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Project Summary

Pollution Prevention Opportunity Assessment, U.S. Coast Guard Aviation Training Center, Mobile Alabama

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An assessment of pollution prevention opportunities at the U.S. Coast Guard Aviation Training Center in Mobile, AL, identified waste reduction opportunities in five major processing areas: flight simulator operation, aircraft maintenance, aircraft fueling, aircraft washing, and general operations. The assessment team observed evidence of a concerted effort to reduce wastes at the facility. This publication summarizes additional opportunities for waste reduction.

This Project Summary was developed by EPA's Risk Reduction Engineering Laboratory, Cincinnati, OH, to announce findings of the research project that is fully documented in a separate report of the same title (see Project Report ordering information at back).

Introduction

A pollution prevention (P2) opportunity assessment of the U.S. Coast Guard (USCG) Aviation Training Center (ATC) in Mobile was conducted under the purview of the Risk Reduction Engineering Laboratory's Waste Reduction Evaluations at Federal Sites Program. The program supports P2 research through joint assessments at selected federal sites. The study was conducted using the EPA manual *Facility Pollution Prevention Guide* (EPA/600/R-92/088), which outlines a process for collecting and analyzing information using detailed worksheets to characterize waste streams and waste reduction alternatives.

The USCG ATC is located at Bates Field adjacent to the Mobile, AL, Municipal Airport. The training center was commissioned in 1966 to provide centralized comprehensive training to Coast Guard personnel in the operation of fixed-wing and rotary-wing aircraft. The facility also has fixed-wing search and rescue responsibilities. Five hundred employees operate the facility on a 24-hr basis. Three types of aircraft are maintained in operation: the Dauphin Helicopter (HH-65), the Jayhawk Helicopter (HH-60), and the Falcon Jet (HU-25). Duties include cleaning, maintenance, and repair of structural, mechanical, and electrical components, and rescue and survival gear. The aircraft are also fueled onsite. Approximately 20 aircraft are operated at this facility.

The assessment team observed evidence of a concerted effort to reduce wastes at the facility. Opportunities for further progress in waste reduction were identified in each major process area: flight simulators, aircraft maintenance, aircraft washing, aircraft fueling, and general operations.

Flight Simulators

The ATC houses three flight simulators, all of which use hydraulic equipment. Hydraulic fluid spills account for the major portion of the waste generated from the simulators. Recovered hydraulic fluid is sold to a recycling facility for $0.03/gal while spent hydraulic fluid filters and spill absorbents are disposed of as hazardous wastes. A recommended option was to perform preventive maintenance on hydraulic pumps and pipe joints, thus reducing the leaks and subsequent cleanups. Additionally, a wringer can be used to

recover the fluid from the absorbents, and the absorbent material can be reused with an average of 75% absorption capacity. Overall, these options have economic advantages: a reduction in waste disposal costs and a savings in the purchase of raw materials.

Aircraft Maintenance

Several activities in the aircraft maintenance area account for pollution generated at the ATC. As an example, the three airframe shops and the engine shop each have their own material lockers. Many of the materials used in the shops are alike or similar. A P2 option is to combine the four lockers and establish a centralized control point for management of maintenance materials. Management responsibilities would include tracking the material shelf life extensions. This option would reduce material usage and losses at little or no increase in personnel costs.

Alternative cleaning agents were identified to replace the numerous cleaning materials containing organic solvents which are collected and disposed of as hazardous waste, or which evaporate. As an example, instead of toluene to clean rubber surfaces, alternatives such as acetone, isopropyl alcohol, or terpene-based cleaners could be used.

Currently, preventive maintenance on the airframe engines in the Dauphin Helicopter and Falcon Jet require replacing the engine oil every 150 hr of operation and gearbox oil every 450 hr of operation. For the Jayhawk Helicopter, however, replacement is based on the condition of the oil. A P2 option is to establish that same practice for the Dauphin Helicopter and Falcon Jet. A benefit would be the extended life of the oil. A 10% increase in oil life would reduce oil consumption by an estimated 200 to 300 gal/yr at the ATC. Implementation costs would include periodic analyses to track the condition of the oil.

Aircraft Fueling

Several easily implemented options would significantly reduce pollution resulting from aircraft fueling. These include the following: using spill absorbents to recover spilled fuel; squeezing the absorbent to recover additional fuel, and reusing the absorbent; eliminating rainwater entry to the bowser where waste is stored; and segregating bowser wastes for later recovery. Bowser waste can be sold at $0.03/gal, but since $0.50/gal of water is deducted from the price, it is economically beneficial to eliminate the water. All that is needed to implement this option is to ensure that the inlet and funnel are not left unattended during waste transfer to the bowser.

Most spills from fuel transfer activities are the result of unsupervised or unattended transfer, especially at the fuel farm. In addition, failure of automatic shut-off valves results in overflow spills. Installation, careful inspection, and periodic testing of overfill protection systems in all fuel transfer facilities and equipment will significantly reduce this source of pollution.

Another option is to limit the amount of fuel used to satisfy the requirement for visual testing of fuels. One pint is the minimum required, but often two or three times that amount is used. Adherence to the minimum requirement is all that is needed to reduce pollution from waste fuel by two to three times.

Aircraft Washing

Considering future environmental requirements, a P2 option is to use alternative washing soaps. The ATC currently uses Aircraft Soap Types 1, 2, 4 and 5, which contain the following compounds:

Type 1 — Dipropylene Glycol Methyl Ether, Hexylene Glycol, Morpholine
Type 2 — Dipropylene Glycol Methyl Ether
Type 4 — Mineral Spirits, 2-Butoxyethanol, Hexylene Glycol
Type 5 — Naphtha, 2-Butoxyethanol, Hexylene Glycol

These compounds are currently within the requirements of the rinsate discharge permit, but they may be regulated in the future. Nonhazardous alternatives used by the Air Force, such as AVIAWASH 4000* and Turboclean, should be investigated to determine if they meet the aircraft washing needs of the ATC.

General Operations

Several alternatives were identified that could communicate ways that P2 relates to specific job requirements. These include the following: issuing a written P2 management policy, tailoring training material specifically to USCG aviation activities, incorporating P2 practices into operating procedures, measuring P2 progress, conducting staff briefings on the progress made, and recognizing P2 efforts and progress.

Conclusion

The assessment team observed evidence of a concerted effort to reduce wastes at the facility. Opportunities for further progress in waste reduction were identified in each major process area. The P2 options identified for the ATC require minimum effort and expense and could be easily implemented.

The full report was submitted in fulfillment of Contract 68-D2-0181, WA 1/011, by the TRC Environmental Corporation, under Subcontract No. 1-645-999-222-004 to Pacific Environmental Services, Inc., under the sponsorship of the U.S. Environmental Protection Agency.

* Mention of trade names or commercial products does not constitute endorsement or recommendation for use.

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The complete report, entitled "Pollution Prevention Opportunity Assessment, U.S. Coast Guard Aviation Training Center, Mobile, Alabama," (Order No. PB95-100020; Cost: $27.00, subject to change) will be available only from:
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