



Volume 2, Number 2

# Enforcement Alert

Office of Regulatory Enforcement

## Petroleum Refineries:

### Compliance with RCRA Requirements Critical to Protecting Public Health, Environment

#### About Enforcement Alert

"Enforcement Alert" is published periodically by EPA's Office of Regulatory Enforcement to inform and educate the public and regulated community of important environmental enforcement issues, recent trends and significant enforcement actions.

This information should help the regulated community anticipate and prevent violations of federal environmental law that could otherwise lead to enforcement action.

See Page 4 for useful EPA Websites and additional resources.

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#### Some Refineries May Be Failing to Identify Wastes as Hazardous

Petroleum refineries are subject to the requirements of the Resource Conservation and Recovery Act (RCRA). Enacted in 1976, RCRA, as amended, regulates solid wastes, hazardous wastes and underground storage tanks. Two of RCRA's primary goals, among others, are to protect human health and the environment from the potential hazards of waste disposal and to ensure that wastes are managed in an environmentally sound manner.

This issue of "Enforcement Alert" highlights three areas of RCRA requirements for hazardous wastes that are of importance to petroleum refineries in reducing risks to human health and environment:

- **Waste Determinations:** Refineries must properly determine if the wastes they generate are subject to RCRA requirements. Subsequently, each hazardous waste must be treated, stored, and disposed in accordance with the applicable RCRA requirements.

- **New Waste Listings:** In August 1998, EPA determined that certain tank bottoms and other wastes were subject to RCRA. Effective Feb. 8, 1999, refineries should have

identified and begun managing these wastes in accordance with RCRA standards.

- **RCRA Air Emissions Requirements:** Refineries must control emissions of volatile organic compounds (VOCs) associated with applicable process vents, equipment containing or contacting hazardous wastes, and tanks and other units used for the storage of hazardous wastes.

#### Improper Waste Determinations; Long-Term Averaging May Lead to RCRA Violations

Several situations have been identified where refineries improperly evaluated waste and, as a result, improperly managed or illegally treated or stored hazardous waste.

- A refinery commingled sewer system discharges of process wastewater with storm water runoff. During periods of heavy rain, the refinery diverted commingled storm water into storm water retention basins (i.e., storm water diversion), away from the wastewater treatment units. The refinery's practice of averaging samples taken during different storm water diversion events throughout the year was improper and could lead to failures of hazardous waste identification and classification. Also, the im-

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pact of this practice could lead to hazardous waste concentrations that exceed RCRA threshold levels remaining in the storm water retention basins during and/or after storm water diversion events for extended periods. For this facility, an appropriate approach would have been to average the hazardous waste (i.e., benzene) concentrations for individual storm water diversion events to determine if the storm water exhibited the RCRA characteristic for toxicity.

- A refinery used long-term averaging as a practice. The refinery's practice of long-term averaging multiple wastes that were disposed into surface impoundments, at different times throughout the year, violated RCRA's requirement to take "representative samples" of each individual waste stream. The implication of this practice was that this facility could have placed highly hazardous waste into the surface impoundments at any time so long as it also later dumped enough non-hazardous wastes such that, on average, over time, the total material dumped was not hazardous. The facility's long-term averaging practice is a form of dilution which is prohibited by RCRA absent a permit (*United States v. Mobil Oil Corp.*, 1997 WL 1048911 (E.D.N.Y. Sept. 11, 1997)).

- A refinery mismanaged process wastewaters from the refinery oily sewer system by diverting the wastewaters into unpermitted surface impoundments during periods of dry weather. The sludges generated and removed from the surface impoundments were not managed as hazardous waste. Also, the surface im-

### RCRA Subtitles Applicable to Petroleum Refineries

Petroleum refineries are primarily subject to three distinct parts of RCRA (i.e., Subtitles). These subtitles are: Subtitle C, which covers hazardous waste management; Subtitle D, which deals with solid waste management; and Subtitle I, which applies to underground storage tank management. The requirements of these Subtitles (i.e., regulations) help prevent the release of contaminants to the environment, such as the leaching of metals from wastes into groundwater or the release of toxic air emissions from stored wastes.

RCRA Subtitle C gives EPA the authority to control hazardous waste from its generation to its disposal (i.e., "cradle-to-grave"). Typically, hazardous wastes generated by refineries and subject to regulation under RCRA are metals, spent acids, spent caustics, spent solid catalysts, wastewater treatment sludges and residues from tank cleaning operations, and numerous solid wastes containing toxic organic compounds (such as those found in the bottoms of distillation processes). These hazardous wastes under RCRA, for example, are required to be manifested, transported in an appropriate manner, treated in accordance with proper treatment standards, or if stored, for instance in a container, properly managed.

poundments did not meet RCRA design and operating requirements. Correct management would have been to handle the sludges as hazardous wastes and have the surface impoundments in compliance with all requirements of RCRA (e.g., double linings, leachate collection system, and ground water monitoring).

Complete and accurate hazardous waste determinations and proper management practices are critical to protecting the public health and the environment. Failure to correctly identify and manage hazardous wastes may result in contaminated lakes, rivers, groundwater, and soil causing endangerment to the general public and the ecosystem. The law requires refinery owners and operators to properly identify, classify, and manage all generated wastes.

### New Waste Stream Listings

On Aug. 6, 1998 EPA listed as hazardous four waste streams generated

by the petroleum refining industry. The new listed hazardous wastes include: Crude Oil Storage Tank Sediment (K169), Clarified Slurry Oil Tank Sediment (K170), Spent Hydrotreating Catalyst (K171), and Spent Hydrorefining Catalyst (K172). The new waste listings are based on risk assessments that show unacceptable risks to human health posed by benzene, arsenic, and polynuclear aromatic hydrocarbons.

Standards for the treatment (i.e., any method, technique, or process designed to physically, chemically or biologically change the nature of a hazardous waste) exist for these newly listed hazardous wastes and can be found in Title 40 of the Code of Federal Regulations, Section 268.40 (the amended Table of Treatment Standards) or on page 42187 of the Aug. 6, 1998, Federal Register. EPA requires that all refineries manage the newly listed waste as hazardous waste by the effective date of the Final Rule,

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Feb. 8, 1999. The newly listed wastes are generated as follows:

1. **K169 wastes** consist of sediment, water, and entrapped oil removed from the bottom of crude oil storage tanks.

2. **K170 wastes** consist of sediment generated from the storage and/or filtration of clarified slurry oil.

3. **K171 wastes** are generated when hydrotreating catalyst is removed from reactors used to treat petroleum fractions from the atmospheric and vacuum distillation units.

4. **K172 wastes** are generated when hydrotreating catalyst is removed from reactors used to treat heavier molecular weight petroleum fractions, residual fuel oil and heavy gas oil.

Potential waste management practices for the newly listed wastes include:

- K169 and K170 can be: (a) combusted in off-site hazardous waste incinerators; or (b) managed in on-site hazardous waste incinerators; or (c) (using the Oil-Bearing Exclusion) processed in coking or other refinery process units.

- K171 and K172 can be: (a) com-

busted in off-site hazardous waste incinerators followed by stabilization and then hazardous waste landfill of the ash; or (b) regenerated/reclaimed in off-site metal recovery units.

### RCRA Air Emission Requirements

Air emissions are a major concern to EPA and the general public. The 1994 Toxic Release Inventory (TRI) reported releases from refineries that totaled 67,241,720 pounds (159 reporting refineries), averaging 422,904 pounds released per facility and ranking seventh among industries. Refinery volatile organic compound (VOC) air releases account for 55 percent of all refinery air releases.

VOC emissions are an area of significant concern because refineries ranked first for these emissions based on data from the 1995 Aerometric Information and Retrieval System, AIRS, database, compared to 17 other industrial sectors. VOCs are partly responsible for causing ground-level ozone, which damages the lungs. Many VOCs are also toxic, causing illnesses such as cancer, neurological, and respiratory diseases. Furthermore, approximately 76 refineries are within three miles of population centers containing 25,000 people and 44 refineries are within three miles of popula-

### K LISTED WASTES

K listed wastes are wastes from specific sources that EPA has studied and made a precise narrative description of the waste (i.e., listing) based on the threat the waste can pose. The K listed wastes can be found in Title 40 of the Code of Federal Regulations, Section 261.32 (i.e., hazardous wastes from specific sources).

tions of more than 5,000.

Many refineries throughout the country generate and manage hazardous waste containing VOCs, potentially placing them under RCRA requirements (40 C.F.R. Parts 264 and 265) for air emissions under Subparts AA (process vents from specific management operations), BB (equipment containing or contacting hazardous waste), and especially CC (tanks, surface impoundments, containers, and miscellaneous units).

RCRA air emissions standards for process vents (Subpart AA) applies to process vents associated with distillation, fractionation, thin-film evaporation, solvent extraction, or air or steam stripping operations that man-

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### What Data Do the AIRS & TRI Databases Provide?

**AIRS, Aerometric Information Retrieval System,** is a computer-based repository of information about airborne pollution in the United States and various World Health Organization (WHO) member countries. AIRS contains air quality, emissions, compliance, and enforcement data that EPA and state agencies can use to implement the necessary programs for improving and maintaining air quality.

**Toxics Release Inventory (TRI)** is an EPA database containing information about toxic chemicals that are being used, manufactured, treated, transported, or released into the environment. TRI provides citizens information about potentially hazardous chemicals and their use so that communities have more power to hold companies accountable and make informed decisions about how toxic chemicals are managed.



United States  
Environmental Protection Agency  
Office of Regulatory Enforcement  
2201A  
Washington, D.C. 20460

Official Business  
Penalty for Private Use \$300

Bulk Rate  
Postage and Fees Paid  
EPA  
Permit No. G-35



Recycled/Recyclable  
Printed with Soy/Canola Ink on paper that  
contains at least 50% recycled fiber

## Useful Resources

RCRA's Information website:  
<http://www.epa.gov/oeca/ore/red/>

RCRA Orientation Manual:  
<http://www.epa.gov/epaoswer/general/orientat/>

OSW website for the Petroleum Refining Process Wastes Listing Final Rule:  
<http://www.epa.gov/epaoswer/hazwaste/id/petroleum/> or contact: Max Diaz (703) 308-0439 E-Mail: [diaz.max@epa.gov](mailto:diaz.max@epa.gov)

Subparts AA, BB, and CC regulations: Title 40 Code of Federal Regulations Parts 264 and 265:  
<http://www.access.gpo.gov/nara/cfr/waisidx/40cfrv17.html>

EPA AIRS database website:  
<http://www.epa.gov/airs/>

TRI database: <http://www.epa.gov/opptintr/tri/>

Small Business Gateway:  
<http://www.epa.gov/smallbusiness>

Reporting Environmental Violations (Tips and complaints): <http://www.epa.gov/oeca/tips1.html>

EPA's Y2K Enforcement Policy:  
<http://www.epa.gov/oeca/epddd/ocy2k.html>

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age hazardous wastes with organic concentrations of at least 10 parts per million by weight.

Air emissions standards for equipment leaks (Subpart BB) applies to equipment that contains or contacts hazardous wastes with organic concentrations of at least 10 percent by weight.

The Subpart CC regulation applies to tanks, containers, surface impoundments, and miscellaneous units used to manage hazardous waste with average VOC concentrations of more than 500 parts per million by weight at the point of waste origination. Industry compliance with Subpart CC regulation will reduce VOC emissions from certain hazardous waste management activities.

December 8, 1997, was the final compliance date by which affected units were required to have installed and begun operating specified air emission controls. In cases where these facilities have air emission controls that are in compliance with other air emission regulations (i.e., National Emission Standards for Hazardous Air Pollutants, Maximum Achievable Control Technologies), facilities are deemed to be in compliance with Subpart CC.

EPA expects refineries to review their processes and equipment to ensure they have met all RCRA air emission requirements. Addressing air emissions should be a high priority for all refineries. Ensuring industry compliance with RCRA air emissions requirements will reduce air toxics emissions and improve air quality.

## Next Steps

The Agency considers the petroleum refining industry a priority sector and, therefore, has increased its compliance assurance and enforcement focus on it. EPA encourages refineries to take affirmative steps to ensure they are in compliance with all applicable RCRA requirements.

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## **Policies for Reducing or Eliminating Penalties for Self-Policing**

*EPA has adopted two policies designed to encourage the regulated community to comply with environmental laws. For more information, see EPA's Audit Policy Website at: <http://www.epa.gov/oeca/auditpol.html>, and the Small Business Policy at: <http://www.epa.gov/oeca/smbusi.html>.*