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# A Practical Approach To Used Oil Collection/Recycling

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SEWARD SHIP'S DRYDOCK

October 3, 2002

# Regulatory Overview

Title 40, Part 279 of the Federal Code of Regulations covers the following primary issues:

- Used oil generation
- Used oil collection and storage
- Used oil transportation
- Used oil burned for energy recovery

Federal used oil regulations assume that the used oil will be put into recycling

# Used Oil Standards, Regulatory Purpose and Objectives

The use oil regulations were

- Created to provide objective management standards to distinguish used oil from hazardous waste
- Structured in a manner that promotes recycling of used oils
- Used oil is recycled by one of two methods
  - (1) As a fuel
  - (2) Reprocessed for use as a lube

# Key Aspects, Regulatory Framework and BMPs

- Hazardous waste or used oil generators are identified and managed by facility operator, not by the owner
- A facility is defined under RCRA as “all contiguous land and structures, other appurtenances and improvements on the land, used for treating, storing or disposing of hazardous waste.”
- Used oil regulations dovetail with EPA Hazardous Waste Regulations

# Key Aspects, Regulatory Framework and BMPs Continued

- The EPA has maintained primacy for enforcement of Hazardous Waste and Used Oil Regulations in Alaska
- Used oil regulations managed by a combination of activity or process definitions, exclusions and exemptions
- In addition to the used oil regulations, a wide range of environmental regulations may apply to facility recycling and waste management

# Definitions of Used Oil and Applicability of Regulations

Used oil is defined as:

- Any oil that has been refined from crude oil, or any synthetic oil that has been used as a result of such use if contaminated by physical or chemical impurities

EPA presumes that used oil is to be recycled unless a used oil handler disposes of used oil, or sends used oil for disposal.

*Except as provided in subpart 279.11*

## Definitions of Used Oil and Applicability of Regulations Continued

- The regulations of 40 CFR part 279 apply to used oil, and to materials identified in this section as being subject to regulation as used oil, whether or not the used oil or material exhibits any characteristics of hazardous waste identified in subpart C of 40 CFR part 261 (the hazardous waste regulations).

The aforementioned reference to subpart 279.11 is important because:

- Once used oil is shown to be on-specification by a combination of historic chemical analyses, routine screening, generator knowledge, and marketer declaration; and is to be burned for “energy recovery”, *the used oil is not subject to regulation under the 40 CFR Part 279, the Used Oil Regulations*

# Conditions Covering Used Oil Exemptions

This important distinction is qualified by another condition that the party claiming that the used oil is not subject to 40 CFR part 279 is in full compliance with applicable provisions of following paragraphs of Subpart H, Standards for Used Oil Fuel Marketers:

- 279.72 - On-spec Oil Standards for Used Oil Fuel Marketers (lab analysis)
- 279.73 - Notification, Standards for Used Oil Fuel Marketers
- 279.74(b) - On-specification Used Oil Delivery Standards (record keeping)

# Conditions Covering Used Oil Exemptions Continued

The used oil regulations exempt on-specification used oil that is to be burned for energy recovery. However, an entity involved in used oil type management activity may become regulated under other portions of the regulations by either a definition, process, or failure to comply to all provisions that provide a particular exclusion.



# Conditions Covering Used Oil Exemptions Continued

Thus, to take advantage of simplified compliance strategies, the oil handler must:

- be aware and in full compliance with applicable provisions that provide for the simplified compliance strategy

Occurrence of any of the following may result in loss of regulatory exemption:

- A batch of oil is shown to be off-specification and is not burned on-site (at the facility of generation) for energy recovery
- Compliance with provisions of 279.72, 279.73, or 279.74(b) are not met, or
- The used oil is not burned for energy recovery

# Energy Recovery

A key point in the regulations is what constitutes energy recovery?

Specifically is on-site burning in space heaters a form of energy recovery? To resolve this question, RSE contacted EPA Region 10 personnel. The EPA representative provided the interpretation that on-site burning in space heaters constitutes energy recovery.



# Used Oil Regulatory Provisions and Management Standards

## Used Oil Generators

A used oil generator is any person, by site, whose act or process produces used oil or whose act first causes used oil to become subject to regulation.

# Used Oil Regulatory Provisions and Management Standards Continued

## The following parties are not generators:

- Household "do-it-yourselfer" used oil generators are not subject to regulation under this part
- **Vessels at sea or at port are not subject to this subpart.** For purposes of this subpart, used oil produced on vessels from normal shipboard operations is considered to be generated at the time it is transported ashore. The owner or operator of the vessel and the person(s) removing or accepting used oil from the vessel are co-generators of the used oil and are both responsible for managing the waste in compliance with this subpart once the used oil is transported ashore. The co-generators may decide among them which party will fulfill the requirements of this subpart

# Used Oil Regulatory Provisions and Management Standards Continued

A generator is any business which produces used oil through commercial or industrial operations, or that collects it from these operations or private households. Generators must:

- Keep storage tanks and containers in good condition
- Label storage tanks and containers with the words, “USED OIL”
- Clean up any used-oil spills or leaks to the environment immediately

# Used Oil Regulatory Provisions and Management Standards Continued

## On- or Off-Specification Used Oil

Used oil management options and responsibility for regulatory compliance are dependent upon whether the oil is classified as on- or off-specification used oil. The chemical and physical characteristics of the used oil as determined by laboratory analyses determines this classification. Used oil is subject to analyses for the parameters identified in Table 1.

# Used Oil Regulatory Provisions and Management Standards Continued

- Table 1. On-Specification Used Oil Criteria

<b>Constituents/Property</b>	<b>Allowable Level</b>
Arsenic	5 ppm max.
Cadmium	2 ppm max.
Chromium	10 ppm max.
Lead	100 ppm max.
Flash Point	100 <sup>of</sup> max.
Total Halogens	4000 ppm max.

# Used Oil Regulatory Provisions and Management Standards Continued

## Other On-Specification Provisions

- Used oil that meets the Table 1 criteria is considered on-specification and is exempt from regulation under this standard
- If oil is determined to be off-specification and it is not burned for energy recovery in on-site space heaters, local management options become limited and will likely require transfer of oil to third parties
- Alaska Pollution Control (APC) or Emerald Alaska, Inc. (EAI). These and other Alaskan and Lower-48 companies provide used oil recycling services for off-specification oils and other non-RCRA oil contaminated solids and liquids.

# Used Oil Regulatory Provisions and Management Standards Continued

## Is on-specification used oil regulated at all?

The following is excerpted from 40 CFR 279.1:

*“Used oil burned for energy recovery, and any fuel produced from used oil by processing, blending, or other treatment, is subject to regulation under this part unless it is shown not to exceed any of the allowable levels of the constituents and properties in the specification shown in Table 1 {Table 2 in this report}. Once used oil that is to be burned for energy recovery has been shown not to exceed any specification and the person making that showing complies with §§ 279.72, 279.73, and 279.74(b), the used oil is no longer subject to this part.”*

# Used Oil Regulatory Provisions and Management Standards Continued

## Used Oil Transporters and Transfer Facilities (Subpart E)

Used oil transporter regulations apply to anyone who transports used oil, any person who collects used oil from more than one generator and transports the collected oil, and owners and operators of used oil transfer facilities.

- Used oil transporters may consolidate or aggregate used oil for purposes of transportation but with the following exception, may not process used oil
- Transporters may conduct incidental processing operations that occur in the normal course of used oil transportation (e.g., settling and water separation), but that are not designed to produce (or make more amenable for production of) used oil derived products or used oil fuel.

# Used Oil Transporters

Used oil transporters, in addition to meeting the requirements Identified for generators, must perform the following:

- Obtain an EPA ID number
- Store used oil in areas with oil-impervious flooring and secondary containment such as berms, ditches, or overpacks (depending on the type of facility, used oil may be able to be stored for only a limited amount of time)
- Ensure that hazardous wastes have not been added to the used oil
- Comply with DOT requirements for packaging, labeling, and placarding
- Record each used oil shipment accepted for transport or delivered

# Used Oil Transfer Facility

A used oil transfer facility is defined as “ transportation related facilities including loading docks, parking areas, and other areas where shipment of used oil are held for more than 24-hours during the normal course of transportation but not longer than 35-days”.

Used Oil Transfer Facility status requires the following:

- Storage of used oil in areas with oil-impervious flooring and secondary containment such as berms, ditches, or overpacks
- Equip ASTS with secondary containment
- Maintain storage tanks and containers in good condition
- Label storage tanks and containers with the words, "USED OIL"
- Clean up any used-oil spills or leaks to the environment immediately

# On site Space Heaters and Burning Used Oil For Energy Recovery (Subpart C, G)

Burning used oil for energy recovery is a primary option for recycling of used oil in Alaska. Used oil can be recycled as fuel by burning on-site (i.e., at the site of generation) or at the generators or third party off-site facilities. The standards, which apply to each option, are described on the next few slides.



# On site Space Heaters and Burning Used Oil For Energy Recovery (Subpart C, G)

## Burning Used Oil in On-Site Space Heaters

- Generators may burn their own used oil (and/or oil received from household "do-it-yourself" generators) in used oil space heaters rated at less than 500,000-Btu/hr that are vented to the atmosphere. Both on- and off-specification used oil may be burned in space heaters located on the premises where the used oil was generated. There are no management standards associated with on-site generated and burned used oil.

# On site Space Heaters and Burning Used Oil For Energy Recovery (Subpart C, G)

## Burning Used Oil for Energy Recovery

The standards applicable to burners of used oil vary depending on the type of used oil being burned. There are three categories of used oil:

- On-specification used oil
- Off-specification used oil
- Hazardous waste fuel

Burners of on-specification used oil must comply with the following notification, analysis, and record keeping requirements:

- Obtain an EPA ID number
- Perform an analysis of the used oil to ensure it is on- specification
- Record each shipment of on-specification used oil delivered to a burner

# Off-Specification Used Oil

Off-specification used oil is oil that exceeds the specifications shown in Table 1. Used oil is assumed to be off-specification unless testing proves otherwise. Off-specification used oil may be burned only for energy recovery in boilers and industrial furnaces. Burners of off-specification used oil must comply with the following standards:

- Obtain an EPA identification number to burn off-specification used oil;
- Process and store used oil in areas with oil-impervious flooring and secondary containment
- Issue a onetime written notice to the generator, transporter, or processor/re-refiner certifying that the burner has notified EPA of its used oil management activities
- Record each shipment of used oil accepted for burning

# Hazardous Waste Fuel

Used oil may be considered hazardous waste fuel because either it has been mixed with listed hazardous wastes or it exhibits a characteristic of a hazardous waste. Hazardous waste fuel may only be burned at an EPA-permitted facility. If the used oil is only hazardous because it has been mixed with hazardous wastes generated by households or conditionally exempt small quantity generators, then it may be burned in accordance with the off-specification burner standards.



# Used Oil Collection Centers

A DIY used oil collection center is any site or facility that accepts/aggregates and stores used oil collected only from household do-it-yourselfers. Owners or operators of all DIY used oil collection centers must comply with the generator standards in subpart C of this part. The used oil regulations specify that collection centers can accept used oil in less than 55-gallon quantities.

# Used Oil Collection Centers

A used oil collection center is any site or facility that:

- accepts/aggregates and stores used oil collected from used oil generators regulated under subpart C who bring used oil to the collection center in shipments of no more than 55-gallons under the provisions of section 279.24(a)
- Used oil collection centers may also accept used oil from household do-it-yourselfers

# Used Oil Collection Centers

Owners or operators of all used oil collection centers must:

- Comply with the generator standards in subpart C
- Be registered/licensed/ permitted/ recognized by a state/county/municipal government to manage used oil



# Used Oil Fuel Marketers

Any facility that conducts either of the following activities is a used oil fuel marketer:

- Directs a shipment of off-specification used oil from their facility to a used oil burner
- First claims that used oil is to be burned for energy recovery meets the used oil fuel specifications set forth in section 279.11

# Used Oil Fuel Marketers

The following entities are not marketers:

- Used oil generators, and transporters who transport used oil received only from generators, unless the generator or transporter directs a shipment of off-specification used oil from their facility to a used oil burner
- Persons who direct shipments of on-specification used oil and who is not the first person to claim the oil meets the used oil fuel specifications of § 279.11

# Used Oil Fuel Marketers

Used oil marketers must also comply with one of the following:

- Subpart C of this part -- Standards for Used Oil Generators
- Subpart E of this part -- Standards for Used Oil Transporters and Transfer Facilities
- Subpart F of this part -- Standards for Used Oil Processors and Re-refiners
- Subpart G of this part -- Standards for Used Oil Burners who Burn Off-Specification Used Oil

# Used Oil Management Costs (Southcentral Alaska)

Several Companies offer Used Oil Recycling Services

- Alaska Pollution Control
- Emerald Alaska, Inc.



# Used Oil Management Costs (Southcentral Alaska)

Prices for used oil and other fluid management (not including profiling or transportation)

- Used Oil \$0.25 to \$0.35/gallon
- Contaminated Water \$1.15 to \$1.25/gallon (non-RCRA)
- Ethylene Glycol \$3.00/gallon
- Oily Sludge (non-hazardous) \$6.00 -\$8.18/gallon or \$450/drum
- Drum Cleaning fee \$25/drum
- Used Oil Analyses \$150-\$200/test (including PCBs)

# Used Oil Management Costs (Southcentral Alaska)

Used oil is manifested as UN 1993 Combustible liquid N.O.S. and may be reclassified from flammable to combustible liquid if its flash point is between 140 and 100 degrees Fahrenheit.

Oil may be burned for energy recovery in an industrial boiler or may be processed and re-sold by Used Oil recyclers.

Processed used oil is resold for \$0.55 to \$0.85/gallon in Alaska and displaced No. 2 diesel at about \$0.90/gallon (bulk price)

# Simplified Compliance

- Maintain collection and storage facilities free of leaks and spills or residue.
- Equip all storage facilities with lids or coverings to prevent water intrusion.
- Conduct regular inspection and maintenance of used oil collection containers.
- Comply with local Fire Codes, State and Federal safety regulations.
- Label storage tanks "Used Oil."
- Clean up any used oil spills or leaks immediately and maintain clean-up material on-hand. Report all spills to regulatory agencies.
- Establish generator profiles and maintain records of used oil test results, filtered water tests, and related used oil compliance records. Keep records for at least three years.
- Maintain Used Oil Collection and Transfer logs and keep records for at least three years.
- Provide Information to the public regarding proper oil management and waste segregation practices.

# Whenever Possible Burn Used Oil in On-site Space Heaters

Generators may burn their own used oil (and/or oil received from household "do-it-yourself " generators) in used oil space heaters rated at less than 500,000 Btu/hr that are vented to the atmosphere. Both on- and off-specification used oil may be burned in space heaters located on the premises where the used oil was generated. There are no management standards associated with on-site generated and burned used oil. The SSBH and the City has a total of four used oil space heaters that promote substantial fuel savings for each department.

# Be Prepared to Respond to Releases of Used Oil

Even though pollution prevention is a primary focus used oil generators or managers must be prepared to respond to spills of used oil. The following general protocol is provided as guidance to manage spills of used oil and provide any necessary equipment:

## Managing and Dispose of Used Oil Filters, Absorbents and Materials

As personnel change oil in a fleet vehicle, the oil filter is also changed. Used oil filters can contain 10 to 16 ounces of used oil, therefore proper management of this source of used oil is required. Used oil filters are not considered a hazardous waste under RCRA if they are properly drained of oil. As used oil filters are removed from a warm engine, they should be placed gasket side down in an oil drain pan. If the filter has an anti-drain valve, the "dome end" of the filter should be punctured with a screwdriver (or similar device) so that the oil can flow freely. The filter should then be allowed to drain for 12 to 24 hours as the method to drain the filter. Drained used oil filters are stored in a covered, rainproof container to prevent used oil release to the surrounding environment. Used oil filters collected at the used oil collection sites, are stored in this manner for disposal. Absorbent materials should be deposited at the used oil collection sites are similarly stored for disposal.

# Orphan Hazardous Materials

Not infrequently a customer will abandon non-used oil products at a used oil collection site. These products can include the following items:

- Water-contaminated gasoline
- Fuel-contaminated waters
- Liquid and aerosol paints
- Solvents
- Anti-freeze (ethylene or propylene glycols)
- Alcohols
- Pesticides
- Batteries

In many cases the materials can be readily identified by labels or by physical or chemical characteristics. Small amounts of this material may be temporarily stored at an identified accumulation location for subsequent transfer to the appropriate Waste Transfer Facility on a date identified for receipt of household or CESQG waste materials. In other instances it may be desirable to retain a third party waste contractor to identify, package and transport the material to an approved waste treatment or disposal facility.

# Employee Training

Employees should be informed of used oil management procedures relevant to the position they fulfill. This training occurs both in the classroom and on the job. The Employer maintains records of job titles and written job descriptions for all positions related to used oil management and the names of employees filling each job. The Employer also maintains records describing the type and amount of training provided.

Applicable health and safety regulations that may apply include:

- Hazards communication standards (worker right-to-know)
- OSHA respirator regulations
- Hazwoper training requirements
- Hazardous Materials Awareness and Transportation regulations
- LEPC and Community Right to Know regulations

# Used Oil Profiling and Chemical Analyses

Used oil management options and responsibility for regulatory compliance are dependent upon whether the oil is classified as on or off-specification used oil. The chemical characteristics of the used oil as measured by laboratory analyses determines this classification.

# Used Oil Profiling and Chemical Analyses

## Laboratory Testing

Numerous analytical laboratories can provide used oil analytical testing services. Laboratory testing is used by the used oil generators for purposes of establishing an annual profile of the used oil characteristics for a particular generator or City activity generating used oil. In situations where “orphaned” drums or other containers with liquid or solid waste are deposited at collection centers, additional chemical analyses may be recommended. These situations should be evaluated on a case-by-case basis and in consultation with an experienced personnel and third party laboratory or environmental consultant input.

# Used Oil Profiling and Chemical Analyses

## Field Testing

Field-testing of used oil is appropriate if observations indicate that the used oil deposited in a collection tank is suspected to be off-specification or contaminated with other unacceptable substances. Field testing is performed for the dual purpose of regulatory compliance and personnel safety. Minimum field testing methods available is as follows:

- Use of colorimetric total halogen test kits
- Use of a portable or fixed flashpoint testing device
- Monitoring near collection tanks with a gasoline explosimeter
- Monitoring near the collection tanks with a organic vapor detector (photo-ionization detector)
- Use of compound specific Draeger tubes for personnel health and safety protection

# Used Oil Profiling and Chemical Analyses

## Used Oil Suitability for Burning in On-site Space Heaters

Used oil that meets on-specification criteria may still be unsuitable for burning at temperatures and conditions found in typical on-site space heaters. Virgin motor oil that is rich in unaltered additives and conditioners as well as oil that is emulsified with water as a result of mixing with detergents or other chemicals, may be difficult to burn in on-site space heaters. Oil that is rich in sediment, which may also be complexed with water or other oil additives or contaminants, and may not burn effectively in on-site space heaters either. In these cases the best option currently available to SSBH is to contract with third-party contractors with an industrial furnace or other suitable combustion device to handle these products as used oil fuel.

# Used Oil Collection AST Screening and Management Practices

Used oil collection tanks are inspected on a frequent basis and at up to a daily frequency during peak used oil generation time periods. These inspections will occasionally be recorded on Used Oil collection Tank Inspection Form or on the Used Oil Collection and Transfer Log.

The collection tanks are to be inspected for abandonment of containers with non-used oil hazardous materials such as anti-freeze, batteries, volatile fuels, paints, solvents or other household or CESQG waste items. If these items are discovered, their presence and disposition should be documented on a Used Oil collection Tank Inspection Form .

# Other Regulatory Programs

A number of regulatory programs separate from the used oil regulations apply to components of used oil activities.

Detailed review of compliance with state and federal regulations while outside of the scope of this contract include the following general categories:

- Federal Department of Transportation Hazardous Materials Regulations
- Federal and State Occupational Safety and Health Regulations
- State or Local Fire Code Regulation
- Federal Spill Prevention Control and Countermeasure (SPCC) Regulations
- Safe Drinking Water Act (SDWA) Underground Injection Control (UIC) Regulations
- EPA Hazardous Waste Regulations



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