September 1, 2013

The Honorable Ed Whitfield
Chairman
Subcommittee on Energy and Power
Committee on Energy and Commerce
2125 Rayburn House Office Building
Washington, DC 20515

Dear Chairman Whitfield:

Thank you for the opportunity to appear before the Subcommittee on Energy and Power on Tuesday, July 23, 2013 to testify at the hearing entitled "Overview of the Renewable Fuels Standard: Stakeholder Perspectives." I look forward to continuing to work with you and your staff on this important policy.

Attached are my responses to the questions that have been asked for the hearing record.

Once again, thank you for including the Union of Concerned Scientists in both the Subcommittee hearing and the continuing policy conversations about the Renewable Fuel Standard.

Sincerely,

Jeremy Martin

Jeremy I. Martin, Ph.D., Senior Scientist

Clean Vehicles Program, Union of Concerned Scientists

cc: The Honorable Bobby L. Rush, Ranking Member, Subcommittee on Energy and Power

Attachment

The Honorable Henry A. Waxman

At the hearing, you testified that production of biomass-based diesel under the Renewable Fuels Standard (RFS) is leading to increased production of palm oil abroad. You further testified that production of palm oil is linked to severe deforestation, land degradation, habitat destruction, and increases in carbon pollution. Please elaborate on these issues. Specifically:

1. ***How does the RFS currently and/or how could the RFS in the future drive increased production of palm oil? Please respond to the argument made at the hearing by the National Biodiesel Board that palm oil is not a concern under the RFS because EPA has not approved palm oil as a renewable fuel under the law.***

   Much of the attention on the food versus fuel conflicts associated with the Renewable Fuel Standard (RFS) has rightly been focused on corn ethanol, but biodiesel also has significant impacts. These impacts are poised to grow substantially more severe depending upon key decisions that the U.S. Environmental Protection Agency (EPA) and Congress make about the RFS and other biofuels policies, particularly the biodiesel tax credit.

   Biodiesel is produced from a variety of fats and oils, and production has expanded rapidly over the past few years. When made from a true waste diverted from the waste stream, such as non-marketable used cooking oil, biodiesel is a low impact, low-carbon fuel. However, when demand for biodiesel production exceeds the availability of used cooking oil and other low impact sources of fats and oils, serious problems can arise.

   More than half of the biodiesel sold in the U.S. is produced from food grade vegetable oil, either soybean oil or canola oil. As Mr. Jobe from the Biodiesel Board correctly pointed out during the July 23rd Subcommittee hearing, there is not at this time a significant direct use of palm oil to produce biodiesel in the United States. In its "Notice of Data Availability (NODA) for Renewable Fuels Produced from Palm Oil Under the Renewable Fuel Standard (RFS2) Program" EPA's preliminary finding was that palm oil would not meet either the 50% GHG reduction requirement for advanced biofuel, or even the 20% reduction required for conventional biofuel[1]. It is worth noting that EPA has not made a final determination on this point at this time.

   However, while U.S. biodiesel is not produced directly from palm oil, that does not mean that the nation's use of soybean oil for biodiesel has no impact on palm oil demand. Oilseeds like soybeans and oil palm (and the vegetable oils and meal that come from processing oilseeds) are traded around the world in enormous quantities, and the markets for these oils are strongly linked. Because many different oils can be used for the same purpose (e.g., cooking and frying), they are

[1] Notice of Data Availability (NODA) for Renewable Fuels Produced from Palm Oil Under the Renewable Fuel Standard (RFS2) Program. EPA–HQ–OAR–2011–0542; FRL–9608–8 Federal Register/ Vol. 77, No. 18 / Friday, January 27, 2012 / Notices. Page 4300 Available online at http://www.gpo.gov/fdsys/pkg/FR-2012-01-27/pdf/2012-1784.pdf

mostly interchangeable, are essentially traded on one market, and the prices of all the vegetable oils tend to go up and down together.

The oilseed trade is highly globalized, with palm oil traveling in enormous tankers from Singapore to Rotterdam, soybeans being shipped hundreds of miles down the Mississippi or Amazon Rivers to China, and rapeseed oil going from Canada to southern Africa. This global trade can lead to complicated supply chains and difficulties in tracing products from farm to end user. Changes in the supply and price of one of its components are quickly transmitted through a global web to all the other parts.

To understand the impact of U.S. biodiesel use on palm oil it is important to note that as the use of vegetable oil based biodiesel has increased in the U.S., it has not been produced primarily by expanding production of U.S. vegetable oil. Rather the change has tracked quite closely with increased vegetable oil *imports*, and this is a trend that is expected to continue.[2]

Because production of the excess vegetable oil demanded by the RFS is coming from overseas, we must also look abroad for the impacts, and an examination of recent trends in vegetable oil trade make it clear that the dominant supplier of new vegetable oil on the global marketplace is palm oil.

Overall, the three most important producing countries in the global trade in oils are Indonesia (19 percent), Malaysia (about 13 percent), and China (13 percent). Other countries, such as the United States (6 percent of vegetable oil production), the European Union (10 percent), and Brazil (5 percent), are major producers but consume most of their vegetable oil internally, so they make up a smaller part of the total that is traded between countries. However, the United States and Brazil are the principal exporters of raw soybeans, so they too play a major role in the dynamics of the market, as many of the soybeans are converted to oil after import, and any decrease in exports of soybeans pushes up demand for other oils, especially palm.

In recent years, palm oil has tended to have a declining price relative to the others, while still following the same trends of price fluctuations. Between 1995 and 2006 its price dropped from being practically identical to that of rapeseed oil to about 30 percent lower. Palm is the largest source of vegetable oil, the fastest growing, and the least expensive, which makes it the “marginal” commodity in the market. Thus, as demand increases for vegetable oils, most of the increased supply comes from palm rather than the alternatives.

The EPA considered the impact of the RFS on oilseed markets in the analysis they did for the 2010 final rule for the RFS2, and concluded that based on the assumptions it used then, there was a limited impact of U.S. soybean oil biodiesel use on palm oil production, and in any case the net

[2] More information including references on the global trends and impacts of vegetables oils are presented on pages 15-20 of our comments to EPA’s Regulation of Fuels and Fuel Additives: 2013 Renewable Fuel Standards which is attached for inclusion in the hearing record, and is also available online at http://www.ucsusa.org/assets/documents/clean_vehicles/UCS-Comments-on-RFS-2013-Volumes.pdf

result of the global changes in agriculture were still consistent with allowing U.S. soybean oil based biodiesel to meet the 50% GHG reduction required for eligibility as an advanced biofuel under the RFS. However, two key factors have changed since the EPA concluded that analysis in 2010. First, the EPA and others have done a much more thorough study of the GHG impact of palm oil production since the 2010 rulemaking, so there is new information on palm oil trade and impacts that was not available in 2010.

But the most important change is that the EPA analysis in 2010 was based on an assumption a compliance scenario that is no longer plausible based on current information. EPA assumed that more than three quarters of the advanced biofuels mandated in the RFS would be cellulosic biofuels produced from biomass based feedstocks, and that only 1.82 billion gallons (BG) would come from bio-based diesel, of which only 660 BG would come from virgin vegetable oil (e.g. not previously used for cooking). However, in light of the slower than anticipated scale-up of cellulosic biofuel production, the potential exists for the RFS to result in much larger quantities of biodiesel use than the EPA evaluated in the 2010. The gap between the cellulosic levels in the EPA's 2010 compliance scenario and the 2013 mandate is 994 million gallons, and based on projections from the Energy Information Administration, this gap will probably grow to well over 10 BG in 2022. EPA has yet to clarify how it will address this shortfall, and until they do the prospect that biodiesel mandates grow very large is a substantial source of uncertainty and concern. More details on this topic are included in the attached comments the Union of Concerned Scientists (UCS) provided to EPA in their April rulemaking.

Mr. Jobe from the Biodiesel Board also mentioned that it is not necessary to worry about biodiesel mandates expanding beyond the available supply because of the EPA annual rulemaking process, which takes available supply into consideration. I agree that EPA has the authority it needs under the RFS to address the potential problems identified above. The one BG minimum statutory mandate for bio-based diesel specified by Congress is not unreasonable, so the problems identified above can be addressed by EPA under current authority. However, EPA has not yet clarified how they will make these decisions, and in particular whether the delayed commercialization will be allowed to result in far higher mandates for food based biofuels, and especially biodiesel, than what Congress originally contemplated when drafting the RFS.

One additional point of clarification on the process Mr. Jobe described for determining the biomass based diesel mandates and production levels is also important. There is more than one mandate that is relevant to the amount of biodiesel and renewable diesel demand induced by the RFS. While Mr. Jobe described the process to determine the process under which the biobased diesel mandate is set, it is likely that biodiesel use as an RFS compliance strategy will substantially exceed the biobased diesel mandate, and that biodiesel may be used to comply with a significant portion of the non-cellulosic advanced mandate or even potentially some of the overall renewable fuel mandate. Historically the relative prices of biodiesel and ethanol suggested that biodiesel was unlikely to substitute for ethanol in other mandates, but in light of infrastructure constraints that make it challenging to blend ethanol beyond E10, and also because of the tax credit for biodiesel, a

compliance strategy that relies more heavily on biodiesel to meet the non-cellulosic advanced and overall renewable fuel mandates is likely. Looking at 2013 mandate levels as an example, the biodiesel board provided EPA with data which they argued supported an expansion of the 2013 mandate from the 1.0 BG level in 2012, to 1.3 BG in 2013, and EPA finalized a 2013 mandate of 1.28 BG in their September 2012 final rule.[3] However, it is likely that biodiesel production will considerably exceed this level, driven by the demand not for biodiesel RINs, but by advanced and conventional RINs. This means that the additional indirect demand for palm oil may be induced by not only the specific biodiesel mandate level, but by the advanced and overall mandate levels as well, particularly if the EPA continues to expand the non-cellulosic advanced mandate to make up for the delayed cellulosic production as they have in 2012 and 2013. It should be noted in closing that EPA has indicated a willingness to show some flexibility in this regard in their 2014 volume proposal, and we look forward to providing them input on how best to proceed in a manner that minimizes the risk of indirectly expanding palm oil production at the expense of carbon emissions that significantly undermine the climate change benefits of the RFS.

2. What are the environmental impacts of palm oil production, and what implications do or could these impacts have on the intended climate change benefits of the RFS?

In the past two decades, two sources of vegetable oil – soy in the Amazon and palm oil in Southeast Asia – have expanded dramatically, and much of this growth has come at the expense of tropical forests. It is not just the scale of the expansion, but also the pace (with production of both nearly doubling in just a decade) that has put pressure on forests. With demand expected to increase, how production of these oils expand in coming years will be critical to whether tropical deforestation emissions can successfully be reduced.

Palm oil in Southeast Asia showed a large boom at the expense of tropical rain forests in the 1990s and 2000s. Malaysia was initially the industry leader, and at first much of its new palm oil area came from the conversion of declining rubber plantations. But Indonesia, with annual production growth rates of over 10 percent, has overtaken Malaysia in the past decade. Although estimates vary, the Indonesian government plans to establish as much as 18 million additional hectares of palm oil plantation (beyond the 7 million hectares existing in 2008) over the next decade.

Of particular concern from a climate perspective is expansion into peat forests, which are swamp forests common to Southeast Asia whose soils contain very large amounts of carbon. Only about 10 percent of the plantations in Indonesia and Malaysia established up to 2003 were on peat soils, but these were responsible for over a third of the carbon emissions from palm plantations. Furthermore, the drained peat soils will continue to emit carbon dioxide for many years into the future as the peat continues to decompose. Deforestation due to vegetable oil expansion is likely to

[3] 40 CFR Part 80 Regulation of Fuels and Fuel Additives: 2013 Biomass-Based Diesel Renewable Fuel Volume; Final Rule. EPA–HQ–OAR–2010–0133; FRL–9678–7 Federal Register / Vol. 77, No. 188 / Thursday September 27, 2012 / Available at http://www.gpo.gov/fdsys/pkg/FR-2012-09-27/pdf/2012-23344.pdf

continue until governments and businesses make commitments to stop clearing forests and to making their products deforestation-free.

There is considerably more information in this topic in the UCS recent report, *Recipes for Success: Solutions for Deforestation-Free Vegetable Oils,*[4] which is attached for inclusion in the hearing record.

3. What measures do you recommend, either legislatively or administratively, to ensure that the RFS does not lead to increased palm oil production and to the adverse environmental impacts associated with this production? Should there be a limit on the volume of biomass based diesel allowed or required under the RFS? Are there types of biomass-based diesel that do not drive palm oil production?

The EPA has sufficient authority under the existing law to address the challenges described above. Legislative changes to the RFS are neither necessary nor desirable at this time. The administrative actions EPA can take to address these concerns are described briefly below and in more detail in the comments UCS submitted to EPA for the 2013 rulemaking, which are attached.[5]

- EPA should finalize the palm oil rulemaking and clarify that a thorough analysis of the most accurate science confirms that palm oil based biodiesel or renewable diesel does not qualify as an advanced or conventional biofuel under the RFS.
- EPA should not allow the non-cellulosic advanced biofuel mandates to exceed 5 billion gallons, and should adjust the overall and advanced targets in parallel with the adjustments in the cellulosic biofuel mandates.
- Prior to any decision to expand mandates for biodiesel or non-cellulosic advanced biofuels beyond the levels evaluated in 2010, EPA should evaluate how doing so would impact the climate benefits of the policy. Because it is not practical to undertake this analysis as part of the annual volume determination, EPA should conduct a significant rulemaking as soon as possible to consider how best to implement the policy in the 2016 to 2022 timeframe in light of the delayed scale up of cellulosic biofuel. This rulemaking should include an analysis of the impacts on global agricultural markets, trade, deforestation and global warming emissions, and should finalize a concrete basis for the annual volume determinations that would ensure that mandates do not increase when market circumstance suggest that volume increases would be counterproductive to the goals of the policy.
- As part of the rulemaking described above, EPA should update the compliance scenario that was issued in the 2010 final rule in light of the most current information on the speed of commercialization of the cellulosic biofuels industry, an updated assessment of the implications for global trade and indirect land use change, and the constraints in the vehicle

[4] Union of Concerned Scientists (UCS). 2012d. Recipes for Success: Solutions for deforestation-free vegetable oils. Online at *http://www.ucsusa.org/assets/documents/global_warming/Recipes-for-Success.pdf*.
[5] The comments can also be viewed online at: http://www.ucsusa.org/assets/documents/clean_vehicles/UCS-Comments-on-RFS-2013-Volumes.pdf

and fueling infrastructure. This revised forecast should balance realism about what timeframes are practical and desirable with the speedy realization of the goals of the RFS. It is UCS's position that a revised and realistic compliance scenario would reflect that the 36 billion gallon target will not be met in 2022, and may be closer to 2030. And while this is a disappointment, a more realistic scenario will be more useful and provide enhanced certainty to all the market participants which will facilitate the investments that will make the goals of RFS possible. A realistic RFS compliance scenario is also important in other contexts, providing better information to other EPA rulemakings that rely on projected biofuel use over the next decade (like the vehicle GHG standards), and allowing market forecasters greater clarity on what to expect from the RFS over the coming decade.

4. What other legislative or administrative measures do you recommend to maximize the RFS's climate change benefits?

To realize the climate change potential of the RFS two major goals have to be accomplished; accelerating the commercialization of low carbon cellulosic biofuels, and reducing the rate of expansion of food based biofuels. Congress and the Administration have many avenues to support these goals, including changes to the tax code -- extending and enhancing support for investment in cellulosic biofuel commercialization while allowing the biodiesel tax credit to expire, as well as introducing performance-based tax credits that build on the framework of the RFS and provide all biofuel producers an incentive to reduce emissions -- and changes to agricultural and energy policy that support development of cellulosic feedstocks, conversion technologies, and develop the required supply chain and logistics. Congress should also recognize that the RFS is a complex and time consuming policy to administer, so EPA needs adequate funding to execute the required actions in a timely fashion, and other agencies like USDA and DOE need the resources to provide EPA the support it needs.

Thank you for providing me with the opportunity to provide more information about the potential impact of the RFS on palm oil production and deforestation. I look forward to continuing to work with all the members of the Subcommittee on this important policy.