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February 13, 2015

By certified mail
Administrator Gina McCarthy
U.S. Environmental Protection Agency
Washington, D.C. 20460

Re: Notice Pursuant to 40 C.F.R. Part 54 Prior to Filing of Civil Action under 42 U.S.C. § 7604(a)(2) for Failure to Take Nondiscretionary Actions

Dear Administrator McCarthy:

I write on behalf of Plant Oil Powered Diesel Fuel Systems, Inc. ("POP Diesel"), a Delaware corporation with offices in California, New Mexico, and Virginia. I write to give you notice pursuant to 40 C.F.R. Part 54, prior to the institution of a citizen's civil action under 42 U.S.C. § 7604(a)(2), of the failure of the U.S. Environmental Protection Agency ("EPA") to fulfill nondiscretionary duties and take nondiscretionary actions to regulate nitrous oxides emissions from biofuels, additives comprised of biofuels, and the biofuel-derived blendstocks of petroleum-based fuels run in compression ignition (diesel) engines of all kinds.

## 1. Introduction

These biofuels may run at 99 or 100 percent concentration in an auxiliary fuel system of the type with which EPA has given POP Diesel and Optimus Technologies of Pittsburgh approval to retrofit certain outside useful life and other diesel engines. More commonly, these biofuels may run as a blendstock with petroleum diesel or at as high as 100 percent concentration in satisfaction of the requisite properties stated in ASTM International Standard Specification D-975 ("ASTM D-975") for diesel fuel or in satisfaction of comparable ASTM fuel standards or EPA regulations governing fuel oil burners, non-aviation gas turbines, nonroad engines, locomotives, marine engines, aviation applications (although these may be under the regulatory jurisdiction of the Federal Aviation Administration), and the like.

The Petroleum Products Committee of ASTM ("the Petroleum Products Committee") adopts "fuel quality" standards that most states automatically incorporate by reference into state law. Therefore, whatever this Petroleum Products Committee approves becomes the law governing permissible "fuel quality" and sellable in most states. See, e.g., ASTM listing of states that incorporate by reference ASTM D-975 (Exhibit 1).

## 2. Your Complainant

POP Diesel was the first to win EPA approval to retrofit select diesel engines with a clean alternative fuel conversion system to operate on 100 percent plant hydrocarbon oil, in POP Diesel's case, oil from the fruit seeds of the tropical jatropha tree, run at 100 percent concentration in select diesel engines equipped with POP Diesel's patented auxiliary fuel system. The common, generic name for this kind of fuel is "straight vegetable oil." Jatropha fruit oil is inedible to humans and therefore, its use as biofuel feedstock does not compete with the demand for food. Of more relevance to this letter, POP Diesel has reasonably demonstrated and pledged to EPA, as part of POP Diesel's outside-useful-life notification of its emissions testing of its auxiliary fuel system, that jatropha plant oil, run through POP Diesel-equipped diesel engines, will consistently produce nitrous oxides emissions that are no worse than those generated by petroleum diesel. I discuss the technical aspects of different biofuel feedstocks' generation of nitrous oxides emissions in greater detail in Section 5 of this letter below.

## 3. ASTM's Petroleum Products Committee

Of necessity, POP Diesel has been an active member of the Petroleum Products Committee since 2010. The Petroleum Products Committee has in the last few years added a definition of "hydrocarbon oil" to ASTM D-975 that, with specific express exclusions, brings within ASTM D-975 any feedstock, no matter the source, satisfying its Table 1 requirements. Biofuels or non-fossil, biological feedstocks may now be blended with petroleum diesel in satisfaction of these requirements in any concentration. Since EPA regulations set forth below define "motor vehicle diesel fuel" with reference to commercially-sold No. 1 and No. 2 diesel fuel, monikers that come from ASTM D-975, this additional definition of "hydrocarbon oil" adopted by the Petroleum Products Committee has the effect of bringing onto the market, with EPA's *ante facto*, regulatory approval, biofuel and petroleum blends for use in diesel engines for which EPA has not fulfilled its requisite duty to monitor and regulate the nitrous oxides emissions, as explained below.

Similarly, the Petroleum Products Committee's adoption of this same or a nearly identical definition of "hydrocarbon oil" governing its Standard Specification D-396 for fuel oil burners and its Standard Specification D-2880 for Non-Aviation Gas Turbines; its attempt, so far incomplete, to adopt this definition to govern aviation fuel; and its universal adoption of this definition across all of its body of work bring to bear for EPA the same legal issues and liability

under 42 U.S.C. § 7604(a)(2) as your Agency faces with regards to fuel applications covered solely by ASTM D-975. For your information, ASTM D-975 and other ASTM fuel standards that are referenced in federal or state law are available online at the following web address: www.astm.org/READINGLIBRARY/ . Upon reaching this website, it is necessary for the viewer to log into ASTM's reading library to gain access to these ASTM standards.

The Petroleum Products Committee adopted these definitions of "hydrocarbon oil" without publishing to voting members any evidence of what might be unintended effects of incorporating wholly new blendstocks into fuel quality standards designed for petroleum fuels. I note that POP Diesel, as a member of the Petroleum Products Committee, opposed this Committee's adoption of these definitions of "hydrocarbon oil" because they expressly exclude "triglycerides," which is the name by which the Petroleum Products Committee calls EPA-approved POP Diesel Fuel made of 100 percent plant hydrocarbon oil. (There is no scientific reason to exclude vegetable oils from the definition of "hydrocarbon oil," as the very reason that vegetable oils combust and make good fuels is their hydrocarbon molecular structure. Vegetable oils are referred to as "hydrocarbon oils" in several scientific papers published by the Society of Automotive Engineers.). POP Diesel and several other small companies opposed the Petroleum Products Committee's adoption of this exclusive definition as an unreasonable restraint on trade in violation of federal and state antitrust law.

Please note further that because EPA Standards Executive Mary C. McKiel ("Ms. McKiel") served as the Chair of ASTM's Board of Directors during the key period in question, over POP Diesel's written objection to EPA Administrator Lisa Jackson by letter dated June 4, 2012, which letter is posted on POP Diesel's website at the following address www.popdiesel.com/pdf/lettertoEPAAdministratorASTMBoard.pdf, I believe that Ms. McKiel has a conflict of interest that prevents her from giving you impartial and objective advice on the subject matter of this letter.

To be clear, while POP Diesel participated actively and in good faith for three years in the Petroleum Products Committee beginning in 2010, this Committee made it clear that it did not respect or want POP Diesel's input on inclusive and transparent standard-writing governing plant oil fuel. POP Diesel believes that the Petroleum Products Committee is ill-suited and opposed to developing honest and fact-based fuel quality standards governing plant oil fuel. At this stage, POP Diesel only participates in the Petroleum Products Committee to the extent it has to to monitor activity within the broader fuel industry and raise objections internal to the ASTM organization, when they arise, though these objections are invariably voted down and futile. POP Diesel does not believe that the Petroleum Products Committee is capable of developing fuel quality standards for plant oil fuels that are honest, backed by sound evidence, and address the emissions issues raised in this letter, unless EPA first promulgates the necessary regulations.

## 4. Historical Background

The genesis of EPA's failure and present need to take necessary nondiscretionary action arose due to changes in the fuel industry over the last 25 years. ASTM developed ASTM D-975 and the identifying traits listed in its Table 1 since the 1940's with only middle distillate petroleum fuels in mind. The advent of biodiesel fuel, which starts as plant hydrocarbon oil but undergoes a complicated and energy-intensive transformation of the triglyceride molecule into fatty acid methyl esters, meant that diesel engines could run with material modification only to the seals on fuel derived from plant hydrocarbon oil. The Petroleum Products Committee first approved neat biodiesel as a blend-stock in ASTM Standard Specification D-6751 ("ASTM D-6751"). The Petroleum Products Committee then approved by amendment to ASTM D-975 the blending of 5 percent biodiesel meeting ASTM D-6751 in subordination to 95 percent petroleum diesel fuel for use in the single tank of a compression ignition (diesel) engine.

There are two main feedstocks used to manufacture biodiesel in the United States: domestically-grown soy oil and waste vegetable oil ("WVO") collected from restaurants and rendering firms. According to the National Renewable Energy Laboratory ("NREL"), a part of the U.S. Department of Energy, and according to an independent jatropha literature review prepared for EPA, turning either of these feedstocks into biodiesel doubles the amount of energy invested or embedded in the fuel from its earlier feedstock state. Thus, the energy cost to POP Diesel of manufacturing its fuel is roughly half of the cost to take the same plant oil and turn it into biodiesel. Furthermore, POP Diesel's use of plant oil as fuel in POP Diesel-equipped engines at 100 percent concentration, versus merely 5 percent biodiesel allowed by ASTM D-975, gives these products both a big price and a big environmental advantage over competing petroleum and biodiesel fuels, considering the big net life cycle carbon emissions reductions POP Diesel's products offer the market.

Seemingly as a result of the fact that raw vegetable oil used as a fuel can vastly undercut the price of biodiesel, since 2006, various elements within the Petroleum Products Committee have attempted to restrict the use of ordinary plant oil as fuel by adopting unjustified restrictions on it into ASTM standards. (I include in this rubric of "plant oil" animal fats, which are similar in composition to plant oils, though from an animal, rather than a plant, source.). I will not go into detail on this history, or POP Diesel's efforts to combat it, except with regards to the current state of affairs.

The latest effort along these lines is the Petroleum Products Committee's adoption of the definition of "hydrocarbon oil" expressly excluding "triglycerides," which definition also *de facto* changes ASTM D-975 from a standard governing middle distillate petroleum diesel fuel to a standard that is open to any kind of feedstock, no matter its source, so long as the final, blended

fuel satisfies the characteristics set forth in Table 1. The Petroleum Products Committee's parallel inclusion of the definition of "hydrocarbon oil" in its other flagship standards for fuel oil burners ("ASTM D-396"), non-aviation gas turbines ("ASTM D-2880"), and other applications similarly opens the back door to fuels made from biological feedstock for these various applications, provided the end blend satisfies the requisite characteristics set forth in those other standards.

Although the current version of ASTM D-975 permits biodiesel satisfying ASTM D-6751 to be a blend component in as much as a 5 percent concentration, the Petroleum Products Committee's addition of the definition of "hydrocarbon oil" described above permits other forms of biofuel, such as hydro-treated plant oil or renewable or green diesel not satisfying ASTM D-6751, to form as much as a 100 percent component of diesel fuel, provided the final fuel meets the characteristics of Table 1 of ASTM D-975. The same is true of ASTM D-396 and ASTM D-2880.

The Petroleum Products Committee does not concern itself with emissions. Therefore, Table 1 of ASTM D-975, like the fuel characteristic tables in ASTM D-396 and ASTM D-2880, do not include any measurements of any test methods that could or do predict nitrous oxides emissions. Nor do they include measurement of or limits on phosphorous, which fouls and disables emissions after-treatment catalytic converters that are found on all diesel engines manufactured today to ensure compliance with nitrous oxides emissions standards. However, when EPA adopts emissions regulations that affect fuel content, the Petroleum Products Committee seems to comply. For instance, when EPA adopted regulations imposing limits on the amount of sulfur in fuels, in part to protect catalytic converters from sulfur's disabling effect, the Petroleum Products Committee incorporated these limits into ASTM D-975 and corresponding ASTM standards for other applications.

EPA presently requires reporting of sulfur levels and compliance with sulfur limits in fuels and fuel additives that it has designated for registration with the Agency. See, e.g., EPA Form 3520-12, Fuel Manufacturer Notification for Motor Vehicle Fuel. It requires batch testing and sample and record retention for sulfur levels in fuels. See, e.g., 40 C.F.R. § 80.581 (requiring batch testing and sample retention for motor vehicle diesel fuel, nonroad locomotive and marine fuel, and Emissions Control Area ("ECA") marine fuel). However, EPA does not impose limits or require testing, reporting or sample retention with regards to first, the iodine value of a biofuel or additive comprised of non-fossil, biological feedstock, and second, their phosphorous content. I discuss the significance of these omissions, which constitute EPA's failures to take nondiscretionary action, in the next section, before setting forth a fuller explanation of EPA's lapses in carrying out its relevant nondiscretionary duties under the Clean Air Act in the section following the next section.

## 5. Technical Issues

### a. Nitrous Oxide Emissions from Plant Oil Biofuels

The National Renewable Energy Laboratory determined that the particular molecular structure of a plant oil feedstock determines the resulting fuel's nitrous oxides emissions, as compared to the petroleum diesel baseline. NREL, Effects of Biodiesel on Pollutant Emissions, Slideshow dated Sept. 9, 2004, slides 6 - 13 (Exhibit 2, "NREL Slideshow") (Please note that generalizations about the nitrous oxides environmental impact of using biodiesel stated in this Slideshow are a function of the biodiesel feedstocks tested, which, drawn from the American market, would mostly likely have been soy and WVO, the significance of which is discussed below). Specifically, as explained in the NREL Slideshow (Exhibit 2), the percentage of double bonds between the hydrogen and carbon atoms, the degree to which the molecule is "saturated," tends to determine whether the plant oil, when turned into biodiesel, will tend to produce more or less nitrous oxides emissions than petroleum diesel fuel.

As set forth in slides 6 through 14 of the NREL Slideshow enclosed as Exhibit 2, iodine value is a measurement of the reaction of iodine with the plant oil that corresponds with the percentage of double hydrogen-carbon bonds in it. Thus, the iodine value of a sample of plant oil predicts the degree to which the plant oil will produce nitrous oxides emissions that are greater or lesser than the emissions resulting from baseline petroleum diesel. NREL determined that the tipping point for iodine value is 95. NREL Slideshow, slide 13 (Exhibit 2). An iodine value that is higher than 95 means that the plant oil, when turned into and combusted as biodiesel, will produce a higher rate of nitrous oxides emissions than petroleum diesel. An iodine value that is lower than 95 means that the plant oil will produce a lower rate of nitrous oxide emissions than petroleum diesel.

As depicted in slides 9 and 10 of the enclosed NREL Slideshow (Exhibit 2), particular plant oil feedstocks are identifiable by the particular profile of their component fatty acids, the profile being the number of hydrogen and carbon atoms that form particular fatty acid strands and the relative proportion of these fatty acid strands comprising the plant oil molecule whole. The construction of the fatty acid strands, whether they have many or few double hydrogen-carbon bonds, determines iodine value and thus, the relative level of nitrous oxides emissions, as compared to petroleum diesel.

POP Diesel's own emissions testing, in which it ran different kinds of plant oils at 100 percent concentration through a diesel engine equipped with POP Diesel's auxiliary fuel system, confirmed NREL's conclusions. For instance, as depicted in NREL Slideshow slide 13 (Exhibit 2), the iodine value of soy is greater than 120, which is higher than the tipping point identified by

NREL of an iodine value of 95. Therefore, soy biodiesel produces nitrous oxide emissions that are higher than the mean for petroleum diesel fuel used to EPA certify engines. POP Diesel found that this result also held true for soy oil used as fuel in its natural, untransesterified state: higher nitrous oxides emissions than petroleum diesel. The iodine value would also predict relative nitrous oxides emissions results if the plant oil feedstock were processed in some other way than by manufacturing it into biodiesel satisfying ASTM D-6751, such as if the plant oil were hydro-treated or otherwise turned into renewable or green diesel that does not fit under ASTM D-6751.

Similarly, considering the kinds of virgin vegetable oils that typically comprise waste vegetable oil, nearly all of them have iodine values greater than 95. See Declaration of Marcus Romano (Exhibit 3) (cooking oils used in the fast food restaurants consuming the most vegetable oils in the restaurant industry are soy, canola (rapeseed), cottonseed, sunflower, corn, palm, and peanut); American Oil Chemists Society, Physical and Chemical Characteristics of Oils, Fats and Waxes (David Firestone, Ed., 2006) (excerpt) (Exhibit 4) ("AOCS") (of the cooking oils used in the foregoing restaurants, only palm and sunflower oils have an iodine value that is consistently below 95). Unless a sample of WVO from a particular restaurant or rendering source is isolated, and the restaurant used only one kind of vegetable oil, it is impossible to know or ascertain the plant oil origins of a collection of WVO. Declaration of Claude D. Convisser (Exhibit 5).

Typically, the commercial pumping and rendering industries mix WVO from one restaurant or source with WVO from others. Therefore, the final blend used as a fuel feedstock has a mixture of unknown plant oil origins. Declaration of Claude D. Convisser (Exhibit 5). Due to the irregular and inconsistent composition of WVO, but the likelihood that it comes from plant oil sources with an iodine value exceeding 95, it must be assumed, therefore, that any sample of WVO, burned as fuel in its ordinary state or turned into biodiesel, hydrotreated fuel, or renewable or green diesel, will produce nitrous oxides emissions levels higher than baseline petroleum diesel. Some samples of WVO, depending on their unknown source plant oils, will have very high iodine values, producing very excessive nitrous oxide emissions.

The newly added definition of "hydrocarbon oil" to ASTM D-975 and other ASTM standards and universal ASTM definitions transposes the opaqueness of WVO's iodine value onto all fuels meeting the Table 1 requirements of ASTM D-975 and the corresponding other ASTM standards (e.g., ASTM D-396 and ASTM D-2880). Since these ASTM standards do not themselves require the reporting of or impose any limitation on iodine value, nor does ASTM D-6751 of biodiesel, plant oil-derived feedstocks with high iodine values could be used to fabricate commercial fuels compliant with these ASTM standards, but not compliant with EPA emissions standards for the various applications involved, be they compression ignition motor vehicle

engines, fuel oil burners, non-aviation gas turbine engines, nonroad engines, locomotive engines, marine engines, or aviation turbine engines.

Just as ASTM D-975, ASTM D-6751 and other ASTM fuel standards and definitions do not require the reporting of or impose limits on iodine value, so also do they not require the reporting of or limit the plant oil source of biofuel, in terms of its fatty acid profile, which might be used to deduce iodine value. Indeed, given the plant oil feedstocks presently comprising the lion's share of the diesel biofuel feedstock in the United States, soy oil and WVO, it is certain that the concealment by ASTM D-975 and its parallel ASTM standards and definitions of the plant oil feedstock origins of the end fuels subject to these standards is hiding the introduction of nitrous oxide emissions non-compliant fuels to the market.

**b. <u>Phosphorous</u>**

Phosphorous in fuel disables a catalytic converter in the same way that sulfur does, thereby leading to uncontrolled nitrous oxides emissions. Phosphorous is present as a trace element in many kinds of plant oils and to a greater degree, in WVO. ASTM fuel standards, including ASTM D-975 and ASTM D-6751, do not require the reporting of or impose a limitation on the phosphorous level of fuels. In the absence of any EPA regulation of phosphorous levels in the biofuel component of diesel engine fuel, biofuels are coming onto the market that contain phosphorous in levels greater than 15 parts per million that damage and render inoperative catalytic converter emissions after-treatment equipment.

**c. <u>Injection Timing Adjustment</u>**

As is stated in NREL Slideshow slide 14 (Exhibit 2), a strategy for mitigating nitrous oxide emissions from biofuel operating compression ignition (diesel) engines is to retard fuel injection timing. POP Diesel experimented with this idea in several emissions laboratories and found that it successfully reduced nitrous oxides emissions on any particular sample of 100 percent plant oil fuel, at the expense of higher particulate emissions and greater fuel consumption using the same plant oil fuel without the injection timing adjustment. In fact, POP Diesel has a patent pending on several versions of technology that can accomplish such injection timing adjustments.

POP Diesel found in its emissions laboratory testing that it is possible using *any* sample of biofuel to make injection timing adjustments to produce nitrous oxides emissions that are no worse than when the same POP Diesel-equipped diesel engine, without the injection timing adjustments, is running on baseline petroleum diesel fuel. However, success at this venture does not give any indication of how nitrous oxide emissions from the same specially equipped diesel

engine will fare when the engine starts operating on the wide range of iodine value-biofuels on the market, which iodine values are completely obscured by EPA and ASTM's failures to impose limits by iodine value or retain records of plant oil feedstock origins or samples of batch testing. Indeed, the evidence of soy oil's high iodine value, the high iodine values of most WVO, and the unpredictable iodine value-variability of WVO feedstock and biodiesel-origin feedstock demonstrate that no retardation of the injection timing is capable of mitigating nitrous oxides emissions from biofuels on the market run through specially equipped diesel engines, such as those equipped by POP Diesel or Optimus Technologies, unless either the iodine value or the plant oil origins of the biofuel feedstock is known and EPA requires it to be consistent.

Optimus Technologies employed POP Diesel's idea of adjusting the injection timing to generate emissions results for EPA showing compliance of its auxiliary fuel system with EPA's nitrous oxide regulations running 100 percent "biofuel" samples through select outside useful life engines. POP Diesel knows that Optimus Technologies employed this idea for a fact to secure EPA approval because of communications Optimus Technologies had with POP Diesel, and for other reasons.

It would have been possible for Optimus Technologies to purposefully select 100 percent biofuel emissions testing samples that had low iodine values, which would have aided it in generating favorable nitrous oxides emissions results. It would have had to have specially calibrated the injection timing retardation to fit each different sample of biofuel, to pass the nitrous oxide emissions tests.

Unless Optimus Technologies or its customers' fuel supplier informed EPA of different categories of biofuel that its retrofit customers would use, and if, instead, it intended that its customers would use generic "biofuel" not traceable to any particular kind of plant oil origins, then whatever injection timing adjustments Optimus Technologies made to pass the nitrous oxides part of emissions testing using particular samples of "biofuel" would not produce nitrous oxides-compliant emissions in the real world, due to the tremendous variability in iodine values that biodiesel and WVO have in the fuel and feedstock marketplace, according to the particular origins of their plant oil feedstocks and feedstock blends, and due to the likelihood that most "biofuels" sold on the market have iodine values higher than 95.

In other words, an injection timing adjustment made to pass nitrous oxide emissions testing on a particular sample of "biofuel" would not produce regulatory compliant nitrous oxide emissions in the real world, unless EPA also conditioned its approval of the Optimus Technology equipment on use of a particular kind of "biofuel" having an iodine value in a prescribed range corresponding to the increment of the specific injection timing adjustment. Best of all would be EPA's limiting its approval only to "biofuel" having an iodine value of less than 95, which

would give assurance that nitrous oxide emissions would not be any higher than when the same engine ran on petroleum diesel.

For the very reason of assuring consistent nitrous oxides emissions compliance, POP Diesel agreed to limit EPA approval to running only 100% jatropha plant oil through the clean alternative fuel conversion systems it installs and sells. Exhibit 6 states the iodine value of jatropha plant oil. Intertek Laboratory Results (Exhibit 6) (**Confidential Business Information**). (POP Diesel has learned that the iodine value reported by AOCS for jatropha is incorrect.). EPA would rightly consider the furnishing of any non-emissions compliant fuel to these retrofit-equipped engines, any fuel other than the jatropha plant oil on which EPA's approval of POP Diesel's after-market equipment, to be tampering with or defeating emissions after-treatment equipment in violation of 42 U.S.C. § 7522(a)(3)(A) or (B). See also email message from Steve DeBord, EPA, to Claude D. Convisser, dated Sept. 3, 2013 (Exhibit 7) (stating EPA restriction on fuel approved in conjunction with POP Diesel's then-application for outside-useful-life clean alternative fuel conversion notification).

Optimus Technologies apparently promised EPA some sort of fuel quality standard as a condition of its receiving EPA's approval for its own outside useful life notification. See excerpt from Optimus Technologies submission to EPA (Exhibit 8) (referring to "first ever industry fuel standard" for its "biofuel" posted to its website). However, EPA has failed to produce the specifics of such a fuel quality standard to POP Diesel in response to POP Diesel's FOIA request, which request is now on appeal with a FOIA specialist in EPA's Office of General Counsel. Optimus Technologies, despite its apparent proffer to EPA stated in Exhibit 8, has not posted any such fuel quality standard on its website. In the absence of proof to the contrary, which POP Diesel has attempted diligently to procure from EPA, I assume that EPA has not compelled Optimus Technologies to disclose both the iodine value and the phosphorous level of the "biofuel" that will run through its EPA-approved retrofit kit.

This failure on EPA's part constitutes a failure to carry out a nondiscretionary action, according to the statutory sections set forth in the next section of this letter. Thereby, EPA appears to be knowingly permitting Optimus Technologies to tamper with after-treatment emissions equipment, or if its converted engines do not have any emissions after-treatment equipment installed on them, to put onto the market and burn 100% "biofuel" that produces worse nitrous oxide emissions than petroleum diesel does, which would also be a breach of EPA's statutory duty set forth below.

## 6. EPA's Failures to Take Nondiscretionary Action Prescribed by Statute

EPA has failed to perform the following non-discretionary duties and acts under the Clean Air Act, Chapter 85 of Title 42 of the United States Code, 42 U.S.C. §§ 7401, et seq.

### a. Requiring Iodine Value of 95 or Lower and Phosphorous Level of No More than 15 Parts Per Million in the Biofuel Components of Fuels and Additives EPA Has Designated for Registration

As you know, in the United States, most medium- and heavy-duty engines are compression ignition (diesel) engines because these engines, as compared to spark-ignition or gasoline engines, have better torque needed to perform more demanding work. Compression ignition engines also have better fuel efficiency (the measure of energy consumed per unit of work performed) and require less maintenance than spark ignition engines. These are engines fitting mid-sized pick-up trucks and bigger passenger and commercial vehicles and trucks, as well as engines used in nonroad, stationary, locomotive and marine applications.

Pursuant to 42 U.S.C. § 7545(a), as stated above, EPA has designated the following as "motor vehicle diesel fuel" requiring registration with EPA:

> (a) The following fuels commonly or commercially known or sold as motor vehicle diesel fuel are hereby individually designated:
> (1) Motor vehicle diesel fuel, grade 1-D;
> (2) Motor vehicle diesel fuel, grade 2-D.

40 C.F.R. § 79.33 (excerpt). Similarly, in EPA's regulation of fuels and fuel additives designated for registration with it, EPA has defined "diesel fuel" to be "any fuel sold ... for use in diesel engines, and that is –"

> (1) A distillate fuel commonly or commercially known or sold as No. 1 diesel fuel or No. 2 diesel fuel;
> (2) A non-distillate fuel other than residual fuel with comparable physical and chemical properties (*e.g.*, biodiesel fuel); or
> (3) A mixture of fuels meeting the criteria of paragraphs (1) and (2) of this definition.

40 C.F.R. § 80.2(x).

The diesel fuels that fit the above definitions of "motor vehicle diesel fuel" are the fuels that satisfy the definitions of No. 1 and No. 2 diesel fuel stated in ASTM D-975 or that satisfy either of the grades No. 1-B or No. 2-B stated in ASTM D-6751 for neat biodiesel. In other words, EPA requires fuels meeting ASTM D-975 or ASTM D-6751 to be registered with EPA and to meet all the requirements of fuels that are so registered. EPA did, in fact, require "[a]ll designated diesel fuels [to] be registered within 12 months after promulgation of" the above definition of "motor vehicle diesel fuel." 40 C.F.R. § 79.33(b).

The section of the Code of Federal Regulations defining "motor vehicle diesel fuel" subject to registration with EPA, 40 C.F.R. § 79.33, goes on in its subsections (c) and (d) to require reporting of various other characteristics of "motor vehicle diesel fuel" and fuel additive, including its sulfur content. However, to the extent that the feedstock used to make the fuel is non-fossil fuel biological matter, EPA does not require reporting of the fuel's iodine value or its phosphorous content.

Pursuant to 42 U.S.C. § 7545(b)(2), upon registering any fuel or fuel additive, EPA:

> shall, on a regular basis, require the manufacturer of any fuel or fuel additive – (A) to conduct tests to determine [] environmental effects of the fuel or additive[] and (B) to furnish ... such [] information as is reasonable and necessary to determine the emissions resulting from the use of the fuel or additive contained in such fuel, the effect of such fuel or additive on the emissions control performance of any vehicle, vehicle engine, nonroad engine or nonroad vehicle, or the extent to which such emissions affect the public health or welfare.

42 U.S.C. § 7545(b)(2) (emphasis added).

EPA has failed to fulfill the above nondiscretionary, statutory duty of requiring that biofuels and biofuel additives, including biodiesel, that are registered with it have iodine values below 95 and phosphorous levels below 15 parts per million. This data reporting is missing from EPA Form 3520-12, Fuel Manufacturer Notification for Motor Vehicle Fuel. As stated in the next section, EPA has also failed to carry out its nondiscretionary duty to require batch testing of these properties and sample and record retention with regards to motor vehicle, nonroad, locomotive, or marine diesel fuel and ECA marine fuel.

**b. Requiring Iodine Value of 95 or Lower and Phosphorous Level of No More than 15 Parts Per Million in the Biofuel Components of Fuels and Additives That EPA Regulates**

EPA regulates fuels that it has designated for registration, as well as fuels that it has not so designated. Its regulation of fuels and fuel additives is set forth in Part 80 of Title 40 of the Code of Federal Regulations.

With regards to fuels that it has designated for registration, the Clean Air Act authorizes EPA to:

> by regulation, control or prohibit the manufacture, introduction into commerce, offering for sale, or sale of any fuel or fuel additive for use in a motor vehicle, motor vehicle engine, or nonroad engine or nonroad vehicle if, in the judgment of [EPA], any fuel or fuel additive or any emission product of such fuel or fuel additive causes, or contributes to, air pollution [] that may reasonably be anticipated to endanger the public health or welfare.

42 U.S.C. § 7545(c)(1). EPA long ago determined that nitrous oxides emissions "may reasonably be anticipated to endanger public health or welfare." Id.

Although 42 U.S.C. § 7545(c)(1) states an authorization and not a duty, a duty to regulate for emissions that EPA has determined endanger public health or welfare arises in the circumstances described in this letter when other provisions of the Clean Air Act governing combustion emissions come into consideration.

For instance, with regards to new motor vehicles and new motor vehicle engines, EPA is required to adopt:

> standards applicable to the emission of any air pollutant from any class or classes of new motor vehicles or new motor vehicle engines, which in [EPA's] judgment, cause, or contribute to, air pollution which may reasonably be anticipated to endanger public health or welfare. Such standards shall be applicable to such vehicles and engines for their useful life.

42 U.S.C. § 7521(a)(1) (excerpt). With regards to oxides of nitrogen, these motor vehicle standards are required to "reflect the greatest degree of emission reduction achievable through the

application of technology, which [EPA] determines will be available for the model year to which such standards apply." 42 U.S.C. § 7521(a)(3)(A)(I).

EPA has the same statutory duty with regards to adopting emissions standards for "heavy duty vehicles and or engines and from other [mobile] sources," except that in that statutory section, nitrous oxide emissions are set at a maximum, specific level. 42 U.S.C. § 7521(a)(3)(B)(i) and (ii). Title 42 United States Code, Section 7547, subsections (a)(1) to (a)(3) impose on EPA a similar duty to adopt emissions standards, and standards applying specifically with regards to nitrous oxides, covering nonroad engines and vehicles.

As a result, EPA has adopted standards governing NOx emissions from new and existing vehicles and new and existing vehicle engines, as well as from nonroad engines, locomotive engines, marine engines, motorcycles, and other platforms. See, e.g., 40 C.F.R., Part 80 (Regulation of Fuels and Fuel Additives). The contemporary models of most, if not all, of these kinds of engines have on them specialized emissions after-treatment equipment that must necessarily remain in operating condition for the engines to function as intended to meet nitrous oxides emissions standards.

EPA adopted specific regulations of emissions, including nitrous oxides, over the "useful life" of a motor vehicle or engine, as stated in 42 U.S.C. § 7521(a)(1) block-quoted above, to govern "clean alternative fuel conversion systems" that retrofit existing engines. See 40 C.F.R. Part 85. 42 U.S.C. § 7587 also requires conversions of clean alternative fuel vehicles to satisfy emissions regulations adopted by EPA. Retrofit kits that do not satisfy the emissions regulations set forth in 40 C.F.R. Part 85 do not meet with EPA's approval and subject the manufacturer and installer to EPA enforcement actions for tampering with or defeating after-treatment equipment in breach of 42 U.S.C. § 7522(a)(3)(A) or (B). See email message from Steve DeBord to Claude D. Convisser dated Aug. 5, 2014 (Exhibit 9).

EPA's nondiscretionary duty to ensure that fuels introduced to the marketplace correspond by way of fuel quality standards with fuel samples used for EPA emissions certification testing further arises from other statutory sections. For instance, 42 U.S.C. § 7545(f) provides that any fuel that is "not substantially similar" to any fuel or fuel additive that was used for engine certification in 1975 is unlawful unless EPA grants a waiver by determining that "such fuel or fuel additive or a specified concentration [] thereof, and the emissions products [] thereof, will not cause or contribute to a failure of any emission control device or system [] to achieve compliance by the vehicle or engine with the emissions standards with respect to which it has been certified pursuant to sections 7525 and 7547(a)." 42 U.S.C. § 7545(f)(1) and (4). Since the definition of "motor vehicle diesel fuel" stated at 40 C.F.R. § 79.33 tying this definition to ASTM D-975 has been around since 1975, this statutory section means that any "motor vehicle

diesel fuel" that is not "substantially similar" to ASTM No. 1 or No. 2 diesel fuel requires a statutory waiver under 42 U.S.C. § 7545(f)(4) or some other exception to be lawfully sold without EPA's having designated it for registration with EPA.

Upon information and belief, so far, EPA has not granted any independent statutory waiver for any diesel biofuel under 42 U.S.C. § 7545(f). Therefore, any biofuel used in a diesel engine must either fall under the purview of ASTM D-975 as being "commercially known" as No. 1 or No. 2 diesel, 40 C.F.R. § 79.33, or it must fall within an exception allowed in the Clean Air Act.

It is a "prohibited act" under the Clean Air Act for a manufacturer to introduce into commerce, or offer for sale, a new motor vehicle engine or vehicle if EPA has not first issued a certificate of conformity that the engine or vehicle meets regulations adopted pursuant to 42 U.S.C. § 7521(a) for nitrous oxides and other pollutants. 42 U.S.C. § 7522(a)(1). With regards to existing engines, as stated above, if retrofit equipment installed on an engine "renders inoperative" original emissions after-treatment equipment, 42 U.S.C. § 7522(a)(3)(A), or has "a principal effect [] to bypass, defeat, or render inoperative" emissions after-treatment equipment, 42 U.S.C. § 7522(a)(3)(B), then the manufacturer, dealer or installer is engaged in a "prohibited act" under the Clean Air Act. EPA considers the act of introducing a fuel to a new engine or to an existing engine retrofitted with an EPA-approved clean alternative fuel conversion system to be an act of unlawful tampering if the fuel has "a principal effect [] to defeat" the applicable emissions limitation, 42 U.S.C. § 7522(a)(3)(B), and if the fuel does not correspond to the certification fuel, or in the case of a clean alternative fuel conversion system, the approval fuel.

Different kinds of fuels put into a diesel engine may produce different emissions results, not only between fuels sold on the marketplace, but also between the fuel sample used for emissions testing reported to EPA and the fuel sold on the market that that sample is supposed to represent. Therefore, regulation of fuel sold is necessary, at lest to the extent of assuring that fuel sold meets with criteria to assure emissions compliance met by the sample used for emissions testing, if EPA is to fulfill its statutory duty to ensure that engines emit nitrous oxides conforming with EPA's emissions limitations.

Along these lines, the U.S. Court of Appeals for the District of Columbia Circuit "has long recognized the interdependence between motor vehicle certification under the [Clean Air] Act [] and fuel regulations." Ethyl Corp. v. EPA, 306 F.3d 1144, 1148 (D.C. 2002) (cited in White Stallion Energy Center v. EPA, 748 F.3d 1222, 1258 (D.C. 2014)). For instance, 42 U.S.C. § 7541(g) requires the owner of a motor vehicle to replace and maintain fuel system and after-treatment equipment necessary to ensure compliance with emissions standards regulations and the original manufacturer's warranty regarding emissions compliance required by 42 U.S.C.

§ 7541(a). Because the fuel used affect the functioning of emissions after-treatment equipment and because 42 U.S.C. § 7541(g) would be meaningless without EPA's ensuring compliance of emissions-predictive qualities of the fuel sold on the marketplace with those qualities of the fuel sample used in certification or other emissions testing, this statutory provision compels EPA to take nondiscretionary action to assure that fuel quality sold complies with those characteristics of the fuel that predict emissions compliance, such as iodine value and particulate matter level in the biofuel or biofuel additive component of fuel used in diesel engines.

Under statutory mandate set forth at 42 U.S.C. § 7545(o), EPA's Renewable Fuel Standard, 40 C.F.R. Part 80, Subpart M, recognizes and regulates additional categories of fuels made from biological feedstocks, such as renewable fuel, renewable diesel fuel, biomass-based diesel fuel, and advanced biofuel. However, EPA does not presently regulate the emissions performance of these additional categories of biofuels, apart from the statutory and regulatory sections described above.

In sum, EPA has failed to fulfill its nondiscretionary, statutory duty of requiring that all biofuels and biofuel additives, including biodiesel, hydro-treated plant oil or animal fat, renewable diesel, green diesel, and "biofuel," that it allows to enter the fuel market, either expressly or indirectly by use in a clean alternative fuel conversion system of the like of POP Diesel's or Optimus Technologies', have iodine values below 95 and phosphorous levels below 15 parts per million, and that these biofuels and biofuel additives satisfy these limits before they are blended with petroleum and other feedstocks to make No. 1 or No. 2 diesel or other fuels sold in the marketplace. Along these lines, EPA has failed to require the necessary batch testing of these properties and sample and record retention with regards to motor vehicle, nonroad, locomotive, and marine diesel fuel and ECA marine fuel, as it does already to ensure compliance with its sulfur content regulations. Short of requiring nitrous oxides emissions testing on every batch of fuel blended, the foregoing is the only way for EPA to assure that the blended end products meet emissions standards.

In addition, in keeping with the foregoing failures to take nondiscretionary action, EPA failed to deny Optimus Technologies' request to use or sell 100% "biofuel" in engines it retrofitted without EPA's also requiring a showing that this "biofuel," as sold on the marketplace, would have an iodine value of at least 95. Such a showing is impossible for generic "biofuel" and for WVO and soy and many other virgin plant oils, because these biofuels and feedstocks, as sold on the market, all have iodine values that exceed 95 or that are not consistently below any specific iodine value level so as to permit an adjustment to the injection timing to compensate towards satisfaction of nitrous oxide emissions standards. Therefore, EPA was required to take nondiscretionary action to deny Optimus Technologies' applications or notifications for

outside-useful-life or other Clean Air Act retrofits of diesel engines, including stationary engines, for 100% "biofuel," action EPA failed to take.

## 7. Conclusion

I would be happy to receive and engage in further communications with you on the above and related subjects, should you so desire, and to answer any questions you may have.

Thank you for your consideration.

Sincerely yours,

Claude D. Convisser,
President & General Counsel*

Encl's: 9 Exhibits

cc: Avi Garbow, EPA Gen'l Counsel ✓

*Admitted in VA (active status), NM, NY, and DC; not admitted in CA