscf) and Baghouse Manufacturer's performance guarantee." This appears to be double-counting of emission reductions as 0.01 gr/dscf is too low for particle loading at the inlet to a baghouse. Please verify that the source is not significantly underestimating emissions.

5. Project aggregation needs to be evaluated with respect to other projects being proposed by ADM.

a. As discussed above, this project will cause increased utilization of the coal-fired boilers. At the same time, ADM has proposed several other projects that will cause increased utilization of these boilers. Since the boilers are being affected by multiple projects that are happening at the same time, the calculation of the emissions increases at the boilers should take into account the combined emissions changes due to the combined projects.

b. The application indicates that some of the emission units being modified or affected by the project qualify as "new" units because they have not been operated for more than two years. *See* Application at C-7 (no increase in emissions from recently permitted flaking rolls are included in the emissions analysis because, these flaking rolls are considered to be "new" emissions units. For this reason, the baseline actual emissions from these units are by definition, equal to their [PTE])). Also *see* Application at C-30 (Unit CE SP-03). Assuming that the referenced flaking rolls were in fact only recently permitted, why aren't those units aggregated with the current project? There is no discussion of project aggregation with respect to those units.

6. Will the boilers be *operationally* changed as a result of the increased steam demand associated with the multiple projects being proposed by ADM?

ADM has proposed through the current permitting action and several pending permit applications multiple modifications to its Decatur facility that will affect utilization of the existing coal-fired boilers. However, it is not clear if the multiple modifications proposed by ADM will necessitate changes *in the method of operation* of the boilers to enable steam production at the projected steam pressure and quantity. Please clarify.