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## Tank Testing Steps and Procedures

Bell Performance

Long-term fuel storage in hot and humid areas inevitably leads to a high chance of water buildup and microbial infestation in fuel tanks. Microbial contamination of stored fuels leads to problems for the fuel supplier and end user – plugged filters, accelerated breakdown of stored fuel quality, and expensive tank corrosion. Therefore it is recommended to conduct tank testing for water buildup and microbial contamination on a regular basis.

## Objectives

The first objectives are to establish the presence of a water phase in the storage tank and to gauge the size of the water phase. The second objective is to detect the presence of microbes in the stored fuel, in advance of conducting antimicrobial treatment to destroy existing microbial growth.

## The Link Between Water and Microbes

Microbes cannot survive in a fuel storage situation without the presence of a water phase. Therefore it is important to determine if a water phase is present. If there is no water, there's not likely to be microbial growth. The converse, however, does not always hold. If water is present, that does not guarantee the presence of microbes. But it dramatically increases the chance of an infestation developing at any given point in the future.

## Procedures for testing

- Dip the tank to confirm the presence of water
    - Use a long stick marked with water-finding paste. The paste should change color upon contact with water.
  - Determine how much water is in the tank by the results on the paste
    - The further up the marking stick goes the color change, the larger the water phase.
  - Small amounts of water can be reabsorbed into the fuel phase with the use of a water-control treatment like DFS Plus. Larger amounts of water will require remediation with manual draining or pumping.
  - Use a bacon bomb to take a fuel sample from the bottom of the tank.
    - A bacon bomb is a large tube made from non-sparking metal, designed for fuel sampling.
    - Depending on how deep the water phase is, sampling from the bottom of the tank may draw only water in the sample. Therefore it is advisable to take several samples from the bottom and mid-bottom points of the storage tank.
  - Use microbial test strips to test for microbial growth.
    - These will take about 3-4 days to yield a yes/no result for microbial presence.



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## Remediation Recommendations

- Active microbial growth in the fuel requires application of biocide to kill the microbes. Apply Bellicide at the recommended treat rate of 1 oz: 40 gallons and circulate the treated fuel. Circulation is critical to the biocide's effectiveness as it needs to come in contact with the microbes in fuel for it to work.
- After application of biocide, wait 48 hours and retest the tank with microbial test strips to confirm the kill of the infestation.
- Be prepared to use extra fuel filters to remove the dead microbial carcasses. Extreme cases of contamination may require professional fuel filtering.
- Apply a maintenance dosage of biocide (1 oz:80 gallons for Bellicide) quarterly to prevent establishment of new microbial infestations at future points.
- Regular treatment of the fuel tank with water-controlling treatments, whether single-function or multi-function (i.e. Bell Performance Dee-Zol, Ethanol Defense and DFS Plus) will help to control the buildup of the water phase that also contributes to establishment of microbial colonies.

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05/2013