

## That's Right, BUGS!



Also known as "microbes" (bacteria, fungi, and algae) may be growing in your fuel tank and creating problems such as slimy, clogged filters; plugged fuel lines; and foul-smelling, degraded fuel.

Perhaps you thought these problems were related to normal wear and tear, and have been investing time and money changing filters, cleaning injectors and performing other maintenance procedures. Unfortunately, these maintenance programs are only marginally effective because they treat the symptoms and ignore the cause. Changing filters is only a temporary solution to the real problem: fuel contaminated by microbes.

## How Do Microbes Get In Your Fuel Tank?

Microbes get a free ride into your fuel tank. They are carried along on dust and water particles that get drawn in through the vent as fuel is pumped out of the tank. They may also be present in fuel additives and contaminate fuel when additives are blended at refineries or terminals.

Once inside, microbes establish themselves on tank and fuel line surfaces and form slime layers. There

they continue to reproduce and attack both the fuel and fuel system components. Water vapor and condensation in the tank provide the moisture microbes need to grow and reproduce; fuel and fuel additives provide them with

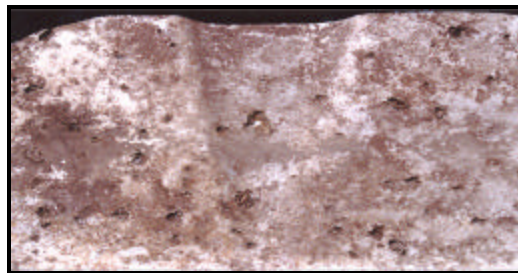


food.

## What Effect Do Microbes Have on Your Fuel and Tank?

Microbes growing in your fuel tank can have both a direct and indirect effect on your fuel supply. They can directly attack the fuel, dramatically changing its performance properties, and forming a slime-layer at the fuel water boundary.

Indirect effects of microbial attack include plugged fuel filters, sludge formation, degraded additive performance and corrosion. When combined, these effects increase your maintenance and operating costs as shown in photo below. This is an aluminum saddle tank that shows consequences of biological corrosion.



## Is There A Solution?

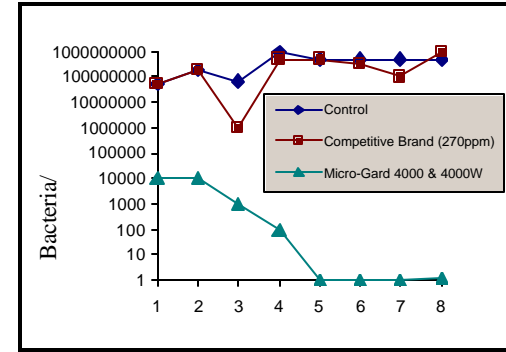
**YES, It's Micro-Gard 4000.** The biocide that does a 1-2 punch in your fuel tank.

First, it quickly kills microbes already in your fuel system. It functions as a preservative measure to inhibit future growth, and provides highly effective, long-term protection against contamination in the entire fuel system (both in the fuel and in the water phases in the tank). In contrast, competitive biocides are only effective in either the water or fuel.

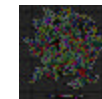
Second, **Micro-Gard 4000** neutralizes the acid by-products that the microbes produce. These acids promote internal tank corrosion which leads to pitting and eventually holes and leaks. **Micro-Gard 4000** kills microbes wherever they may be.

## Is Anything Else as Effective?

In a head-to-head test, the competitive brand failed to reduce bacterial levels; the level of bacteria in the fuel remained high throughout the eight week test.



Time



**Micro-Gard 4000 quickly kills 99.98% of the bacteria in the fuel, prevents bacterial regrowth, and neutralizes acid by-products.**

## Try It Today!

**Micro-Gard 4000** can solve your Diesel contamination problems and reduce maintenance costs, down time, and fuel system failures. Treat your fuel system to the proven biocide. . . **Micro-Gard 4000.**

### Benefits

- ◆ Kills the microbes that contaminate fuel systems.
- ◆ Effective in both fuel and water (where microbes grow).
- ◆ Helps prevent corrosive and leaves no corrosive deposits.
- ◆ Neutralizes acid by products.
- ◆ Burns almost as hot as fuel (>106,000 BTU/gal), does not affect engine performance.
- ◆ Will not ignite at temperatures below 174° F (No DOT shipping restrictions).
- ◆ EPA-registered for fuels, approved as an additive for diesel.
- ◆ Reduces maintenance costs.
- ◆ Helps to prevent systems failures.
- ◆ Lower cloud point and prevent fuel gelling.
- ◆ **Micro-Gard 4000** is an EPA registered biocide and has been Mil Spec approved as an additive for Military middle distillate fuels.

**Fuel Quality Services, Inc.**  
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# LOOK!

## What Could Be In Your Diesel Tank.



## That's Right, Diesel!! Living . . . Breeding . . . Contaminating!

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