

Government of South Australia
Department of Human Services
Environmental Health Branch
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26. May, 2003

To Mr. Daniel Sheedy
Clean Fuels and Vehicles Section
Environment Australia
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Dear Mr. Sheedy

RE: RESPONSE TO NATIONAL STANDARD FOR BIODIESEL

Production of biodiesel from various sources has been increasing for several years as a niche market. Governments are slowly reacting to the potentials arising from these alternative energy sources, mainly renewable resources, reduction of green house gases and pollution and self sufficiency in regards to energy sources. In Canada, California and other US states and in Europe, governments are pushing biodiesel into large scale production.

Use of biodiesel should in theory decrease substantially the amount of air pollutants released into the environment, including green house gases and air toxics.

But baseline information about biodiesels is still relatively scarce and results claiming reduction in pollutants differ depending on the source material from which biodiesel is derived. For example, Beer states in his report that green house gas emission is connected to the production process of the crop/feedstock. Further, he reported that studies were ambiguous in their results about particle production, with some studies actually reporting higher PM. This may have been resolved, but uncertainty remains.

National standards should be set in order to derive the optimal benefits from this more environmentally friendly fuel. It will be necessary to provide clear leadership in relation to the type of feedstock which is used as source material.

The objective of an Australian standard would be to arrive at a set of parameters for biodiesel that would ensure environmental health benefits and at the same time provide adequate vehicle performance. These benefits would have to be derived by comparing bio-diesel(s) to original diesel and possible other fuels (Gas derived etc) using the following categories:

1. Green house gas

The Kyoto protocol calculates CO₂ based on fossil fuel, while CO₂ based on renewable (biomass) fuel is not included. Therefore the greenhouse debits for the production of biodiesel is based on emissions on the pathway from crop to fuel, also called upstream emissions (farm machinery, production of fertiliser, pesticides, transport, chemical process). A reduction is achievable if downstream emissions (direct emissions from vehicle) and upstream emissions of greenhouse gases (CO₂ + others) combined are lower than those from fossil diesel combustion.

2. Ecological sustainability and possible health risks associated with energy crops

Effects of mass production, price increase of food crops on the world market and implications, biodegradation of soil, use of pesticides, fertilisers and water. Issues of genetically modified crops, potential health problems associated with toxins such as erucic acid and glucosinolates from fuel crops.

3. air pollutants

SO₂, O₃, NO₂, PM: reduction of those air pollutants should be achieved with biodiesel when compared to fossil diesel.

4. Air toxics reduction in comparison

As above

5. Feasibility in relation to design, machine on the road and non-movable machines

6. compliance with other standards for export purposes

Answers to the first four points will give a clearer picture in relation to the health benefits gained from the use of biodiesel. In making national fuel standards it will be necessary to clarify the following points:

- a cumulative life cycle assessment of relevant biodiesels with particular emphasis on relevant Australian feedstock should be made available.
- In relation to PM uncertainty: It would be necessary to conduct investigations of PM emissions on relevant biodiesels in the Australian context (feedstock, machines etc.)
- The discussion paper leans heavily on the report by Beer, which concludes that all pollutants (except NO_x) and greenhouse gases are reduced in comparison to fossil diesel. The following question is raised: In relation to upstream assessment of emissions for life cycle assessment, are agricultural machines assessed under the presumption that they would be using biodiesel/ethanol or fossil diesel. Would this be happening under real life circumstances. This point is raised in relation to the uncertainty of PM emission.
- Increase in NO_x and O₃ has to be included in the overall health risk assessment.
- Ecological sustainability of the biodiesel feedstock in Australia has to be evaluated and incorporated into the fuel standard. A potential of risk for human health may arise due to cross pollination between fuel rapeseed and canola (genetically modified or not) and associated potential of high concentrations of erucic acid (cardiopathogenic) and glucosinolates (goitrogenic).
- The extent of the reduction of all pollutants, including air toxics should be clarified in the context of the biodiesel standards. If reductions don't go far enough then other fuel sources may be more important.
- Are there any new toxics (eg. acrolein)? What is the extent?
- The CSIRO report (Beer, 2001) has indicated that only biodiesel from waste oil reduces emissions of greenhouse gases? Does this mean that reduction in green house gases will be not achieved by using other pure or blend biodiesels?
- What are the implications of waste oil in relation to air toxics?
- Will there be a decision in regards to the alcohol used for esterification? Ethanol would bring more benefit for reduction of pollutants and green house gas emissions.

Yours sincerely

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