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**ATP ANALYSES AS A TOOL TO DETERMINE THE NEED TO CLEAN THE FUEL
TANKS OF DIESEL MOTIVATED VEHICLES BEFORE REFUELING WITH
BIOCIDES AND STABILITY IMPROVING ADDITIVES**

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Stabilizing additives and biocides may enhance the suspension of organic and microbial sediments that accumulate in Diesel fuel tanks of vehicles during long term storage. This could lead to fuel filters blocking immediately upon the release of the vehicles from storage. We have investigated the possibility to use the Microbial Contamination Level (MCL) and ATP contents of clear diesel fuel samples withdrawn from vehicles, between storage intervals, as criteria for judging the need to clean the vehicle's fuel systems before the addition of such additives.

Bottom fuel samples taken from fuel cells of combat vehicles in storage, were analyzed for their MCL using the traditional live counts laboratory method. The source fuel tanks were dismantled from the vehicles, opened and inspected for significant visual internal contamination. MCLs higher than 5000 molds/liter fuel were found to correlate to a high contamination level that justifies an intensive cleaning of the vehicle's fuel system. However, the relative slow response time of the regular membrane filtration method which was applied to determine the MCL, made it inconvenient for decision making for field operations. A laboratory study revealed that the sensitivities and detection limits of two commercial ATP test kits were within the range required for detecting such MCL levels in Diesel fuel. One of the kits was evaluated for its capacity to be used for rapid in-situ determination of MCL in combat vehicles' diesel fuel tanks, in the field. Preliminary results have shown that a statistical cutoff value of Relative Light Units (RLU), which is specific to the ATP kit in use, can be set as a threshold limit that distinguish between low and high MCLs. Using such an approach, ATP kits may be used successfully to determine the MCL levels that indicate a need to clean Diesel fuel tanks before refueling.

Key words: ATP, microbial contamination, Diesel fuel, vehicles, Fuel tanks' cleanliness, long term storage, biocides, additives.