COMPLIANCE

VOLATILE CHLORINATED SOLVENT DETECTOR

LEAD ACTIVITY
Naval Aviation Depot (NADEP) North Island

STATUS
Complete

MISSION
Monitor volatile chlorinated compound vapors of waste oils

REQUIREMENT
Waste oils generated by military activities must either be recycled or disposed of. A cost-effective method of determining if waste oils can be recycled is required.

DESCRIPTION
Various military activities generate a variety of waste oils that create waste disposal problems. The decision to recycle or dispose of waste oil is based on specified criteria. One of the criteria is that waste oil available for recycling cannot contain more than 1,000 parts per million (ppm) of total halogens. The University of Dayton Research Institute (UDRI) developed a hand held Volatile Chlorinated Solvent Detector (VCSD) designed to monitor the presence of chlorinated compounds (total halogens) on used oils. The light emitting diode (LED) indicator correlates the amount of chlorinated compounds to the recycling limits in parts per million (ppm). If the oil has less than 1,000 ppm total halogens then a lab analysis is required to determine the level of specific heavy metals, before the used oil can be recycled.

A prototype VCSD was given to the used oil manager at the NADEP 90-day storage facility for actual field tests and demonstration. Traditionally, commercial chemical kits are used to determine the concentration of total halogens; the VCSD would take the place of the kits, thus saving NADEP the cost of test kits (about $225 per quarter) as well as reducing man-hours.

The VCSD detects volatile chlorinated compound vapors of waste oils as well as jet fuel, kerosene, gasoline, and some organic solvents such as acetone. The unit runs on batteries or with an A/C adapter and is rechargeable. During the demonstration, five different oils were spiked with four different chlorine compounds. The spiked samples were analyzed both with chemical kits and with the detector. The results indicate that the detector would be useful for a fast qualitative analysis and limited semi quantitative analysis of the volatile chlorinated contaminants of oil samples under field conditions.

NADEP is using both the VCSD and the test kits, while the VCSD is still being evaluated.

BENEFITS

- Cost savings achieved through reduced man-hours and elimination of test kits

ACCOMPLISHMENTS/CURRENT STATUS

Date	Activity
SEP 1994	First contact with UDRI regarding VCSD
FEB 1995	Detectors were shipped to NADEP for the demonstration
MAY 1995	Conducted the tests of the waste oils
OCT 1995	Final Report written on the demonstration and the successful results
JAN 1999	Document technology in NELP Web page write-up
JUN 1999	Implement technology on a full-scale basis

FUTURE PLAN OF ACTION & MILESTONES

Not Applicable

COLLABORATION/TECHNOLOGY TRANSFER

The VCSD may be used at any facility that needs to determine if waste oils qualify for recycling.

BIBLIOGRAPHY

- Field Analytical Chemistry and Technology, "Evaluation of Volatile Chlorinated Solvent Detector." 1996.
- California Department of Toxic Substance Control, Sacramento, CA, Document No. 103. 1993.

RELATED GOVERNMENT INTERNET SITES

None Available

RELATED NAVY GUIDEBOOK REQUIREMENTS

- 02012 Waste Stream Determination/Analysis
- 10003 Cost Effective Waste Reduction
- 10007 Installation Recycling Programs

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