

Message

From: John Duff [john@sorghumgrowers.com]
Sent: 5/9/2017 7:36:49 PM
To: Schwab, Justin [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=eed0f609c0944cc2bbdb05df3a10aadb-Schwab, Jus]
CC: Tim Lust [tim@sorghumgrowers.com]; Chris Cogburn [chris@sorghumgrowers.com]; Bernadette Bern Rappold, Esq. [rappoldb@gtlaw.com]; dohales@gtlaw.com
Subject: Re: Sorghum Oil Update
Attachments: Grain Sorghum Oil Pathway Petition (2).pdf; NSP Responses to EPA Questions on Sorghum Oil Petition (1).pdf; NSP Responses to EPA Questions April 24 (4).pdf; 373478145_v 1_RFS approvals Fed Reg July 2014 (1).PDF

Justin,

This email includes all the information relevant to the sorghum oil pathway process. The email includes a large amount of information, so I have grouped similar pieces of information and included **bold headings** and brief *italicized summaries* of each group for ease of reference.

Applicable Executive Orders

The provisions of Executive Order 13771 requiring two regulations be eliminated for every one issued do not apply given approving sorghum oil is a permitting action that imposes no compliance cost. Furthermore, this Order as well as EO 13783 demonstrate intent by the Administration to streamline the regulatory process and remove regulatory obstacles for businesses.

On our May 4 phone call with EPA staff, Sharyn Lie stated Executive Order 13771 would preclude a straightforward rulemaking (or similar approval) given it would require two regulations to be eliminated as well. This requirement is not applicable in this case given approving sorghum oil as a biodiesel feedstock does not increase compliance costs but rather functions as a permit for the petitioners to engage in a business activity. Subjecting our petition for approval to EO 13771 would undermine the intent of the EO, which was to reduce unnecessary costs of regulatory compliance.

The Order states in section 1: "It is the policy of the executive branch to be prudent and financially responsible in the expenditure of funds, from both public and private sources." This demonstrates an intent for the process of approving new regulations to be streamlined. An expeditious approval of sorghum oil as a biodiesel feedstock would save significant taxpayer resources and assist U.S. companies subject to a renewable volume obligation with compliance. In addition, we believe our proposed pathway is so similar to existing pathways that approval by letter, rather than rulemaking (as EPA has done in the past), is appropriate.

Similarly, section 1(c) of Executive Order 13783 states:

"Accordingly, it is the policy of the United States that executive departments and agencies (agencies) immediately review existing regulations that potentially burden the development or use of domestically produced energy resources and appropriately suspend, revise, or rescind those that unduly burden the development of domestic energy resources beyond the degree necessary to protect the public interest or otherwise comply with the law."

In section 2, the Order further directs:

“The heads of agencies shall review all existing regulations, orders, guidance documents, policies, and any other similar agency actions (collectively, agency actions) that potentially burden the development or use of domestically produced energy resources, with particular attention to oil, natural gas, coal, and nuclear energy resources.”

It continues by defining "burden" in section 2(b):

"For purposes of this order, 'burden' means to unnecessarily obstruct, delay, curtail, or otherwise impose significant costs on the siting, permitting, production, utilization, transmission, or delivery of energy resources."

Taken together, these sections demonstrate a desire by the Administration to remove regulatory obstacles to greater energy production. When conducting its review under EO 13783, we suggest the EPA examine ways to reduce the burden on renewable fuels producers. As described below, our lengthy journey to obtain a permit for a much-needed domestic energy source is a perfect example of the kind of burden the Administration seeks to eliminate.

Pathway petition and related documents sent to EPA staff

We have submitted three documents to EPA staff totaling 325 pages. The original petition was submitted in July 2016, and follow-up submissions answering staff questions were sent in January 2017 and April 2017. We also sent a follow-up answer to Aaron Levy on May 4. He assured us the question we answered with this email would be the last in this process.

The first three attachments constitute our submissions to EPA staff. The first is the original petition submitted in July 2016. The second includes our answers to their first round of questions submitted in January 2017. The third includes our answers to their second round of questions submitted in April 2017.

We answered their third round of questions on May 4 with the following email to Aaron Levy, who assured us via phone this would be all staff needs to finish the pathway. On the questions of a) why we are unable to provide separate market data for sorghum DDGS with oil and sorghum DDGS without oil and b) why nutritionist Ryan Mass stated cattle feeders pay less for de-oiled DDGS:

"Per our discussion, these two statements are not contradictory. First, on the question of marketing sorghum DDGS with and without oil, the two products are not physically separated and sold as such by the ethanol producer. An ethanol producer deploying oil extraction for the first time will not change anything with regard to storing or selling the DDGS.

Second, on the question about Dr. Mass's statement, he is correct in that cattle feeders do pay less for DDGS without oil. However, he also emphasizes the dynamic nature of feed markets. This applies to all feed ingredients as these are commodity markets and thus change on a minute-by-minute basis. Therefore, feed buyers do pay different prices for DDGS depending on market conditions for a multitude of ingredients.

For example, local supply and demand of soybean oil often has a significantly larger impact on the price and needed quantity of oil in DDGS than the oil content in DDGS itself. Other key prices in this calculation are the domestic and international supply and demand factors affecting energy as well as local availability of other energy sources. Prices of other ingredients, such as protein and starch, also exert influence. This holds for both corn and sorghum DDGS as the change in composition from sorghum DDGS with oil to sorghum DDGS without oil is the same as the change in composition from corn DDGS with oil to corn DDGS without oil.

As Dr. Mass noted, species other than beef cattle (e.g., poultry, swine and dairy cattle) in many cases perform better on de-oiled DDGS. And, in the case of beef cattle, there is still a large amount of oil left to meet the animals' needs. Furthermore, as stated above, feed markets are dynamic and complex, and feed buyers continuously change the price they are willing to pay based on a number of factors. This is the same whether the ingredient in question is sorghum DDGS or corn DDGS."

Modeling

No new modeling is required as extensive modeling has already taken place for related feedstocks and processes. Adding oil extraction means sorghum ethanol producers should achieve a footprint reduction of approximately 35-40%. This is because a) adding oil extraction improves the environmental footprint and b) sorghum ethanol has a better footprint than corn ethanol.

As Aaron Levy verified via phone, adding oil extraction to an ethanol production facility actually improves the environmental footprint of the ethanol produced from the de-oiled grain (keep in mind a smaller footprint means a higher "score"). This is important as EPA staff is particularly interested in ensuring nothing related to the oil extraction process will adversely impact the footprint of the ethanol produced from the de-oiled grain.

Per section V.C. of the RFS2 final rule:

"Based on the above, corn ethanol facilities using natural gas or biomass as the process energy source will meet the applicable 20% GHG performance threshold if it either also uses at least two of the technologies Table V.C-6 or one of the technologies in Table V.C-6 but marketing at least 35% of its DGS as wet. Alternatively, a facility using none of the advanced technologies listed in Table V.C-6 will qualify as producing ethanol meeting the 20% performance threshold if it sells at least 50% of its DGS prior to drying."

Here is the table to which the passage refers:

TABLE V.C-6—MODELED ADVANCED TECHNOLOGIES

Corn oil fractionation
Corn oil extraction
Membrane separation
Raw starch hydrolysis
Combined heat and power

This reference to corn oil extraction as an advanced technology indicates it improves the footprint. Furthermore, per the following passage from section 1.4.1.3 of the RFS2 regulatory impact analysis:

"The oil recovered using the corn oil extraction process is distressed oil and cannot be sold as a food grade product. Markets for this product do exist, however, as an additive to cattle feed or as a biodiesel feedstock. In addition to generating an additional revenue stream, extracting the corn oil has several other benefits for the ethanol producer. Because the oil is an insulator, removing it improves the heating efficiency of the DGS dryers and reduces the energy demand of the ethanol plant. Reducing the oil content of the DGS also improves its flowability and concentrates its protein content."

This passage details the reasons why corn oil extraction improves the footprint, and the following table provides a quantification. This table is included in the RFS2 notice of proposed rulemaking:

TABLE VI.C.1-2—LIFECYCLE GHG EMISSIONS CHANGES FOR VARIOUS CORN ETHANOL PATHWAYS IN 2022 RELATIVE TO THE 2005 PETROLEUM BASELINE

Corn ethanol production plant type	Percent change from 2005 petroleum baseline (100 yr 2%)	Percent change from 2005 baseline (30 yr 0%)
Natural Gas Dry Mill with dry DGs	-16	+5
Natural Gas Dry Mill with dry DGs and CHP	-19	+2
Natural Gas Dry Mill with dry DGs, CHP, and Corn Oil Fractionation	-27	-6
Natural Gas Dry Mill with dry DGs, CHP, Corn Oil Fractionation, and Membrane Separation	-30	-10
Natural Gas Dry Mill with dry DGs, CHP, Corn Oil Fractionation, Membrane Separation, and Raw Starch Hydrolysis	-25	-14
Natural Gas Dry Mill with wet DGs	-27	-6
Natural Gas Dry Mill with wet DGs and CHP	-30	-9
Natural Gas Dry Mill with wet DGs, CHP, and Corn Oil Fractionation	-33	-12
Natural Gas Dry Mill with wet DGs, CHP, Corn Oil Fractionation, and Membrane Separation	-35	-15
Natural Gas Dry Mill with wet DGs, CHP, Corn Oil Fractionation, Membrane Separation, and Raw Starch Hydrolysis	-39	-18
Coal Fired Dry Mill with dry DGs	+13	+34
Coal Fired Dry Mill with dry DGs and CHP	+10	+31
Coal Fired Dry Mill with dry DGs, CHP, and Corn Oil Fractionation	-5	+15
Coal Fired Dry Mill with dry DGs, CHP, Corn Oil Fractionation, and Membrane Separation	-13	+8
Coal Fired Dry Mill with dry DGs, CHP, Corn Oil Fractionation, Membrane Separation, and Raw Starch Hydrolysis	-21	-1
Coal Fired Dry Mill with wet DGs	-9	+12
Coal Fired Dry Mill with wet DGs and CHP	-11	+10
Coal Fired Dry Mill with wet DGs, CHP, and Corn Oil Fractionation	-17	+3
Coal Fired Dry Mill with wet DGs, CHP, Corn Oil Fractionation, and Membrane Separation	-25	-4
Coal Fired Dry Mill with wet DGs, CHP, Corn Oil Fractionation, Membrane Separation, and Raw Starch Hydrolysis	-30	-9
Biomass Fired Dry Mill with dry DGs	-39	-18
Biomass Fired Dry Mill with wet DGs	-40	-19
Natural Gas Fired Wet Mill	-7	+14

²¹² The treatment of emissions over time is not critical if international land use change emissions

are excluded because the results without land use change are consistent over time. Therefore the

overall lifecycle GHG results do not vary with time or discount rate assumptions.

Notice adding corn oil fractionation (which in the notice of proposed rulemaking primarily means oil separated via centrifuge, or the process sorghum ethanol producers use) to a facility producing DDGS improves the footprint by 8%. For a facility producing WDGS, adding oil extraction improves the footprint by 3%. The coproduct credit is included in both cases.

According to the grain sorghum notice of data availability (EPA-HQ-OAR-2011-0542; FRL-9680-8), grain sorghum ethanol achieves a 32% footprint reduction, easily meeting the 20% reduction threshold necessary for qualification as a conventional biofuel eligible to generate RINs under RFS2. Accordingly, adding oil extraction means sorghum ethanol producers should achieve a footprint reduction of approximately 35-40%.

As noted above, EPA staff is particularly interested in ensuring nothing related to the oil extraction process will adversely impact the footprint of the ethanol produced from the de-oiled grain. Any adverse impacts would relate to the coproduct credit, which improves the footprint by offsetting the amount of grain needed to replace the grain diverted away from the feed supply to produce ethanol.

It is important to note the modeling summarized in table VI.C.1–2 above includes the coproduct credit. Given the similarities between corn and sorghum DDGS we have demonstrated in our submissions and sorghum's smaller footprint, sorghum ethanol with oil extraction has already been effectively modeled with the result being an approximate 35-40% footprint reduction. Therefore, per EPA's own models, sorghum ethanol produced with de-oiled grain easily qualifies as a conventional biofuel eligible to generate RINs under RFS2. For this reason, sorghum oil qualifies as a biodiesel feedstock.

Between the wealth of data we have provided and the similarities between sorghum oil and other grain oils, the EPA has ample information that would allow it to quickly approve our pathway. In fact, the EPA's prior actions in approving renewable fuel pathways suggest there is already legal precedent for more streamlined action. Well-researched, proven sources of energy like our proposed pathway have usually qualified for expedited approval without the need for a lengthy rulemaking.

Legal precedents

At least three precedents for expeditious approval exist. The first two were approvals of biodiesel pathways (in 2013 and 2014) using assumptions and models already approved. Neither approval included a protracted process, and one required no new modeling at all. The third was an approval of all grain kernel fibers (in 2014) based on similarities to corn kernel fiber. No modeling was performed for this approval at all.

Here is an excerpt Bernadette Rappold prepared for us detailing what EPA has done in the past:

"Every element of our proposed pathway has been evaluated during prior pathway approvals, which should provide the EPA with most of the models and data needed to complete a quick analysis. In particular, the EPA's approval of renewable fuel pathways with non-food grade corn oil (NFGCO) and grain sorghum feedstock should provide the necessary background and a blueprint for your analysis of our proposed grain sorghum oil pathway.

Since 2013, several proposed pathways for biodiesel produced from corn oil and other crop residue oils have been approved with minimal additional analysis because of their similarity to previously approved pathways. For example, in October 2013, the EPA approved a pathway petition from Diamond Green Diesel, LLC, after comparing DGD's proposal to existing modeling for three previously approved pathways that had the same components as DGD's proposal. Although DGD's proposal included several feedstock options in addition to NFGCO (soybean oil, canola oil, and biogenic waste oils/fats/greases), much of the EPA's straightforward analysis utilized the assumptions and models applicable to the already approved hydrotreating process, NFGCO, and *Camelina satvia* oil feedstock, which had all been carefully evaluated. Similarly, in March 2014, the EPA determined that Duonix Beatrice's proposal to produce biodiesel from NFGCO, beef tallow, and/or yellow grease through transesterification did not even require a new fuel pathway petition because of its similarity to existing approved pathways.

Just like the DGD and Duonix Beatrice pathways, almost all aspects of our proposed pathway have been analyzed during the approval process for NFGCO pathways. Given the current industry practices of blending corn-based and sorghum-based distillers' grains, we would expect any analysis concerning the impact of sorghum grain oil feedstock to be virtually identical to the analysis already conducted for corn oil. Further, in the EPA's July 2014 RFS Pathways II rule identifying corn kernel fiber as a crop residue feedstock, it acknowledged the similarity between corn kernel fiber and other grain kernel fibers: 'The impacts of fiber on the digestion of ruminants, swine, and poultry are extremely similar, regardless of what grain that fiber came from, because all grain fiber is virtually 100 percent cellulosic. Therefore, we are confident that diverting that fiber to a fuel production stream would have similarly insignificant market and other GHG impacts to those of corn kernel fiber...' Environmental Protection Agency; Regulation of Fuels and Fuel Additives: RFS Pathways II, and Technical Amendments to the RFS Standards and E15 Misfueling Mitigation Requirements, 79 Fed. Reg. 42,150 (July 18, 2014)."

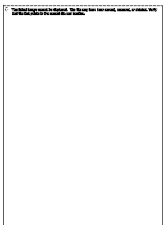
We believe the last reference, in particular, is key. I have attached this rule. As noted in the reference the key passage can be found on page 150, which is page 24 of the attachment. You will notice all grain fibers were approved with little to no analysis based on similarity to corn fiber.

Based on these precedents, we believe that the EPA could approve our sorghum oil pathway by letter, just as it did with the DGD and Duonix Beatrice pathways described above. If it still believes rulemaking is necessary, the 2014 RFS rule approving several grain kernel fibers provides an ideal blueprint for an efficient rule that approves sorghum oil based on its similarities to corn oil, soybean oil as well as other approved crop residue oils and includes the approval in a related rulemaking (i.e., renewable volume obligations). The EPA already has the information it needs for an efficient approval, and we ask that it acts on our petition in the same manner that it did in its past approvals.

Please do not hesitate to let me know if you have questions.

Thanks,

John



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