

<Email comments from biocide expert>

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Water typically gets into the fuel because the storage tanks are vented to the outside, and daily temperature shifts produce condensation inside the tank. The water settles to the bottom; most tanks are equipped with drains, but often they are a foot or two above the bottom of the tank. Both fungi and bacteria grow at the interface; drawing nutrients from the fuel. Continued growth leads to formation of a 'mat' at the interface and production of corrosive acids.

There are several biocide chemistries approved by EPA to treat fuel, but only two have been approved by the aircraft manufacturers. One product is Biobor JF; it has been in use since 1965. The other is Kathon FP1.5, the product I used to work with. Very unlikely that any other products will be approved because the cost to get tested and approved by the airline industry is enormous, and the amount of biocide used in aviation is quite small. Rather than treat all jet fuel, the airlines treat individual aircraft selectively and periodically. And since the 'bugs' grow only in the water phase, which is a very small volume in proportion to the fuel, only a small amount is needed for treatment.

There have been instances of aircraft failure due to bug growth; pieces of the mat can break free and clog a fuel line. Biggest problems are in tropical areas because they constantly move from hot and humid to very cold air, thereby increasing condensation. Here are a couple links to Dow propaganda about fuel biocides. Dow now owns Kathon FP1.5.

<http://www.fuelcare.com/pdf/kathonpds.pdf>

http://msdssearch.dow.com/PublishedLiteratureDOWCOM/dh_0853/0901b8038085332a.pdf?filepath=microbial/pdfs/noreg/253-02864.pdf&fromPage=GetDoc

<Additional comments from colleague>

I did some digging on my own and found a few reports going into more detail about the effects of certain fungi on fuel tank structures. They go into detail about the "bugs" that contaminate the fuel systems, as well as cite some specific examples of aircraft failure due to fungal buildup.

<http://nzetc.victoria.ac.nz/tm/scholarly/tei-Bio19Tuat01-t1-body-d4.html>

http://www.icas.org/ICAS_ARCHIVE/ICAS2006/PAPERS/013.PDF