It wasn't that long ago when horses were used for plowing fields and carting the grain. A part of each farmers property was put aside to provide premium forage for these animals.

Today we can do the same and feed our tractors and vehicles with grain from the paddock!

It is not quite as easy as sending the farm vehicles out to graze in the fields, but with the help of modern technology, steps are being taken to move toward a more environmentally friendly, homegrown fuel source.

What is B100?

B100 is a cleaner-burning diesel fuel additive made from natural, renewable sources such as oilseed crops.

Why B100?

Tougher emission standards are forcing diesel engine users to look for cleaner-air options. B100 dramatically reduces particulate matter emissions and other federally targeted emissions while helping stabilise greenhouse gasses.

What emissions does B100 reduce?

Independent research has shown that B100 in a 20% blend with petroleum diesel created a significant reduction in visible smoke and odour. It reduces particulate matter as much as 14% due to the oxygen in B100 which enables a more complete combustion to CO^2. Eliminates the sulphate fraction (no sulphur in B100). When 100% B100 is used along with a an oxidation catalyst, it reduces:

- Particulate Matter by 45%
- Carbon Dioxide by 41%
- Total Hydrocarbons by 65%

What Are The Benefits?

While its emission profile is radically lower, B100 functions in the engine the same as petroleum diesel.

B100 delivers emission reductions while maintaining current fleets, refuelling stations, spare parts inventories and skilled diesel mechanics. B100 can be substituted for diesel with essentially no engine modifications, and maintains the payload capacity and range of diesel. Is the use of B100 covered under engine warranties? Manufacturers warranties cover defects in materials and workmanship, and those warranties extend to engines burning B100. The warranties do not cover engine problems related to fuel of any kind. Tests and demonstrations, however, have shown that B100 is no different to petroleum diesel in terms of engine performance and wear.

B100 has a higher flashpoint and doesn't produce explosive vapours.

Has B100 Been Thoroughly Tested?

B100 has been extensively tested by government agencies, university researchers and private industry in the United States, Canada and numerous countries in Europe. Many transit authorities in Europe and the US have conducted on road tests as well.

More than one hundred B100 demonstrations, including three 1.6 million Km tests and more than thirty 80,000 Km on road tests with various B100 blends.

In these tests, horsepower, torque, fuel economy and drivability with B100 blends were similar to conventional diesel, but opacity levels were reduced and exhaust odour was less offensive. Cetane number is significantly higher than conventional diesel. No adverse durability or engine wear problems were noted as lubricity is improved. Fuel tank and filter heaters may be needed in cold climates.

Emissions of nitrogen oxides are either slightly reduced or slightly increased depending on the duty cycle and testing methods.

B100 works well with new technologies such as catalysts, particulate traps, and exhaust gas recirculation (potentially longer engine life due to less carbon).

Who Blends The Fuel? How Is It Done?

Diesel users can have their suppliers obtain B100 and simply mix it before delivery. Or they can have B100 delivered directly and mix it themselves. It blends easily, stays mixed and requires no special handling.

Which Blend Is Best?

B100 users have had success with a variety of blends, but 20 to 30% blend of B100 with petroleum diesel is generally recommended.

How Much Does B100 Blend Cost?

It depends on the market price of diesel and the B100 renewable resource. However, when all the costs of meeting tougher emissions standards are considered (conversion, construction, insurance, etc.), an emission management system based on B100 may be the least cost option.

Surveys by Booze-Allen & Hamilton Inc., Sparks Companies, Inc., and the University of Georgia have found that a truck or bus fleet using B100 in a 20/80 petroleum diesel blend would experience lower total annual costs than other alternative fuels when including capital requirements. Research into advanced farming practices and more efficient production would further reduce the cost of B100.

Do I Need Special Storage Facilities?

B100 or premixed blends can be stored wherever petroleum diesel is stored, except in concrete-lined tanks. At higher blends, B100 may result in deteriation of rubber or polyurethane foam materials.

Who Should Use B100?

Although B100 can be used in any diesel engine, among the first to switch to B100 should include centrally fuelled fleets such as urban buses, heavy-duty truck fleets, shuttle busses, marine, national parks, military and mining operations.

Who Else Can Benefit from B100?

Being produced domestically, B100 strengthens Australia's energy security while generating new industries, jobs and income for farmers.

B100 has a positive energy balance, generating three or more units of energy for every unit required to make it. And

Vehicle Diesel Fumes Key Cause Of Lung Cancer

A new class of potent mutagenic compounds found in diesel exhaust and airborne particles is likely to be among key factors in contributing to human lung cancer, World Health Organisation (WHO).

Evidence is also increasing for a link between childhood cancer and vehicle exhaust.

WHO claims that as many as 80,000 deaths a year in Europe can be attributed to to long term exposure to road traffic pollution.

Dr. Robert Coleman, Director General of the transport division of the European Commission, recently described the impact of transport on the environment and human health as a "major political concern".

European Hospital Management Journal Vol. 5 Issue 4 1998

Diesel Exhaust Proven To Increase Lung Cancer

"This is the first time it has been proven that the risk of lung cancer is increased by exposure to diesel fumes", says Thomas J. Smith from the Uni. of Massachusetts.

Diesel exhaust contains soot particles which are carriers of mutagenic and carcinogenic substances. This has been a well known fact for some time. The particles are deposited in the lungs when inhaling the exhaust fumes.

The American research project examined 55,407 railway workers who were aged between 40 and 64 in the year 1959, and who had started employment between 10 and 20 years previously. The US railways use diesel engines.

The cancer risk increased by 72% for those who had been exposed for 15 years or more. For workers with 1 to 4 years' exposure, the risk increased by 20%.

The study included statistics of the group after the maintenance workers had been excluded. The results still showed an increased risk of lung cancer for the remaining exposed group.

Source American Review of Respiratory Diseases.

California Classifies 40 Particles In Diesel Exhaust As Toxic

SACRAMENTO, CA (AP) - California regulators said 40 chemicals found in diesel fumes must be listed as toxic air pollutants.

The 11-member panel is one of the most influential environmental regulatory agencies in the country. Its decisions often serve as a bellwether for stricter standards at the federal level, where regulators also are drafting standards for diesel emissions.

Daniel Greenbaum, President of the Health Effects Institute, an independent air pollution research group said, "People

B100 Is Safe For The Environment

The 96-hr LC50 (Lethal Concentration) for Bluegills for B100 was greater than 1,000 mg/L. Concentrations above 1,000 mg/L are deemed "insignificant" according to US National Institute for Occupational Safety and Health Guidelines in its Registry of the Toxic Effects of Chemical Substances.

B100 is considered biodegradable based on its chemical nature and test data collected for experimentally determined oxygen demand and carbon dioxide production as a percent of calculated theoretical values. B100 does not show any micro biological inhibition up to 10,000 mg/L.

In tests performed by the University of Idaho, B100 in an aqueous solution after 28 days was 95% degraded. Diesel fuel was only 40% degraded. In a second study done in an aquatic environment (CO^2 evolution), various B100 products were 85.5% to 88.5% degraded in 28 days, which is the same rate as sugar (dextrose). Diesel degradation was only 26.24%.

B100 helps speed diesel degradation when used in blends with petroleum diesel fuel.

B100 degrades about four times faster than petroleum diesel fuel. Also, when blended with B100, the degradation rate of petroleum diesel tripled when compared to diesel alone, according to a University of Idaho tests.

We are currently conducting research on producing hydraulic fluid from B100.

B100.

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