

*IASH 2007, the 10th International Conference on
Stability, Handling and Use of Liquid Fuels
Tucson, Arizona
October 7-11, 2007*

POSTER

A MICROBIOLOGICAL EXAMINATION OF A BIODIESEL SAMPLE OVER TIME

Capt Sarah K.C. Brooks, Ellen M. Strobel, Loryn L. Bowen, Marlin D. Vangness, Lori M. Balster, and Susan S. Mueller

US Air Force, 1790 Loop Road North, WPAFB, OH 45433 USA,

This poster details a year-long study of the microbial contamination found in a single sample of B-20 using microbiological and molecular techniques. Biodiesel is a domestically produced, renewable fuel that can be manufactured from vegetable oils (the least expensive of which is soy oil), animal fats, or even recycled restaurant greases. B-20 is more specifically a blend of 20% B100 and 80% diesel and can be used in diesel engines without modification. The United States Air Force uses B-20 at several CONUS locations to supplement the diesel supplies for ground power applications. An ATP measurement was made and filtered microbes were archived on FTA paper on site within two hours of sample capture. Fuel was also sent to the laboratory at Wright Patterson Air Force Base where it was cultured on multiple types of media as well as processed via non-culture methods (PCR). Over a period of one year, five test points were accomplished where the biodiesel sample was re-cultured and PCR to observe consortia changes over time. Initially, growth was prolific on several types of media and several fungal and bacterial species were identified. Initially, fungi were the dominant species but bacterial species became dominant as time progressed. Sequencing of the 3 week, 6 week, and 3 month time points showed a varying amount of bacterial populations present in the biodiesel. By the 6 month time point, growth on culture medium had been reduced significantly with no fungi present and only a few bacterial species growing which were predominately Gram positive cocci.