



Federal Aviation Administration

National Part 139 Cert Alert

Advisory**Cautionary**Non-Directive**Advisory**Cautionary**Non-Directive**Advisory**Cautionary**Non-Directive

Date: 6/23/2023 **No. 23-04**

To: All Title 14 CFR Part 139 Airport Operators

Subject: Jet Fuel Contamination with Diesel Exhaust Fluid (DEF)

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1. Purpose. This CertAlert provides information and recommendations for the safe handling, labeling, and storage of diesel exhaust fluid in the airport environment.

2. Background. Between November 2017 and May 2023, there were multiple events of jet fuel contamination with DEF and fuel system icing inhibitor (FSII). Most recently, two more suspected events have occurred. The fueling agents inadvertently used DEF instead of FSII on a refueling truck, which was injected into the fuel with the truck's FSII injection system. DEF is not a jet fuel additive; however, it is required by the Environmental Protection Agency (EPA) to be used in newer dieseltruck engines to reduce nitrogen oxide (NOx) emissions. When DEF is mixed with jet fuel, it forms crystals and clogs fuel filters and nozzles, leading to engine shut-downs and other engine operability issues. All of the jet fuel contamination events occurred when Fixed Based Operator (FBO) personnel inadvertently added DEF to the fuel truck anti-icing injection system reservoirs instead of FSII. As a result of these contaminations, several aircraft had to perform emergency landings and others had to undergo major repairs.

3. Action. Bulk fluids are generally stored in hangars or storage areas. Both DEF and FSII are clear and are usually stored in large milky white plastic tanks ranging from 5 gallons tanks to larger cube storage tanks. If DEF and FSII are stored close to each other, they are very hard to differentiate. To prevent confusion, we recommend the following for airport operators and fueling agents:

- a. Do not store DEF and FSII fluids in close proximity to each other.
- b. Clearly mark bulk storage tanks or barrels with 4-inch or larger stenciled letters visible from all sides. Use “**DIESEL DEF**” for all DEF fluid and “**JET FUEL SYSTEM ICING INHIBITOR**” for FSII storage containers.
- c. Lock DEF containers in a separate storage shed or cabinet and only provide the DEF-key to ground vehicle maintenance employees.

- d. Remove jet fuel suspected of being contaminated with DEF and discard it in accordance with applicable regulations. Do not attempt to repurpose DEF-contaminated fuel or containers to other aircraft or vehicles.
- e. Do not refill FSII containers on the fueling vehicles; use replacement containers instead when possible.
- f. Ensure that ONLY properly trained individuals replace or add **any** fluids to aviation equipment and aircraft.

4. More Information.

- a. **Special Airworthiness Information Bulletins (SAIBs).** Subject: Engine Fuel and Control – Operation with Contaminated Jet Fuel. <https://www.faa.gov/aircraft/safety/alerts/SAIB/>
 - i. SAIB HQ-18-08, as revised.
 - ii. SAIB HQ-18-28, as revised. Distributed by: Flight Standards Revision 1.
 - iii. SAIB AIR-21-08, as revised.
- b. **FAA Advisory Circular (AC), as revised.** FAA AC 150/5230-4, Aircraft Fuel Storage, Handling, Training, and Dispensing on Airports. https://www.faa.gov/airports/resources/advisory_circulars/index.cfm/go/document.current/documentNumber/150_5230-4
- c. **NTSB Safety Alert, dated July 2019.** NTSB Safety Alert for Fuel Providers: Prevent DEF Jet Fuel Contamination. <https://www.nts.gov/Advocacy/safety-alerts/Documents/SA-079.pdf>
- d. **Industry Report, dated June 11, 2019.** Aircraft Diesel Exhaust Fluid Contamination Working Group Collaborative Industry Report on the Hazard of Diesel Exhaust Fluid Contamination of Aircraft Fuel. This report was generated by aviation industry representatives, the FAA, and was chaired by the NBAA. <https://nbaa.org/wp-content/uploads/aircraft-operations/safety/DEF/20190611-Aircraft-DEF-Contamination-Working-Group-Report.pdf>

The paper covers many DEF-related subjects, including the following subjects:

- i. DEF contamination safety analysis
 - ii. DEF contamination mitigation strategies
 - iii. Short- and long-term recommendations
 - iv. Additional background, notices, and recommendations
- e. **Energy Institute Video for Fuel Operators.** Educational video on the control of fuel system icing inhibitor and diesel exhaust fluid at airports. <https://youtu.be/18mRbA7DVcc>



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