

United Kingdom Pure  
Plant Oil Association  
(UKPPOA)

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**Contribution to the  
Review of the fiscal  
definition of biodiesel**

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Submission to HMRC

31<sup>st</sup> August 2006

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## Summary

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1. UK Fiscal Policy has been used as a means to reduce carbon emissions from transport by promoting biofuels. Finance Act 2002 introduced the term "Biodiesel" as a generic term for diesel fuels constituting biomass-derived esters, for which a duty-reduction of 20ppl for road use has been allowed. HMRC accept that this includes Pure Plant Oils. That fiscal definition is being reviewed to ensure fitness for purpose.
2. This document outlines the United Kingdom Pure Plant Oil Association's position on the fiscal definition of biodiesel. The UKPPOA is an association established to promote the use of pure plant oil (PPO) in transport on the basis of its environmental, economic, social and fuel security benefits. The UKPPOA's definition of PPO matches that referred to in Article 2 of the EU Biofuel Directive.
3. PPO has been used in diesel engines since their inception and is currently being extensively used as a vehicle fuel in many countries around the world. Though the biodiesel definition given in the Finance Act 2002 has allowed PPO to be eligible for a 20p/l reduction in fuel duty, not all vehicle owners wanting to use PPO as a road fuel have been able to claim this duty reduction due to differences in HM Revenue and Customs interpretation of the fiscal definition.
4. This document enumerates the benefits of PPO and other reasons why it should be promoted through appropriate fiscal arrangements:
5. **Climate change:** The UKPPOA is not aware of any other fuel for adapted standard vehicles which has lower net carbon dioxide emissions. These emissions considerably lower than methyl ester biodiesel<sup>1</sup> making it a more effective fuel for combating climate change. Inclusion of PPO in the Fiscal Definition is fully in line with the purpose of the legislation.
6. **Tropical forest ecosystems:** The majority of PPO adapted vehicles running in Europe use rapeseed oil which is produced in Europe. Since plant oils produced through the clearing of biologically diverse tropical forest, such as soya and palm oil, are less well suited for PPO adapted vehicles and are not included in the relevant DIN standard, the use of PPO will not directly cause the destruction of biodiversity in the tropics in the same way methyl ester biodiesel could. UKPPOA would welcome measures for simple environmental accreditation of biofuels, as long as these do not pose an unnecessary burden on small producers in the UK.
7. **Local and national economy:** As PPO is a fuel that UK farmers can grow and refine to fuel grade quality this has huge potential benefits for the economies of rural areas.

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<sup>1</sup> <http://www.biodiesel.co.uk/levington.htm>

The potential of small scale localized production of the fuel within the UK means that energy required for distribution is minimal. This ensures a greater carbon dioxide saving over the centralized refinery system that currently exists for imported foreign oil. Producing the nation's fuel needs within the UK in the most efficient way through PPO also provides national economic benefits to the UK. The current situation, particularly now that North Sea oil is dwindling, is that the UK imports fossil fuels, which financially drains the nation often to the benefit of Middle Eastern countries with unsavoury regimes. PPO fuel produced in the UK allows financial resources to stay within the country and circulate reducing the national trade deficit.

8. **Energy security:** In addition, by controlling as much of our fuel production as possible, the UK will reduce the degree to which outside fossil fuel producing nations can exert undesirable pressure on the UK. In the case that supplies of imported fuel are interrupted the stability of the nation will be enhanced by possessing indigenous fuel supplies such as PPO.
9. **Ethical consumer choice:** Alternative fuels, such as PPO, should be promoted so that consumers can express ethical choices that will positively influence the whole transport fuel industry.
10. **UK commitment to the EU biofuels directive:** The UK is a signatory of the EU Biofuels Directive that requires it to produce 5.75% of its road fuels from biofuels, specifically including PPO, by 2010. Although the UK is well behind most of Europe in reaching this target, and this will continue to be the case if EU specified fuels like PPO continue to be penalized, PPO can contribute significantly to reaching this target in the UK.
11. **Cost of conversion:** For diesel vehicles to use PPO reliably they require conversion which can cost anywhere between £1000 and £1600. It is therefore necessary as with Liquid Petroleum Gas to give vehicle users some financial incentive to encourage them to make this investment in switching to a carbon neutral fuel
12. **Fuel safety:** PPO is probably the most benign vehicle fuel in relation to public and environmental safety. It is not readily flammable, is fully biodegradable and is considerably less toxic to humans and the wider environment than methyl ester biodiesel.
13. On the basis of the above benefits the UKPPOA encourages the review to put forward the recommendation that PPO continues to fall within the fiscal definition for biodiesel.
14. The position of PPO should be formalized within the definition so that the existing PPO industry in the UK can go forward with the confidence that it needs to develop and enable it to deliver the above mentioned benefits.
15. The UKPPOA also encourages the treasury to reduce the level of duty on biofuels including PPO to at least the level enjoyed by liquid petroleum gas (LPG) to reflect

their environmental and social benefits, but should ensure that this benefit does not extend to biomass from cleared rainforest areas.

## **Introduction to the UKPPOA**

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16. The United Kingdom Pure Plant Oil Association (UKPPOA) is an association of businesses, organisations, farmer producers and individuals committed to, and involved in, the promotion of pure plant oil (PPO) as a vehicle fuel. PPO, also known as straight vegetable oil (SVO), refers to plant oil that can be used directly in engines designed to use the fuel or in diesel engines that have been suitably adapted. The UKPPOA's promotion of this fuel is concurrent with Article 2 subsection 2(j) of European Union Directive 2003/30/EC, also known as the EU Biofuels Directive, which lists 'pure vegetable oil' as one of the biofuels that EU Member States should encourage the use of in transport. Subsection 2(j) describes 'pure vegetable oil' as: *oil produced from oil plants through pressing, extraction or comparable procedures, crude or refined but chemically unmodified, when compatible with the type of engines involved and the corresponding emission requirements.* In addition to this the UKPPOA also includes used cooking oil originally derived from plants under the umbrella of what it refers to as PPO.
17. The majority of the members of the UKPPOA have committed a large amount of personal time to campaigning for the wider use of PPO because of the considerable environmental, economic and national fuel security benefits of this fuel. Based on these merits, members of the association have gained considerable, wide spread public support for their work as well as recognition from the Department of the Environment Food and Rural Affairs (DEFRA) and the Welsh Assembly Government. Both of the latter two UK governmental bodies have provided significant financial support to promote the wider use of PPO as a fuel. The UKPPOA is not alone in its work and there are two EU wide associations which are also promoting the use of PPO in the same context. The UKPPOA promotes the use of locally grown and processed PPO and advocates the use of PPO fuels which meet the highest standard specifically the European Standard for rapeseed for vehicle fuel use DIN 51605 (Appendix 1).

## **Vegetable oil as a fuel for diesel engines**

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18. In relation to this review it is useful to outline the long history of the use of PPO as a fuel for diesel engines and the international context on the world wide use of PPO as a vehicle fuel today.
19. The use of vegetable oil in Diesel engines has a history which dates back to the inception of the Diesel engine itself. There is some debate as to whether Dr Rudolf Diesel, who is credited with inventing the Diesel engine, designed his device

specifically with vegetable oil in mind. However, it is definitely the case that three years after Diesel brought out his first properly functioning Diesel engine prototype these engines were being successfully run on pure peanut oil. It is also the case that Diesel was a considerable advocate for the use of PPO in his engines.

20. Since those early days, over a hundred years ago, the Diesel engine has been very heavily championed by the fossil fuel industry. So much so that the grade of crude fossil oil commonly used in Diesel engines has also assumed the inventor's name. The early pioneering work to use vegetable oils in Diesel engines was thus largely ignored until the large hikes in the fossil fuel prices in the 1970s and early 1980s. It was at this time that Austrian researchers started looking into the production of biodiesel from plant oils but it was also the time that a German company Elsbett started testing PPO in the highly efficient Diesel engine that it had developed<sup>2</sup>. Elsbett have continued to work on the use of vegetable oil in Diesel engines and the company now has over 20 years of research experience in this field. The Elsbett Company produce engine specific retrofit kits for the majority of diesel engined vehicles found operating in Europe today<sup>3</sup> which allows these vehicles to run on PPO. These kits function in a similar way to the kits which allow petrol vehicles to also use liquid petroleum gas. Elsbett are not alone in this technology and there are now a considerable number of companies producing conversion kits through out Europe and North America. Some vehicle manufacturers, including Deutz Fahr and Caterpillar are looking at making their new vehicles compatible with PPO use.
21. In Germany and the Republic of Ireland zero duty taxation on PPO as a vehicle fuel has encouraged a huge up take of this technology. As a result there are a considerable number of farmers producing vegetable oil and selling it to vehicle user in both these countries. There are over a 100 places in Germany where you can fill your vehicle up on PPO, and maps of these filling stations can be seen on the internet<sup>4</sup>.

## **The fiscal definition of biodiesel**

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### **PPO under the current fiscal definition**

22. Again in relation to this review it is useful to outline how members of the UKPPOA have found the existing duty situation in regarding PPO. Since the fiscal definition of biodiesel was introduced by the Finance Act 2002 it has been possible for PPO to receive the lower rate of duty when used as a road fuel. This includes virgin PPO and PPO produced from purified used cooking oil. Both these forms of PPO meet all the fiscal criteria laid out in the amendment 2AA of the Hydrocarbon Oil Duties Act 1979. PPO is a diesel quality fuel as it runs reliably in suitably adapted diesel engines and has been used in diesel engines since their inception. PPO is either a biomass product in the case of virgin oil or waste cooking oil derived in the case of purified

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<sup>2</sup> <http://en.wikipedia.org/wiki/Elsbett>

<sup>3</sup> [www.elsbett.de/forms/ekit](http://www.elsbett.de/forms/ekit)

<sup>4</sup> [www.rerorust.de/tanken/db/index.html](http://www.rerorust.de/tanken/db/index.html).

used cooking oil. Both virgin and purified used PPO have an ester content greater than 96.5% by weight and a sulphur content that is less than 0.005% by weight. Confirmation of these chemical parameters has been made from numerous sources such as the oil analyses on purified and used PPO in appendix 2 and at the website of Biomotors Ltd.<sup>5</sup>

23. On the above basis it has been the case that certain members of the UKPPOA have paid the lower duty rate on PPO with the acceptance of their local HMRC officials. Various HMRC offices have put this in writing (appendix 3) giving PPO businesses a supportive foundation to develop their enterprises on. This however has not been standard throughout the UK and many people attempting to pay the lower rate of duty of PPO have been effectively barred from doing so by other HMRC officials and are being charged the full ultra low sulphur diesel rate on the PPO. It has thus been the case that a contradictory implementation of the Finance Act 2002 is operating within the HMRC throughout the UK.
24. On top of this already confusing situation in October 2005 it appeared that a number of HMRC offices changed the way that they interpreted the Finance Act 2002. At this time various producers of PPO based fuels, which had previously, reportedly been approved to pay the 'biodiesel' rate of duty on their fuel, were told that their fuel no longer qualified<sup>6</sup>. This change in taxation crippled many businesses producing this fuel and cast a shadow of uncertainty over the activity of all businesses implementing PPO technology. However, following challenges to these changes by the businesses concerned it appears that the corresponding HMRC offices have reverted back to their original position that PPO falls with the biodiesel duty rate. The contradictory nature of the current HMRC position on PPO can be found directly on the FAQ: biofuel's section of the HMRC website<sup>7</sup>. This section states:

"What is the duty rate on cooking oil?"

Cooking oil (whether used or unused) which has not been specifically produced or processed as a road fuel, will normally be classed as a fuel substitute. The duty rate will be the same as the sulphur-free diesel rate.

The important question is whether the finished fuel meets the legal definition. If a vegetable oil used as road fuel meets the fiscal definition HMRC will be happy to accept that it is entitled to the duty rate for biodiesel."

25. The answer to the above FAQ is not unequivocal as it indicates that normally PPO will be classed as a fuel substitute unless it meets the fiscal definition, which on numerous occasions it has been successfully argued that it does.

## **The UKPPOA's position on the fiscal definition of biodiesel**

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<sup>5</sup> [www.biomotors.co.uk/133835.pdf](http://www.biomotors.co.uk/133835.pdf).

<sup>6</sup> <http://news.bbc.co.uk/1/hi/england/devon/4436040.stm>

<sup>7</sup> [www.hmrc.gov.uk](http://www.hmrc.gov.uk)

26. The UKPPOA strongly encourages that PPO continues to benefit from the lower biodiesel duty rate for which it has been eligible over the last four years or more. However, in the light of the confusion that currently exists with regard to PPO and the biodiesel duty rate it is recommended that the section 2AA is amended to formally recognize PPO as being eligible for this lower rate, albeit with the same fiscal criteria that exist for biodiesel. This would create clarification, promoting business confidence and future investment in PPO technology.
27. The UKPPOA would also like to see a reduction in the biodiesel duty rate afforded to PPO to further encourage the kind of development in this sector that has been seen in other European countries where there is no duty on PPO. Given that PPO has the lowest net carbon dioxide emissions of any fuel currently available for standard vehicles it seems logical that the duty rate should be set at the same level or lower than that of Liquid Petroleum Gas. Indeed if the duty rate on fuels were in relation to their environmental impact then the duty rate on PPO should be much lower than this fossil fuel.
28. The UKPPOA's belief that PPO should be promoted through favorable duty rates is based on the following important reasons.

### **Climate Change**

29. Recent rapid changes in the global climate have confirmed to governments around the world that global warming is now upon us. UK government departments and agencies are currently tackling the numerous problems that these changes are causing in respect to severe weather events, sea level rise, flooding, high temperatures and season change etc. But as well as living with the consequences of climate change more needs to be done in tackling its root cause: the build up of greenhouse gases. Carbon dioxide as the product of most aspects of modern life and the primary driver of climate change is the greenhouse gas requiring the most effort to stabilize. The UK government is taking steps to achieve this through its commitments to the Kyoto protocol. One of the steps taken by the Chancellor to meet this commitment was the introduction of a duty reduction on biodiesel, announced in the 2001 budget. As has been discussed, this duty reduction covers PPO, which is fortuitous in relation to climate change as PPO emits less net carbon dioxide than methyl ester biodiesel when used as a fuel. If the Chancellor's purpose was indeed to reduce carbon dioxide emissions then it would be completely hypocritical to remove any duty reduction on PPO as is suggested in the review document. PPO falls in the category defined in the first section of part three of the review document i.e. a biofuel that provides environmental benefits greater than those of conventional biodiesel.
30. Methyl ester biodiesel is produced by taking PPO, either from virgin or used sources, and chemically cracking it using methanol, sodium or potassium hydroxide and heat. This chemical conversion process is not complete and it creates considerable amounts of waste products the most major being glycerol. The three necessary components of the cracking process usually require the input of fossil fuels which reduce the carbon neutrality of methyl ester biodiesel. The methanol that is introduced into the reaction



and becomes incorporated into the methyl ester biodiesel molecules almost exclusively comes from fossil fuels in current biodiesel production. It is produced from the oxidation of methane natural gas which is now increasingly being imported due to depletion of North Sea gas reserves. Methanol is generally added in a 25% proportion by volume to PPO in the biodiesel reaction making the fossil fuel origin of the biodiesel fuel a similar proportion. Incidentally it could be successfully argued that the use of fossil methanol renders the subsequent methyl ester biodiesel produced ineligible for the biodiesel duty reduction as it is not of biomass or waste cooking oil origin. PPO conversely is fully compliant in this respect. The other reactant, either sodium or potassium hydroxide, is generally produced by electrolysis using electricity from burning fossil fuels. Finally, biodiesel reactions are generally conducted at an elevated temperature from ambient and require washing and other processing steps all of which require energy which is often fossil fuel in origin. It can be clearly seen that by taking the original source material PPO, and using it without the need for the addition of energy and fossil fuel inputs; and without the production of waste is considerably more carbon neutral, efficient and environmentally more desirable.

31. The Levington Agriculture Report <sup>8</sup> gives a useful carbon foot print of cold crushing rape seed (from field to oil) at 428 MJ/t and the production of biodiesel at 11.0 GJ/t and the production of bioethanol at 23.3 GJ/t. This shows that PPO has an energy cost which is 25 times smaller than that of bio-diesel.
32. The Danish Folkcentre for Renewable Energy has also shown the significant carbon savings from growing Oilseed Rape for fuel<sup>9</sup>
33. PPO unlike methyl ester biodiesel is easier to produce to fuel grade quality on the farms where the oil crop is grown. This enables it to be produced in a decentralized way minimizing the transport of the fuel both to processing facilities and then finally to its point of use. This once again enables considerable reductions in the net carbon dioxide emissions as compared to any other fuel.
34. The UKPPOA is confident that compared to any other fuel option for adapted standard vehicles PPO is the fuel with the lowest net carbon dioxide emissions. Numerous national TV, radio and newspaper commentaries have pointed out the current short comings of the UK Treasury in not specifically recognizing this and promoting this fuel. Given the urgency and enormity of climate change it is utterly indefensible that promoters of this fuel have been charged the full rate of duty when using it. Likewise if, as a result of this review, the duty reduction is removed from PPO it can be assured that the media will take note of the duplicitous position of a UK Government claiming to be doing everything it can to combat climate change while at the same time penalizing the most carbon neutral fuel currently available to motorists.

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<sup>8</sup> <http://www.biodiesel.co.uk/levington.htm> Section 4.6, Processing rapeseed and grain into biodiesel and bioethanol

<sup>9</sup> [http://www.folkecenter.net/mediafiles/folkecenter/pdf/plant-oil/energy\\_co2\\_balance.pdf](http://www.folkecenter.net/mediafiles/folkecenter/pdf/plant-oil/energy_co2_balance.pdf)

## **Tropical forest ecosystems**

35. A major environmental concern with biofuels is that their widespread use will promote the increased destruction of biologically diverse tropical forest around the world. Soya bean cultivation is one of the main drivers for deforestation in the Amazon, whereas palm oil is a main driver for similar destruction in the Borneo region. Both these crops are a major source of plant oils and due to their relatively low price on the commodity market will inevitably be used for transport as the fossil fuel oil price rises. It is a tragedy that biofuels promoted throughout Europe to combat climate change could enhance the problem. Tropical forest when cleared for cultivation for these crops releases considerable amounts of carbon dioxide. This situation is most acute when tropical swamp forests are felled, the land drained and the built up organic matter is respired to the atmosphere. Once the forest is lost these important carbon sinks are also lost. In addition forests such as the Amazon create their own climate through the transpiration. Removing forest cover for soya fields is having a huge impact on this and is pushing the Amazon towards the anticipated tipping point beyond which it will collapse as an ecosystem. It may be no coincidence that the Amazon is suffering its second year of unprecedented drought. The collapse of the Amazon forest would not only bring about one of the largest mass extinction events the world has seen since the disappearance of the dinosaurs and cause unprecedented human suffering to the people of that region it is also likely to have a huge impact on global weather patterns.
36. Large areas of virgin tropical forest have been illegally clear felled in both the Amazon and Borneo and the land turned to oilseed production. The situation in Brazil has been recently highlighted as pressure on multinational soya seed traders and processors has led them to call a two year moratorium on buying oilseed from freshly cleared land. There is concern that this will not be enough to address the problem.
37. It has been estimated that more than a million hectares of tropical forest have been cleared for soya production in the past few years.
38. The Monbiot report on Biofuels<sup>10</sup> presents a dire view of the effects of biofuels production from cleared rainforest areas, and cites further sources of information on the subject. An extract is reproduced in Appendix 4.
39. Notably the few large methyl ester biodiesel plants either existing or under construction in the UK are located at ports where they will be able to easily tap into the cheapest feedstock from around the globe. Currently soya oil provides the cheapest practical feedstock for biodiesel production and until mechanisms are put in place that address the environmental costs of biofuel production it is likely to be widely utilised.
40. It is therefore important that this review looks at these environmental impacts associated with the duty reduction. Methyl ester biodiesel can be and is made from

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<sup>10</sup> <http://www.monbiot.com/archives/2005/12/06/worse-than-fossil-fuel/>

both Amazonian soya oil and palm oil from South East Asia and so care needs to be taken when promoting it.

41. Alternatively vehicles running on PPO in Europe almost exclusively run on rape seed oil produced within the European Union and thus without the direct impacts on tropical regions. Rape seed oil is exclusively used as PPO as it has the optimum characteristics as a vehicle fuel: it remains liquid to relatively low sub zero temperatures and its chemical composition means that it leaves virtually no deposits in adapted vehicles.
42. With methyl ester biodiesel it will be hard to limit the amount of oil coming from “bad” sources that contribute to forest destruction without implementing protectionist policies that could be challenged by the WTO. However by simply promoting PPO use above methyl ester biodiesel it can be largely ensured the industry that benefits is largely environmentally benign. In addition PPO produced from EU rape seed due to its potential for decentralized efficient production may hopefully be able to compete on a financial basis with methyl ester biodiesel from imported “bad” sources. This is provided that these fuels are given a level playing field in regard to fuel duty and not the current situation where PPO is often not granted the duty-reduction due to varying interpretations of the current legislation.

### **Local and national economy**

43. Locally grown PPO benefits both local rural economies and the greater national economy. With the down turn in many forms of UK agriculture many rural economies have suffered considerably over recent years. Prices for agricultural products in many cases have not risen but instead fallen, making many farms financially unviable and dragging down associated communities. Financial resources tend to drain out of rural areas at a greater rate than which they are accrued with one of the biggest financial drains being imported fuels. When rural areas start producing their own fuel through PPO as occurs in both Germany and Ireland this has a regenerative effect on these ailing rural economies. Rather than finances being drained from the area they remain within it and are kept circulating benefiting not only farmers but the whole community.
44. Producing fuels and not relying on imports also vitalizes the economy on a national level. Currently the UK is losing the self sufficiency that it has enjoyed from North Sea reserves. Increasingly the fuels that we need for transport have to be imported from other countries so that our financial resources go to those producer countries, depleting our economy and increasing the national trade deficit. The more fuel that can be grown and produced in the UK the better our national economy will be.
45. An advantage that PPO has over other biofuels for farmers is that as a result of the simple processing that it requires they can complete the whole growing to finished product chain. This means they can gain as much value added to their product as is possible and have the security of not being at the mercy of large retailers. Again this

will benefit rural communities maximizing the money staying locally and creating new job opportunities.

46. An additional economic benefit for farmers is that they can utilize or sell the valuable seed cake that is a by product of decentralized on farm PPO fuel production

### **Energy security**

47. Now that North Sea reserves are dwindling, the UK and indeed the world finds itself in a similar situation to that which it faced in the 1970s where OPEC nations had the capability to control production and hold the world to ransom with crippling fuel prices. The situation is worse today as there are few additional accessible oil reserves that will prevent huge current global demand for oil from out stripping supply. The fuel price will almost certainly continue to rise from now even without the existence of cartel action similar to that of OPEC in the 1970s. It is therefore necessary to accept that the UK's over dependence on fossil fuel oil makes the nation extremely vulnerable as was demonstrated by the 2000 fuel blockade that brought the nation to a practical stand still.
48. The market for fossil fuels is currently very volatile indicating that demand for fossil fuels is starting to out strip supply. Anything that affects the supply or refining of fossil oil sets the global fuel price climbing. This was seen following hurricane Katrina which damaged both oil production and refining facilities in the Gulf of Mexico but affected the whole world market. Unrest or a civil war in a major oil producing nation such as Saudi Arabia would also have similar but more drastic and long term consequences. The effect on the UK of unaffordable fuel or interrupted supply would be unimaginable chaos. It could be therefore considered irresponsible of the UK government to leave British society so vulnerable to potential future fuel supply problems. Dependency on fuel producing nations will also affect the sovereignty of the UK increasing the potential for these nations to exert undesirable control over UK affairs.
49. It is clear that to continue to let the UK be fully dependent on fossil fuels puts British society at huge risk of unimaginable disruption in the almost inevitable event of future disruption of fuel supply and spiraling costs. It therefore seems an absolute national imperative to develop UK based fuel alternatives that increase our energy security. PPO would be a very effective possible alternative.

### **Ethical consumer choice**

50. PPO and other biofuels are proving popular with individual motorists and organizations who want to use the most ethical form of vehicle fuel. A primary reason why they often select PPO is based on the environmental reasons already discussed, however other ethical reasons are often cited.
51. The most primary of these relates to the association that fossil fuels have with ongoing human conflict. Indeed biofuels are marketed around the world with the

strap line “no war required”. Whether or not the latest manifestation of the long running conflict in the Persian Gulf is largely motivated by fossil fuels, it is clear that conflict is almost inevitable over a commodity the world finds itself dependent on that is increasingly limited supply. Therefore consumers are sensible in wanting to switch their consumer power in relation to this.

52. Another ethical reasons for use of PPO includes the dissatisfaction with the social impact of the fossil fuel industry around the world. In particularly oil has had negative social impacts on oil producing nations in Africa. In Nigeria the proportion of the population living in severe poverty has more than doubled, to 66%, after three decades of oil production. Oil revenues have vanished from national treasuries and into the pockets of corrupt officials in staggering amounts—over four billion dollars since 1997 in Angola<sup>11</sup>
53. By expressing consumer choice over fuel source in relation to ethical issues consumers will be able to express their opinion to multinationals companies that are outside democratic control. Alternatives like PPO should be promoted so consumers can improve the ethics of vehicle fuel in the same way as they have improved the ethnical nature of the production and delivery of other consumables and services.

### **UK commitment to the EU biofuels directive**

54. The UK is a signatory of the European Biofuels Directive, which sets a target of 5.75% of all road transport fuels to be provided from biofuels by 2010. Pure vegetable oil or PPO is specifically mentioned in the directive as one of the fuels to be used to meet this target. The EU target for biofuel road transport fuel for 2005 was set at 2%, however, the Department for Trade and Industry was only able to set a paltry 0.3% target for that year due to the UK being apparently hopelessly behind most of Europe in this respect. The confused Treasury policy on PPO, a named fuel in the biofuels directive, is clearly a reason why the UK is behind the following progressive nations which were able to set the following targets in 2005: Czech Republic (3.7 per cent), Sweden (3 per cent) and Germany and France (2 per cent). It is clear that if the UK government is serious about its commitment to the biofuel directive then it needs to promote the biofuels included in the directive. Radical changes in the support given to biofuels will be needed in the UK if it is to approach anything near the 5.75% target.

### **Cost of Conversion**

55. To allow suitable diesel vehicles to run on PPO it is necessary to convert them in the same way that it is necessary to convert petrol vehicles to allow them to run on LPG. The cost of converting a vehicle to PPO is equivalent to an LPG conversion and for a passenger vehicle can be any where between £1000 and £1600. It is therefore necessary to give vehicle users some financial incentive to encourage them to make this investment in switching to a carbon neutral fuel. The UK Treasury has dropped

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<sup>11</sup> <http://magma.nationalgeographic.com/ngm/0406/feature5/fulltext.html>.

the duty on LPG to allow for vehicle users to amortize their conversion cost, it is only fair that the same circumstances are provided for PPO.

56. At the time that the HMRC appeared more resistant to PPO being awarded the duty reduction the following rationale was given on the HMRC website as to why methyl ester biodiesel got the reduction and PPO did not: *The reduced duty rate for biodiesel was set to provide for the additional cost of producing the fuel against the cost of producing ordinary diesel and to reflect the environmental benefits of this fuel.*
57. It is clear that those originally deciding on the fiscal definition were unaware of the additional costs associated with converting vehicles to PPO. Also this is a disingenuous statement to make as a rationale as to why PPO does not get the lower rate of duty since it indicates that the cost should be covered of making PPO into less carbon neutral fuel. It could be inferred that inefficiency is encouraged and efficiency and carbon neutrality is discouraged.

### **Fuel Safety**

58. PPO is probably the safest vehicle fuel to handle and transport. Its flash point is extremely high making an explosions and accidental ignition, like that seen at the Buncefield fuel depot <http://news.bbc.co.uk/1/hi/uk/4517962.stm>, almost impossible. Due to the decentralized nature of its production, as demonstrated in Germany, it is unlikely large depots and refineries of PPO will exist. This further reduces the risk of mega fires and makes the fuel supply industry less prone to disruption and possible terrorist attack. It is fully biodegradable and considerably less toxic to humans and the wider environment than methyl ester biodiesel. Finally home grown PPO will reduce the need for crude oil to be imported by ocean tanker into the UK negating the potential for environmental disaster that has always been associated with this activity.

## Appendix 1

<b>V DIN 51 605 - German Rapeseed Oil Fuel Standard</b>			
<b>Parameter</b>	<b>Method</b>	<b>Specification</b>	<b>Unit</b>
Density (15°C)	DIN EN ISO 121185	900-930	kg/m <sup>3</sup>
Flash point	DIN EN ISO 2719	min. 220	°C
Kin.viscosity(40°C)	DIN EN ISO 3104	max. 36	mm <sup>2</sup> /s
Calorific value, lower	DIN 51 900-2	min. 36000	kJ/kg
Cetane number	IP 498	min. 39	-
Carbon residue	DIN EN ISO 10370	max. 0.40	%(m/m)
Iodine value	DIN EN 14111	95-125	g Iodine/100g
Sulfur content	DIN EN ISO 20884	max. 10	mg/kg
Variable Properties			
Total contaminates	DIN EN 12662	max. 24	mg/kg
Acid value	DIN EN 14104	max. 2	mg KOH/g
Oxidation stability 110°C	DIN EN 14112	min. 6	h
Phosphorus content	DIN EN 14107	max. 12	mg/kg
Earth alkali (Ca+Mg)	E DIN EN 14538	max. 20	mg/kg
Ash content	DIN EN ISO 6245	max. 0.01	%(m/m)
Water content	DIN EN ISO 12937	max 750	mg/kg

## Appendix 2

The chemical analysis of a used cooking oil sample and letter from Cargill's UK on the sulphur content of their oils.

ASG Analytik-Service Gesellschaft mbH  
Trentiner Ring 30 • D-86356 Neusäss / Germany

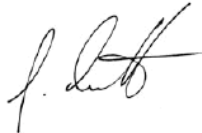
Veg Oil Motoring  
attn. Mr. Daniel Blackburn  
Dyffryn farm, Tegryn, Llanfyrnach  
UK-SA35 ODN Pembrokeshire

your reference : Blackburn  
your order-no. :  
date of order : 6/13/2005  
sample receipt : 6/20/2005  
sampling : Customer  
report date : 6/22/2005  
page : 1 of 1

Report-No. : 132478

Sample	ID	Parameter	Method	Result	Unit
Oil Sample "Veg Oil	71498	Triglyceride content	DGF C-VI 13a (98)	>90	% (m/m)
Motoring", Tegryn,		Di- + Trimer Triglycerides		9	% (m/m)
Llanfyrnach,		Total ester content		>99	% (m/m)
Pembrokeshire		C12:0/ Lauric acid	DIN EN 14103	<0,1	% (m/m)
		C14:0/ Myristic acid		0,1	% (m/m)
		C16:0/ Palmitic acid		10,1	% (m/m)
		C16:1/ Palmitoleic acid		0,2	% (m/m)
		C18:0/ Stearic acid		3,1	% (m/m)
		C18:1/ Oleic acid		40,6	% (m/m)
		C18:2/ Linoleic acid		37,1	% (m/m)
		C18:3/ Linolenic acid		6,8	% (m/m)
		C20:0/ Arachidic acid		0,6	% (m/m)
		C20:1/ Eicosenoic acid		0,9	% (m/m)
		C22:0/ Behenic acid		0,4	% (m/m)
		C22:1/ Erucic acid		<0,1	% (m/m)
		C24:0/ Tetracosanoic acid		<0,1	% (m/m)
		C24:1/ Tetraconsenonic acid		<0,1	% (m/m)
		Sulfur content	DIN EN ISO 20884	0,0001	% (m/m)

The fatty acid distribution points to a mixture of used rape seed and soybean cooking oil .



J. Bernath



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General Manager  
Dr. Thomas Wilharm  
Amtsgericht Aachen HRB 12297





Brocklebank  
Regent Road, Bootle  
Merseyside L20 1EH  
Tel 0151 944 3700  
Fax 0151 933 4165 - Administration  
Fax 0151 922 9664 - Operations

Mr Daniel Blackburn  
Veg Oil Motoring  
Dyffryn Cefnfaes Farm  
Tegryn  
Llanfrynach  
Pembrokeshire  
SA35 0DN  
Wales

29 September 2003

Dear Daniel

**Re: Sulphur Levels in Rapeseed Oil**

This is to confirm our conversation from last week about the levels of sulphur in refined rapeseed oil.

We no longer routinely check the level of sulphur in the crude rapeseed oil that we take into our refinery from our own crushing plants. This is because for some years now the levels have been so low that we do not need to take special steps in our refinery processing to reduce the level of sulphur in oil that is subsequently fed to our hydrogenation plant.

Our last checks were in 2000. These showed that the level of sulphur in two samples of crude oil from UK grown rapeseeds were 9 and 16 parts per million respectively.

Clearly these levels are significantly lower than the 50ppm (0.005%) limited that you quoted.

Yours sincerely

D.A.Allen  
Technical Services Manager - Bulk Oils  
0151 944 3725

Registered Office:  
Knowle Hill Park  
Fairmile Lane  
Cobham  
Surrey KT11 2PD  
Registered in England No. 1387437

## Appendix 3

### Communication with the HMRC Swansea Branch

Michel Michaud  
Ecséis a Masnach Ryngwladol, Abertawe  
Excise and International Trade, Swansea  
Ty Custom Pen y Pier Doc y Brenin Abertawe SA1 8RY  
Custom House Pierhead King's Dock Swansea SA1 8RY  
Ffôn/Tel: 01792 634018 Ffacs/Fax: 01792 634029  
Michel.Michaud@hmce.gsi.gov.uk



**Tollau Tramor a Chartref EM**  
Gwasanaethau Busnes a Trethi  
**HM Customs and Excise**  
Business Services and Taxes

Mr. D.G. Blackburn  
Dyffryn Cefnfaes Farm  
Tegryn  
Llanfyrnach  
SA35 0DN

*Eich cyf/Your ref:*

*Ein cyf/Our ref:* SIFT0600

18th September 2003

Dear Mr. Blackburn,

Our meeting and discussions of 15<sup>th</sup> September 2003 refer.

I should like to reiterate the following points, which we discussed:

- To be able to claim the Bio Diesel rate of duty (£0.2582 pence per litre) on the virgin vegetable oil, which you are currently using, you must be able to evidence an independent analytical report, that shows that the oil has a sulphur content of which does not exceed 0.005% by weight or is nil. Until this evidence is available, then you should account for duty at the ULSD rate of £ 0.4582 pence per litre. We accept your comments regarding the ester content. However, when you commence your use of Waste Cooking Oil, this would require to be analysed for ester and sulphur content, to determine which duty rate would apply.
- As soon as the virgin vegetable oil is purchased for use as a fuel in a vehicle, it becomes liable for excise duty. With the Waste Cooking Oil, this would become liable to duty when it is set aside as a road fuel – i.e. after it has been filtered etc. This must be clearly shown in your records.
- You should submit monthly returns even when no use/production takes place, a nil return is still required.
- You are required to keep records of use of virgin vegetable oil and of processing of Waste Cooking Oil. The format of the records is not prescriptive, but the following is a suggested format. For the virgin oil, the date it is purchased and intended to be used as a fuel and the quantity purchased. For the Waste Cooking Oil – the date and quantity received, the date and quantity produced after processing.

Y We/Web:  
www.hmce.gov.uk

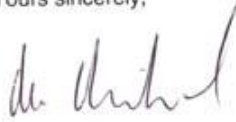
Gwasanaeth Cyngori Cenedlaethol: 0845 010 0300 National Advice Service: 0845 010 9000

Should you have any queries regarding the content of this letter, then do not hesitate to contact me at the letterhead address.

Would you please acknowledge receipt of this letter, by completing and returning the acknowledgement slip enclosed, by 3<sup>rd</sup> October 2003.

Finally I should like to thank-you, for your co-operation and assistance during our visit.

Yours sincerely,



Michel Michaud  
Swansea Excise & International Trade  
Oils Team

## Appendix 4

Extract from <http://www.monbiot.com/archives/2005/12/06/worse-than-fossil-fuel/> with further references

*Last week, the chairman of Malaysia's Federal Land development Authority announced that he was about to build a new biodiesel plant(4). His was the ninth such decision in four months. Four new refineries are being built in Peninsula Malaysia, one in Sarawak and two in Rotterdam(5). Two foreign consortia – one German, one American – are setting up rival plants in Singapore(6). All of them will be making biodiesel from the same source: oil from palm trees.*

*"The demand for biodiesel," the Malaysian Star reports, "will come from the European Community ... This fresh demand ... would, at the very least, take up most of Malaysia's crude palm oil inventories"(7). Why? Because it's cheaper than biodiesel made from any other crop.*

*In September, Friends of the Earth published a report about the impacts of palm oil production. "Between 1985 and 2000," it found, "the development of oil-palm plantations was responsible for an estimated 87 per cent of deforestation in Malaysia"(8). In Sumatra and Borneo, some 4 million hectares of forest has been converted to palm farms. Now a further 6 million hectares is scheduled for clearance in Malaysia, and 16.5m in Indonesia.*

*Almost all the remaining forest is at risk. Even the famous Tanjung Puting National Park in Kalimantan is being ripped apart by oil planters. The orang-utan is likely to become extinct in the wild. Sumatran rhinos, tigers, gibbons, tapirs, proboscis monkeys and thousands of other species could go the same way. Thousands of indigenous people have been evicted from their lands, and some 500 Indonesians have been tortured when they tried to resist(9). The forest fires which every so often smother the region in smog are mostly started by the palm growers. The entire region is being turned into a gigantic vegetable oil field.*

*Before oil palms, which are small and scrubby, are planted, vast forest trees, containing a much greater store of carbon, must be felled and burnt. Having used up the drier lands, the plantations are now moving into the swamp forests, which grow on peat. When they've cut the trees, the planters drain the ground. As the peat dries it oxidises, releasing even more carbon dioxide than the trees. In terms of its impact on both the local and global environments, palm biodiesel is more destructive than crude oil from Nigeria.*

*The British government understands this. In the report it published last month, when it announced that it will obey the European Union and ensure that 5.75% of our transport fuel comes from plants by 2010, it admitted that "the main environmental risks are likely to be those concerning any large expansion in biofuel feedstock production, and particularly in Brazil (for sugar cane) and South East Asia (for palm oil plantations)."(10) It suggested that the best means of dealing with the problem was to prevent environmentally destructive fuels from being imported. The government asked its consultants whether a ban would infringe world trade rules. The answer was yes: "mandatory environmental criteria ... would greatly increase the risk of international legal challenge to the policy as a whole"(11). So it dropped the idea of banning imports, and called for "some form of voluntary scheme" instead(12). Knowing that the creation of this market will lead to a massive surge in imports of palm oil, knowing that there is nothing meaningful it can do to prevent them, and knowing that they will accelerate rather than ameliorate climate change, the government has decided to go ahead anyway.*

*At other times it happily defies the European Union. But what the EU wants and what the government wants are the same. "It is essential that we balance the increasing demand for travel," the government's report says, "with our goals for protecting the environment"(13). Until recently, we had a policy of reducing the demand for travel. Now, though no announcement has been made, that policy has gone. Like the Tories in the early 1990s, the Labour administration seeks to accommodate demand, however high it rises. Figures obtained last week by the campaigning group Road Block show that for the widening of the M1 alone the government will pay £3.6 billion – more than it is spending on its entire climate change programme(14). Instead of attempting to reduce demand, it is trying to alter supply. It is prepared to sacrifice the South East Asian rainforests in order to be seen to do something, and to allow motorists to feel better about themselves.*

*All this illustrates the futility of the technofixes now being pursued in Montreal. Trying to meet a rising demand for fuel is madness, wherever the fuel might come from. The hard decisions have been avoided, and another portion of the biosphere is going up in smoke.*

4. Tamimi Omar, 1st December 2005. *Felda to set up largest biodiesel plant. The Edge Daily.*  
[http://www.theedgedaily.com/cms/content.jsp?id=com.tms.cms.article.Article\\_e5d7c0d9-cb73c03a-df4bfc00-d453633e](http://www.theedgedaily.com/cms/content.jsp?id=com.tms.cms.article.Article_e5d7c0d9-cb73c03a-df4bfc00-d453633e)

5. See e.g. Zaidi Isham Ismail, 7th November 2005. *IOI to go it alone on first biodiesel plant.*  
[http://www.btimes.com.my/Current\\_News/BT/Monday/Frontpage/20051107000223/Article/](http://www.btimes.com.my/Current_News/BT/Monday/Frontpage/20051107000223/Article/); No author, 25th November 2005. *GHope nine-month profit hits RM841mil.*  
<http://biz.thestar.com.my/news/story.asp?file=/2005/11/25/business/12693859&sec=business>; No author, 26th November 2005. *GHope to invest RM40mil for biodiesel plant in Netherlands.*  
<http://biz.thestar.com.my/news/story.asp?file=/2005/11/26/business/12704187&sec=business>; No author, 23rd November 2005. *Malaysia IOI Eyes Green Energy Expansion in Europe.*  
<http://www.planetark.com/dailynewsstory.cfm/newsid/33622/story.htm>

6. Loh Kim Chin, 26th October 2005. *Singapore to host two biodiesel plants, investments total over S\$80m. Channel NewsAsia.*

7. C.S. Tan, 6th October 2005. *All Plantation Stocks Rally.*  
<http://biz.thestar.com.my/news/story.asp?file=/2005/10/6/business/12243819&sec=business>

8. Friends of the Earth et al, September 2005. *The Oil for Ape Scandal: how palm oil is threatening orang-utan survival. Research report.* [www.foe.co.uk/resource/reports/oil\\_for\\_ape\\_full.pdf](http://www.foe.co.uk/resource/reports/oil_for_ape_full.pdf)

9. *ibid.*

10. Department for Transport, November 2005. *Renewable Transport Fuel Obligation (RTFO) feasibility report.*  
[http://www.dft.gov.uk/stellent/groups/dft\\_roads/documents/page/dft\\_roads\\_610329-01.hcsp#P18\\_263](http://www.dft.gov.uk/stellent/groups/dft_roads/documents/page/dft_roads_610329-01.hcsp#P18_263)

11. E4Tech, ECCM and Imperial College, London, June 2005. *Feasibility Study on Certification for a Renewable Transport Fuel Obligation. Final Report.*

12. Department for Transport, *ibid.*

13. *ibid.*