



San Francisco Bay's Red and White Fleet operates on biodiesel

Biodiesel and Marine Vessels

What is biodiesel? Biodiesel is a transportation fuel derived from vegetable oils (like palm and soy) and recycled restaurant grease. Biodiesel contains no petroleum, but it can be blended at any level with petroleum diesel to create a biodiesel blend. It can be used in marine diesel engines with little or no modifications. Biodiesel is simple to use, biodegradable, nontoxic, and essentially free of sulfur and aromatics. But it is essential that biodiesel is made from sustainable feedstocks that don't require destruction of wetlands or forests, or lead to other environmental problems.

How is biodiesel made? Biodiesel is made through a chemical process called transesterification, whereby the glycerin is separated from the fat or vegetable oil. The process leaves behind two products -- methyl esters (the chemical name for biodiesel) and glycerin (a valuable byproduct usually sold to be used in soaps and other products).

Why use biodiesel? Biodiesel is better for the environment because it is made from renewable resources and can have lower emissions compared to petroleum diesel. It is less toxic than table salt and biodegrades as fast as sugar.

Why marine vessels? Passenger ferries, fishing boats, tugs and other commercial marine vessels operate on petroleum diesel fuel, producing harmful exhaust emissions. Marine engines are dirtier than comparable engines on land because air pollution regulations on vessel engines lags far behind that of cars and trucks.

One option for reducing marine engine emissions in existing engines without requiring major engine modifications is to burn biodiesel. This renewable fuel can replace 100 percent of diesel fuel in an engine or be blended with diesel fuel. Even a 20 percent blend of biodiesel with diesel fuel reduces harmful air toxics and sulfur oxide emissions.

What about greenhouse gases? Replacing conventional diesel fuels with biodiesel can significantly reduce life-cycle emissions of greenhouse gases, primarily carbon dioxide, compared to conventional diesel if produced in a sustainable fashion.

Benefits of 100% Biodiesel compared to petroleum diesel

- A renewable fuel produced by US farmers
- Reduces dependence on foreign oil
- Reduces most forms of air pollution and greenhouse gases
- Contains no sulfur, so no smog-forming sulfur dioxide emissions
- Safe to handle because it is non-toxic, about as toxic as table salt
- Smells better than diesel fuel, more like French fries or donuts
- Eliminates soot and smoke
- Can be used in any diesel truck, car, vessel, generator or other diesel engine
- Prices are coming down as availability increases
- Biodiesel acts as an engine cleaner, so engine runs cleaner and longer between oil changes

Links to biodiesel marine projects and information

Red and White Fleet http://www.bluewaternetwork.org/news_stories/ss/ferry_8-16-06_SFChron.pdf

Channel Islands Pacific Ranger

http://www.nature.nps.gov/sustainabilityNews/search_docs/All_Park_Updates/Channel_Islands_Update_Page.htm

NOAA <http://www.glerl.noaa.gov/pubs/brochures/GreenShip.pdf>

Na Pali Adventure catamarans <http://www.ohwy.com/hi/n/napaadve.htm>

Sources: U. S. Environmental Protection Agency, National Biodiesel Board