

## Bio-diesel and the inland waterways

There are two main concerns for the boater when using biodiesel, diesel bug and injector blocking. As most people are aware diesel bug is the term given to a range of fuel spoilage organisms. These organisms can include yeasts, moulds and bacteria and they often develop at the interface of water and fuel. This occurs when water is held in suspension within the fuel, or more commonly in the water bottoms in the fuel tank.

These organisms prefer not to be disturbed while replicating so the canal and riverboat environment is ideal for them. Symptoms that occur from spoiled fuel include a slime formation in the filters, poor starting, smoking and often a lack of power or inability to achieve full revs.

When biodiesel is blended, fatty acid methyl esters (FAME) are added to the mineral diesel and it would appear that micro-organisms love FAME. The fuel supply industry has added control measures and generally throughout the supply chain there does not appear to have been a problem so far. Once the fuel is in your tank however it is up to you to take care of it. If the fuel is no longer being disturbed the FAME attracts moisture which allows the organisms to grow. Add condensation which forms water bottoms and the bugs have all they need for proliferation, water and carbon forms that they can break down.

The only real answer is to use a biocide. Biocides should be used with due care but should not be perceived as harmful or dangerous. Many foods, paints, shampoos etc. all contain biocides as preservatives and so at the level we need to use it our additive is not damaging. The preventative level is only 50ppm (0.005%) and this of course is burnt along with the fuel itself. We believe that continuous use is the best and safest route and in the long term this actually prevents overuse of the biocide. This is because it eliminates spoiled fuel and so there is no requirement for dumping of unusable fuel and shock dosing of biocide.

As yet, in nearly 20 years of using this biocide there has been no evidence of resistance to it being created. This in fact is true of most biocides but confusion in the media and the public has led to a general misunderstanding surrounding antibiotic use. If in the future any resistance did occur we would introduce a second alternate biocide but at present we do not see a need for this.

## Biofuel and injector plugging.

Fatty acid methyl ester (FAME) appears to be the main cause of injector blocking and it is becoming increasingly prevalent especially in the more modern diesel engines. In order to reduce emissions and increase power and fuel economy, pressures have been getting steadily higher while injector holes have become smaller. The effects of deposits formed around the injectors are the reverse of what was intended. Poor atomisation gives a poor burn which means higher emissions and less power and fuel economy.

The solution is to use a high performance fuel additive. The fuel suppliers make their fuels to meet standard requirements whilst making some minor modifications in order to enhance their product for marketing purposes. It would not be cost effective for fuel producers to add more chemistry to all of their products. However, if you feel that you would benefit from this chemistry you can now add some yourself.

New Marine 16 Diesel Fuel Maintenance contains enough biocide to prevent diesel bug occurring. It contains additives that will reduce deposits in your fuel system to zero and keep them there. For good measure it contains lubricant to replace the lubricity lost with the use of low sulphur fuels. It contains a cetane improver to enable cleaner, easier starting that is reduced during fuel storage.

Marine 16 Diesel Fuel Maintenance contains a demulsifier to drop water out of the fuel and remove it to the bottom of the tank where it can do less harm. It also reduces emissions and can improve fuel economy by 1.0 to 3.6%. More importantly it gives you peace of mind that your engine will work when you need it.

Marine 16 Diesel Fuel Maintenance is suitable for all types of diesel engine. Full technical reports and scientific papers are available on request.