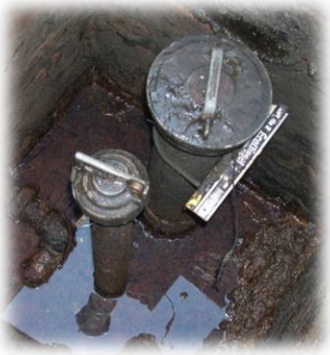
# MICROBIOLOGICAL GROWTH

Water is in every fuel tank and needs to be managed. The water ingress occurs through a number of different means:



- through delivery of water with the diesel
- through the breather (sucking in of moist air as the tank breaths)
- through leaks in pipework, seals and caps

It is essential that this free water is removed from the tank as soon as possible as it has a negative impact on the fuel the tank and the vehicle in which it is used in.

One aspect is that when free water is present in diesel fuel tanks for a period of time microbiological growth may initiate. Air, fuel and water all contain bacteria yeast or fungal spores and these can grow at the interface between water and fuel. Under the right conditions the "slime" grows on the water fuel interface, with the diesel or keroscene, being its man source of food. Cladosporium Resinae (fungal) type infestations being the most common.

This slime, apart from being unsightly it can block tank strainers and vehicle fuel filters. If left unattended it can spoil the fuel and contribute to tank corrosion.

The occurrence of significant quantities of micro-organisms in fuel is relatively rare and the best preventative procedure is to exclude all water by draining at regular intervals. Without water the spores cannot grow!

In those cases where it does develop, proper tank cleaning and filter replacement with biocide treatment is the best cure.

## WHAT CONDITIONS PROMOTE THEIR GROWTH?

For the spores to grow there are a couple of essential factors that are required:

1. water
2. food source; a suitable fuel
3. correct temperature range (10°C - 40°C)



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If any of the above is absent the spores will remain dormant until suitable conditions are present.

## CONTROL

The key to fungal control is removal of water. Dipping for water is therefore essential and should be conducted on a regular basis (weekly), before and after any deliveries are made. The low points of tanks and pipework must be drained regularly. If all water is removed one of the essential conditions is absent and fungi cannot grow.

Should fungi be present then the tank needs to be treated and the water ingress point found and eliminated. There are several options available to treat fungus, once it has been confirmed that this is the problem.

Treatment with a biocide may be all that is required. A biocide should only be added to a fuel tank after any free water and sludge has been drained off.

If fungal contamination is suspected, samples can be tested. It is important to draw samples from the fuel/water interface and the tank bottoms.

**For modern vehicle fuelling systems water and dirt are one of the worst enemies and should be eliminated. This requires housekeeping to be properly addressed at ALL levels of the supply chain from the refinery, through primary and secondary logistics as well as at the dispensing point and on the vehicle. Water and dirt can enter at any of these points.**

*For further information or assistance contact ONFO Consulting at:*

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