

## Emissions

### B100 Biodiesel vs B20 (20% biodiesel+80% petroleum diesel)

EMISSION TYPE	B100	B20
<b>REGULATED</b>		
Total Unburned Hydrocarbons	- 93%	- 30%
Carbon Monoxide	- 50%	- 20%
Particulate Matter	- 30%	- 22%
NOx	+13%	+ 2%
<b>NON REGULATED</b>		
Sulfates	- 100%	- 20%*
PAH (Polycyclic Aromatic Hydrocarbons)**	- 80%	- 13%
nPAH (nitrated PAHs)**	- 90%	- 50%***
Ozone potential of speciated HC	- 50%	- 10%

\* Estimated from B100 result  
 \*\* Average reduction across all compounds measured  
 \*\*\* 2-nitrofluorine results were within test method variability

The overall ozone (smog) forming potential of biodiesel is nearly 50 per cent less than diesel fuel.

The exhaust emissions of sulphur oxides and sulfates (major components of acid rain) from biodiesel were essentially eliminated compared to sulphur oxides and sulphates from diesel.

Pollutants such as unburned hydrocarbons, carbon monoxide, and particulate matter are reduced with biodiesel use. Emissions of nitrogen oxides were slightly increased.

The exhaust emissions of carbon monoxide (a poisonous gas) from biodiesel were 50 percent lower than carbon monoxide emissions from diesel.

The exhaust emissions of particulate matter (a respiratory hazard) from biodiesel were 30 percent lower than than from diesel.

The exhaust emissions of total hydrocarbons (a contributing factor in the localized formation of smog and ozone) were 93 percent lower for biodiesel than diesel fuel.

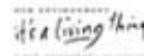
Nitrogen Oxides (NOx) emissions from biodiesel depend on the engine family and testing procedures. NOx emissions (a contributing factor in the localized formation of smog and ozone) from pure (100%) biodiesel increased in this test by 13 percent. However, biodiesel's lack of sulphur allows the use of NOx control technologies that cannot be used with conventional diesel. So, biodiesel NOx emissions can be effectively managed and efficiently eliminated as a concern of the fuel's use.

Biodiesel reduces the health risks associated with petroleum diesel. Biodiesel emissions showed decreased levels (by 50-85 per cent) of PAH and nitrated PAH compounds - identified as potential cancer causing compounds.

For more detailed information about Biodiesel:

[www.biodiesel.org.au](http://www.biodiesel.org.au)

[www.biodieselassociation.org.au](http://www.biodieselassociation.org.au)



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## Biodiesel Truck Trial: Biodiesel As An Alternative Fuel to Improve Local Air Quality





**Camden Council has been successful in winning a grant from the NSW Government Environmental Trust to fund a Local Air Improvement Project in the Camden Local Government Area.**

The project, known as the “**Biodiesel Truck Trial: Biodiesel As An Alternative Fuel to Improve Local Air Quality**” has been developed to trial the use of an alternative fuel known as Biodiesel and to compare the results of exhaust emissions tests taken from a vehicle operating exclusively on Biodiesel (B100) to those of an equivalent vehicle operating exclusively on standard petro-diesel (Ultra Low Sulphur Diesel).

Two vehicles from Council’s waste fleet have been selected for the trial as the nature of the work and the similarity of the vehicles permits ready comparison of the testing results. It is important that as many variables as possible are eliminated from the trial equipment and operating field to ensure opportunities for potential error are minimised.

The trial will run for approximately six (6) months from September 2003 to March 2004. In that time the vehicles will be monitored for a range of indicators and emissions testing will be carried out.

The Bio-diesel Fuel Trial is a partnership headed by Council and partnered by:

- Australian Biodiesel Consultancy
- Pacific Air and Environment
- Cummins
- Tri-City Trucks (NSW) P/L
- Gilbarco Australia Limited
- RTA



While a considerable amount of research has been

undertaken overseas in relation to Biodiesel –

Biodiesel is already being well used in Europe and the USA - this project partnership is a first for Australia bringing together a wealth of Australian

technical expertise and permitting a far greater degree of scientific rigour and validity than would have been

available individually. It has also encouraged and supported the inclusion of Australian research and development opportunities for project partners and enabled the testing of the fuel under Australian conditions.

The results of the trial will be reported to the NSW EPA on completion and should be available to the public in the latter half of 2004.



**What is Biodiesel?**

*Biodiesel* is the name for a variety of ester-based oxygenated fuels made from vegetable oils or animal fats. The concept of using vegetable oil as a fuel dates back to 1895 when Dr. Rudolf Diesel developed the first diesel engine to run on vegetable oil. Diesel demonstrated his engine at the World Exhibition in Paris in 1900 using peanut oil as fuel.

**Properties of Biodiesel**

Today’s diesel engines require a clean-burning, stable fuel that performs well under a variety of operating conditions. Biodiesel is the only alternative fuel that can be used directly in any existing, unmodified diesel engine. Because it has similar properties to petroleum diesel fuel, biodiesel can be blended in any ratio with petroleum diesel fuel. Many federal and state fleet vehicles in USA are already using biodiesel blends in their existing diesel engines.

The low emissions of biodiesel make it an ideal fuel for use in marine areas, national parks and forests, and heavily polluted cities. Biodiesel has many advantages as a transport fuel. For example, biodiesel can be produced from domestically grown oilseed plants such as canola. Producing biodiesel from domestic crops reduces the Australia’s dependence on foreign petroleum, increases agricultural revenue, and creates jobs.

