

## **Discussion of the Nature of Unused #6 Residual Fuel Oil and Disposal Options**

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**Background:** In July, 2017 the OSC inspected Epic Holdings, LLC, a commercial facility in South Glens Falls, NY. During the inspection the OSC observed a room in which the owner (the "Responsible Party, PRP, or RP") had staged approximately 13,000 gallons of aged #6 residual fuel oil in approximately 250 polyethylene plastic (poly) drums on metal racks 4 tiers high. The RP has no use for this oil because the boiler at the facility was converted to natural gas years ago, and the oil is being stored there for lack of a better location as perceived by the RP. The room is ordinarily vacant and is just an empty space that was convenient for the storage of the drums. It has one metal roll-up door for access and egress, and a partition wall separates the room from the rest of the building. The room has no fire detection or suppression systems other than a single 1-pound fire extinguisher, and is within 170 feet of the shoreline of the Hudson River. The land outside the room has a downwards slope away from the building and towards the river. The room lacks any form of secondary containment that would prevent the oil from reaching the river in the event of a release. The OSC determined that if a fire or other catastrophic event occurred, a significant threat existed for the release of petroleum to enter the Hudson River and/or the adjacent shoreline. Consequently, the OSC issued the RP a Notice of Federal Interest ("NOFI") pursuant to the federal Oil Pollution Act of 1990 ("OPA'90 or OPA"). A NOFI puts a PRP or an RP on notice that pursuant to the OPA '90 the RP may be financially accountable for removal costs and damages resulting from the pollution incident, or threat of an incident, involving discharges of petroleum into a navigable waterway of the US. The NOFI gave the RP 14 days from receipt to state whether he was willing to remediate the threat posed by the improper storage of the #6 oil.

Federal removal actions pursuant to OPA will initially be limited to monitoring progress of the RP's actions and providing guidance as necessary. However, the OSC is authorized under the National Contingency Plan ("NCP") to assert federal jurisdiction over a removal action if the OSC deems the efforts on the part of the RP to be ineffective or not timely.

In the matter of Epic Holdings, the OSC has discussed various options with the RP which would be acceptable to EPA in response to the NOFI. The OSC indicated to the RP that he must either: a) store the fuel oil in accordance with applicable federal spill prevention regulations (40 CFR Part 112 and the NCP), b) provide it to an end-user as a commercial commodity, or c) dispose of it as a hazardous waste pursuant to the Resource Conservation and Recovery Act ("RCRA") at a permitted and complying RCRA disposal facility. This document discusses the merits and acceptability of the various options stated above.

### **RP's Response to the NOFI:**

The RP responded to the NOFI within the 14-day period and stated in an e-mail that he had been in contact with hazardous materials removal companies and was seeking price quotes for the removal and disposal of the #6 oil. His immediate suggestion was that the oil could be "solidified" with straw and taken to a landfill for disposal.

### **OSC's Response to RP's Proposed Remediation Plan:**

The OSC rejected RPs plan to solidify the oil with straw and deposit it in a landfill for reasons that will be presented below.

### **Characteristics of #6 Residual Fuel Oil:**

Petroleum fuels are refined from crude oil and are graded from #2 to #6 according to various physical characteristics and end-use. Very light fuel oil with short-chain hydrocarbons and low sulphur content is graded as #2 fuel oil, typically used in home heating furnaces and multifamily housing. Number 2 oil flows readily at room temperature and requires no heating prior to being burned. Going up in numbers the oils contain more complex and lengthy hydrocarbon species and become progressively heavier and thicker. Number 6 grade fuel oil is the heaviest of the fuel oils and is a viscous, semi-solid at room temperatures. In order to keep it in a fluid state it must be pre-heated to 120 °F and kept at that temperature in a heated tank so that it will flow from the tank to the boiler. Prior to being fired in the boiler #6 oil is heated to about 200 °F so it can be mechanically converted into a spray and mixed with air to be burned. Oil heavier than #6 contain toxic and carcinogenic hydrocarbons which are too thick to be burned even after heating. They are typically used as the cement in highway asphalt mixes and roofing tar.

All liquids that can burn have a critical characteristic called a Flash Point. A Flash Point is the lowest temperature at which fumes evaporating from the liquid will ignite. It is a critical and determining characteristic that governs how burnable liquids are handled, transported, and stored. Number 6 oil has a characteristic flash point of between 140 °F and 150 °F, depending on the crude oil from which the #6 was refined. Number 6 oil is classified by the National Fire Protection Association ("NFPA") as a Class III combustible liquid as follows:

"The definitions of "flammable liquid" and "combustible liquid" in NFPA 30 differ from those used by the U.S. Department of Transportation... Definition and classification of flammable and combustible liquids are addressed in Subsection 3.3.33 and Chapter 4 of NFPA 30... a combustible liquid is one whose flash point is 100°F or higher, also when tested by closed-cup methods. These broad groups are further classified as follows: • Class IA - Flash Point less than 73°F; Boiling Point less than 100°F • Class IB - Flash Point less than 73°F; Boiling Point equal to or greater than 100°F • Class IC - Flash Point equal to or greater than 73°F, but less than 100°F • Class II - Flash Point equal to or greater than 100°F, but less than 140°F • **Class IIIA - Flash Point equal to or greater than 140°F, but less than 200°F** • Class IIIB - Flash Point equal to or greater than 200°F".

Furthermore, the RP has stated that much of the oil he is storing is known as "tank bottoms". Tank bottoms is a term to describe the detritus that settle out of the oil over years of oil deliveries. This would include pieces of sand, dirt, grit, specs of metal, insects, objects indecently dropped into the tank, impurities in the oil and the effects of gravity on heavier molecules comprising the oil. Typically tank bottoms require some type of screening or filtration prior to reuse, recycling or disposal. This step is costly, especially when the oil is cold and requires preheating to move it through the screening process.

**NFPA Standards:**

The NFPA is an internationally recognized authority on policies, procedures and standards for anything involving fire protection, fire control and burnable materials.

NFPA standards are almost universally integrated into virtually every fire prevention/building code in the US. One of its purposes is to set minimum standards for the storage of flammable and combustible materials such as oil. For the storage of Class III combustible liquids (see above) the NFPA proscribes the materials of construction of the storage container, the materials and nature of construction of any room or enclosed area in which those liquids are stored, and many other considerations such as fire detection systems, fire suppression systems, ventilation requirements, vapor recovery, etc.

The room in which the oil is stored does not have fire detection or suppression systems, there is no room ventilation, and many of the drums of oil are missing lids, so vapors evaporating from the exposed surfaces of the oil will rise and accumulate in the upper areas of the room.

**OSHA Standards:**

OSHA proscribes standards for containers of flammable liquids in its revised regulations at §1910.106. These regulations were originally devised for storage of both flammable *and* combustible liquids but were revised in 2012 to only apply to the more dangerous flammable liquids. Nevertheless, the original intent of OSHA was to designate both liquids as dangerous enough to require special precautions, such as the use of fire-rated doors (in terms of hours of resistance to fire damage), ventilation systems, explosion-proof lighting and switches, etc.

**Flash Point Testing Method:**

In measuring the flash point of a liquid, the official test method is the Pensky-Martins Closed Cup test. It is designated by the American Society for Testing and Materials as Testing Method D-93, and as Test Method 1010A by EPA's "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods," also known as SW-846. The accuracy of TM D-93 is +/- **1.5 degrees** of temperature. Accuracy is defined as "a description of systematic errors, a measure of statistical bias; as these cause a difference between a result and a "true" value". This is also referred to as the margin of error. So using the RCRA D001 Ignitable waste property of "less than 140°F, an oil that has an ASTM D-93 tested flash point of 140 °F, could actually be as high as 141.5°F or as low as 138.5 °F. This range would be within the +/- 1.5 degree accuracy of the official test method for flash point. The significance of this will be discussed below as it applied to Epic Holdings.

**SPCC Applicability:**

The volumetric threshold for the applicability of the federal oil Spill Prevention, Control and Countermeasure ("SPCC") regulations is 1,320 gallons of total volume. The amount of oil stored by the RP exceeds that threshold, so the facility is subject to the requirements of the SPCC regulations at 40 CFR Part 112 and the NCP. As such there must be, among other things, an approved SPCC plan, secondary containment around the room to prevent migration of the oil, a response contractor with committed resources in the event of a release of oil, etc.

The RP has none of these required protective means, and without secondary containment such as sumps, dikes, walls, or diversion trenches, there is nothing to intercept a the flow of oil from the room and prevent it from traveling overland into the Hudson River or the adjacent shoreline. Even if the RP was to comply with the SPCC regulations, from a practical standpoint the RP has no need for the oil, and without bringing the room up to current fire and electrical codes, regardless of the SPCC protective measures the room itself would remain a fire hazard and unsuitable for storage of a Class IIIA combustible liquid.

#### **First Summary:**

The RP is storing thousands of gallons of a combustible liquid in a limited access room totally unsuitable for such storage, and as such is most likely in violation of the National, state and local fire codes. This forms a suitable environment for a fire to occur in this room and creates a threat of a release of the oil.

#### **CERCLA Applicability:**

There is a petroleum exclusion in the CERCLA statute, so this facility is not subject to the requirements of Superfund. The only practical regulatory solution is RCRA.

#### **RCRA Applicability:**

The only RCRA applicability that would attach would be if the RP decided to discard this oil as a waste. The only possible category of RCRA classification that could apply would be a RCRA D001 Ignitable waste if it's flash point is *140 °F or less*. The oil that the RP is storing has, to the knowledge of the OSC, never been tested for flash point. Although the flash point for a typical #6 oil is *greater than* 140 °F, it does vary by refiner, and one supplier of #6 fuel oil (Apex Oil company, St. Louis, MO) issued a Material Safety Data sheet in 2015 which lists the flash point of its #6 oil just at 140 °F. So, applying the accuracy of the ASTM TM D-93 as discussed above, it is possible that the #6 oil the RP is storing could have a flash point of 138.5 °F, less than the 140 °F RCRA standard, which would make it a RCRA D001 Ignitable waste.

#### **EPA Land-Ban Regulations:**

EPA Land ban regulations at 40 DFR Part 268 require that certain hazardous wastes be treated prior to placement on the land, i.e. either a RCRA Subtitle "C" hazardous waste landfill or a RCRA Subtitle "D" solid waste landfill. Assuming that the #6 oil in question is in fact a D001 hazardous waste, and the RP wants to dispose of it by land placement, it would be subject to the treatment requirements of Part 268. The following is an excerpt from §268.40 Applicability of treatment standards. Note the highlighted portions.

## TREATMENT STANDARDS FOR HAZARDOUS WASTES

Waste code	Waste description and treatment/Regulatory subcategory <sup>1</sup>	Regulated hazardous constituent		Wastewaters	Nonwastewaters
		Common name	CAS <sup>2</sup> number	Concentration <sup>3</sup> in mg/L; or Technology Code <sup>4</sup>	Concentration <sup>5</sup> in mg/kg unless noted as "mg/L TCLP"; or Technology Code <sup>4</sup>
D001 <sup>9</sup>	Ignitable Characteristic Wastes, except for the §261.21(a)(1) High TOC Subcategory below.	N/A	N/A	DEACT and meet §268.48 standards <sup>8</sup> ; or RORGS; or CMBST	DEACT and meet §268.48 standards <sup>8</sup> ; or RORGS; or CMBST
D001	High TOC Ignitable Characteristic Liquids Subcategory based on 40 CFR 261.21(a)(1)—Greater than or equal to 10% total organic carbon. (Note: This subcategory consists of nonwastewaters only.)	N/A	N/A	N/A	RORGS; CMBST; or POLYM

The #6 oil is non-waste water, it has the D001 Waste code, and high Total Organic Carbon (TOC > 10% total organic carbon). So the corresponding treatment requirement prior to landfilling would be those highlighted in green font: RORGS is distillation, CMBST is incineration, or POLYM is polymerization (a technique where the component molecules are chemically converted into a solid material). It is physically impossible to distill #6 oil outside of an oil refinery, so ROGS is not a practical treatment methodology. Polymerization is chemically impossible for #6 oil, so the only viable treatment methodology for #6 oil is incineration.

When questioned by the OSC about land-filling #6 oil, M. DiPietro, NYSDEC Region 5 Spills Response group (Warrensburg, NY) stated that in his experience no one has ever landfilled a large volume of #6 oil. He did say that it could be done if the generator met all the permit condition of the landfill, but it was unlikely that any landfill in NYS would accept that volume of a combustible liquid.

### Second Summary:

Number 6 oil would be a RCRA combustible waste with the Waste code of D001. If he RP proposes to dispose of the #6 oil in a landfill it would have to be as a RCRA Hazardous Waste and would be subject to the EPA Land-Ban pre-placement requirements, in this instance incineration. Since the process of incineration would essentially destroy the #6 oil, incineration as a method of *pretreatment* in order to comply with the Land-Ban requirements would effectively render moot any subsequent placement in a landfill.

**Traditional Acceptable Disposal Options:**

Available options that would be acceptable to EPA are:

1. Incineration. There are commercial facilities on the East Coast that will accept the #6 oil in drums and will incinerate the entire drum for a fee. Approximate cost of incineration is between \$150 and \$200 per drum plus the cost of transportation. Estimated cost for 250 drums of oil would be less than \$60,000.
2. Recycling. There are commercial facilities that will pick up the oil for a fee and sell it to a fuels blender or oil recycler. The cost for this varies with the price of oil and vendors.
3. Give away. There are commercial companies such as asphalt plants and roofers that will either take or buy the oil for reuse in their businesses. The cost for this is generally \$0, but tank bottoms would require some costly pre-screening prior to reuse.
4. Waste-to-energy. There are commercial facilities that will accept this oil to be burned for energy recovery, either in the form of generated steam or electricity. The cost for this type of disposal is very much in line with #1 above.

Any of the above options are an acceptable form of disposal and in fact would be entertained by this OSC if this was an Oil Fund removal action.

**Conclusions and Summary:**

EPA has the jurisdiction to regulate this facility and the #6 oil stored thereon pursuant to the Clean Water Act (CWA) and Oil Pollution Act of 1990 (OPA'90).

The #6 oil at the RP's facility is a fire hazard and presents a threat of a release to the Hudson River, a navigable waterway of the US. The facility does not have any means of preventing a release of oil from reaching the Hudson River or its adjacent shoreline. The federal OSC has issued a Notice of Federal Interest to the RP and the RP has indicated a willingness to comply with the applicable requirements of the CWA and OPA '90 by disposing of the #6 oil. The RP proposes to dispose of the #6 oil by solidification and placement in a landfill, which is unacceptable as it violates the EPA Land-Ban regulations. The only viable options for the disposal of this #6 oil are giving it to another end-user, shipping it to a permitted incinerator for either energy recovery or ordinary incineration, or shipping it to a permitted fuels blender for reuse.

Should the RP demonstrate reluctance or opposition to the above viable disposal options, a Clean Water Act Section 311(c) order should be issued by the OSC to the RP, directing him to initiate a response action. If the RP fails to comply with the 311(c) order or asserts an inability to pay for the requisite response action, EPA should seek voluntary access and assume jurisdiction in this matter. Should the RP deny EPA voluntary access to his facility to initiate an OPA '90 fund-lead response action, it is recommended that EPA refer this matter to the Department of Justice to seek a judicial access order.

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