Make a Difference Recycle

Rerefined Oil Performance and TxDOT Used Oil Collection Procedures

Problem Statement

Maintaining more than 77,000 miles of roadway requires a sizable fleet. The Texas Department of Transportation (TxDOT) is committed to operating its 17,000 pieces of on- and off-road equipment in an environmentally sensitive manner while ensuring optimum effectiveness. Very little objective scientific data is available to use in comparing the quality, performance characteristics, and costs of rerefined oil and fluids with their virgin counterparts.

Objectives

Rerefined Oil Study

The Texas Tech University Institute for Design and Advanced Research conducted study 0-1355, "Rerefined Oil Performance and TxDOT Used Oil Collection Procedures," for the Texas Department of Transportation (TxDOT), the Texas Natural Resource Conservation Commission (TNRCC), and the Federal Highway Administration (FHWA), to meet these objectives:

- Collect information and data on oils and fluids and identify chemical and physical differences between rerefined and virgin oils and fluids.
- Collect and test oil samples from TxDOT vehicles and compare virgin and rerefined oils before and after use, and identify any long-term deleterious effects related to using rerefined oil in TxDOT equipment.
- Assess the life cycle cost-effectiveness of purchasing and logistical approaches for obtaining and distributing rerefined oils.
- Recommend viable purchasing specifications for rerefined oils and fluids.
- Conduct a survey of TxDOT's used oil and fluid collection and recycling procedures, and rerefined oil and fluid usage.
- Propose viable options for TxDOT oil and fluid handling procedures and used oil and fluid collection procedures.

Findings

The most significant observation made from a survey of TxDOT districts for this study is that most, if not all, problems resulting from the use of rerefined oil and fluids are associated with contamination and are not related to the basic characteristics of the fluids.

Many authoritative sources, as well as this study, have thoroughly substantiated that there is essentially no difference in virgin-base stock oils and rerefined-base stock oils. Further, additive packages purchased from reputable refiners are processed to meet American Petroleum Institute (API) specification requirements. Thus, if the blending process is performed properly and no contamination is introduced in the packaging process, the rerefined end product will be equivalent to the virgin end product in every way. API-licensed rerefined oils must pass the same cold start and pumpability tests, rust and corrosion tests, engine wear tests, high temperature oil thickening tests, deposit tests, and phosphorous tests that virgin oils are required to pass. Thus, wear experienced by an engine (or vehicle) due to the use of rerefined oils and fluids will be no different than that experienced using virgin lubrication fluids. Maintenance procedure frequencies, such as oil and filter changes, are not affected by the use of rerefined lubricating products, therefore, the life cycle cost increase (if any) resulting from the use of rerefined fluids is that related to the increased cost