

June 1, 2000

Mr. Keith Bergseid
Motiva Enterprises LLC
P.O. Box 37
Convent, LA 70723-0037

Re: Request for Clarification, Spent Catalysts from Motiva Enterprises LLC, Convent Refinery H-Oil Unit

Dear Mr. Bergseid:

Thank you for your letter of January 26, 2000 in which you requested clarification of the regulatory status of the spent hydroprocessing catalyst from Motiva Enterprises LLC, Convent Refinery's H-Oil Unit. In your letter, you state that the H-Oil Unit is a hydrocracking unit. Therefore, you point out that the spent catalysts removed from the Unit should be classified as spent hydrocracking catalysts and not be subject to the hazardous waste listings for spent hydrotreating and hydrorefining catalysts (K171 and K172).

You suggest in your letter that the spent catalyst removed from the H-Oil Unit should be classified as a hydrocracking catalyst for the following reasons:

- 1) Motiva has consistently reported the H-Oil Unit's capacity to the Department of Energy (DOE) as hydrocracking capacity, which is sufficient to classify it as such for the RCRA listing rule.
- 2) It is reasonable to consider the H-Oil Unit function to be hydrocracking because it clearly converts residual material to various more highly valued products and the conversion rate is substantial -- roughly 70 percent of the feedstock, well above the 50 percent level EPA was considering as one of the alternative cutoff levels in the proposed rule-- and the operating temperatures and hydrogen consumption for the H-Oil Unit meet criteria listed for hydrocracking in EPA's August 1996 *Study of Selected Petroleum Refining Residuals* in the rulemaking record.

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3) The fact that secondary hydrotreating occurs in hydrocracking units, including the moving bed process in Motiva's hydroprocessing unit was known to EPA during its rulemaking, and in fact one of the record samples labeled as spent hydrocracking catalyst in EPA's *Listing Determination Background Document* is from the Convent Refinery H-Oil Unit. Accordingly, EPA should have addressed the regulatory status of the moving bed process in the preamble to the Agency's proposed and final rules if the Agency had intended for the spent catalysts from the moving bed process to be covered by the hazardous waste listing.

After reviewing your letter of January 26, 2000 and considering the merits of the arguments presented, I am informing you that I disagree with Motiva's conclusion that the spent catalyst from Motiva's Convent Refinery H-Oil Unit is not subject to the hazardous waste listing determinations. The Office of Solid Waste ("OSW") does not find Motiva's arguments for defining the spent catalysts removed from the H-Oil Unit exclusively as spent hydrocracking catalysts to be persuasive. Because the catalysts are also hydrotreating catalysts, they are subject to the listing.

The description of the Convent Refinery H-Oil Unit provided in your letter of January 26, 2000 indicates that this unit is a dual purpose unit. Since the H-Oil Unit is performing a substantial hydrotreating function, as well as a substantial hydrocracking function and the same catalysts are promoting both functions, the Unit is a "dual purpose" unit and the spent catalysts from the unit are spent hydrotreating catalysts (K171). The preamble to the final listing determinations for spent hydroprocessing catalysts (63 FR 42110) indicated that spent catalysts from petroleum hydroprocessors performing hydrotreating and/or hydrorefining operations are captured by the hazardous waste listings, regardless of whether hydrocracking also occurs in the same unit or reactor. We also discussed this issue in a November 29, 1999, memorandum. Below we provide a response to each of the major points presented in your letter of January 26, 2000.

The first point that you raise in your letter is that Motiva consistently has reported the capacity of the H-Oil unit to DOE as hydrocracking capacity. However, OSW has determined from the content of your letter, as well as from information publicly available, that the Unit's capacity also could be considered to be hydrotreating capacity due to the fact that Unit is able to process feedstock that is not previously pretreated and has the ability to achieve very high levels of desulfurization and denitrification. The fact that the Unit provides these hydrotreating functions points to the fact that the unit meets the PSA definition for hydrotreating. The mere reporting of a catalyst to DOE as a hydrocracking catalyst is not sufficient to classify spent catalysts for purposes of the RCRA listing.

OSW rejects interpreting the listing rule to allow petroleum refineries to classify "dual purpose" units as hydrocracking units and in doing so argue that the spent catalysts removed from these units are spent hydrocracking catalysts and not within the scope of the hazardous waste listings. Under the plain language of the listing, a spent catalyst that is removed from a

unit that is performing hydrotreating or hydrotreating is covered by the listing; there is no exception for a spent catalyst removed from a unit that is also doing hydrocracking. OSW believes that, under the terms of the PSA definition of hydrotreating discussed in the preamble to the listing, Motiva's H-Oil Unit is performing hydrotreating. The preamble indicated that in cases where a facility previously reported that a unit was hydrocracking, spent catalysts removed from that unit would not be covered by the listing. However, EPA at that time was not presented with the classification of spent catalysts removed from units that perform both hydrotreating and hydrocracking functions. Thus, the discussion regarding PSA reporting was not intended to override the broader point that a unit that is performing hydrotreating within the meaning of the PSA definition is covered by the listing.

Your second point is that it is reasonable to categorize the spent catalyst from the H-Oil Unit as a spent hydrocracking catalyst. EPA, in its final rule, chose to use the PSA definition of hydrocracking rather than use specific numerical conversion rates, because the PSA definition is operational. Motiva's H-Oil Unit may meet the PSA definition of hydrocracking. However, the H-Oil Unit also clearly is designed to perform a hydrotreating function (*i.e.*, designed to remove sulfur, nitrogen, and heavy metals from the feed). Therefore, it is OSW's determination that the spent catalyst from the H-Oil Unit is a listed hazardous waste because the Unit and the catalyst are performing a hydrotreating function and meet the definition of hydrotreating as described in the PSA. We also note that the spent catalyst from the Unit may be contaminated with the hazardous constituents for which the waste was listed as a hazardous waste.

You also point out in your letter of January 26, 2000 that the operating temperatures and hydrogen consumption for the H-Oil Unit are similar to the hydrocracking operating conditions that EPA used to differentiate hydrocracking from hydrotreating in our August 1996 *Study of Selected Petroleum Refining Residuals*. We also do not find this argument to be persuasive. Although the operating conditions for the H-Oil Unit promote a significant hydrocracking function, significant hydrotreating of the feedstock also is occurring. Furthermore, regardless of EPA's discussion in the 1996 report, in the final rule the Agency adopted the process-based definitions of the PSA. In fact, the discussion in EPA's August 1996 study, which is cited by Motiva, points out the similarities as well as the differences between hydrocracking and hydrotreating and points out that hydrocracking units are typically designed in two stages: hydrotreating to remove nitrogen and heavy aromatics and a second stage for cracking. As pointed out in your letter, the H-Oil hydrocracking process does include both a hydrotreating stage and a hydrocracking stage. However, the same catalyst (the ebullating bed) is used to facilitate both treatment and cracking. Given that the catalyst is used for both treatment and

cracking, the catalyst meets that the listing description for hazardous waste K171 when spent particularly in light of the PSA definitions.

We also disagree with your third point that the H-Oil Unit's moving bed process is not covered by the rulemaking because the process was not explicitly addressed in the preamble to the final rule. First of all, the Agency did not receive specific comments, from Motiva or anyone else, on the issue of dual purpose reactors in response to the proposed listing determination for petroleum refining residuals. Nevertheless, discussions in the rulemaking record clarify that spent catalysts from dual purpose reactors are covered by the listing. When EPA addressed public comments to the proposed petroleum refining listing determination on a similar issue regarding spent guard bed catalysts, the Agency classified these catalysts as falling within the scope of hazardous waste listings (*i.e.*, K171, K172). See the final rule preamble at 63 FR 42156. Oil industry commenters argued that spent catalysts from pretreatment processes (*e.g.*, guard beds) that use more severe conditions (*i.e.*, higher pressure and high ratio of hydrogen to hydrocarbon) should be considered hydrocracking because such processes achieve contaminant removal and also provide significant reduction (greater than 10 percent) in feedstock molecular size. EPA rejected the commenters' arguments and stated that spent catalysts from such pretreatment units are covered by the hazardous waste listing. The Agency clarified that catalysts used to facilitate the treatment of petroleum feedstock are hazardous wastes when spent, even if they also facilitate hydrocracking. This same reasoning applies to the spent catalyst removed from Motiva's H-Oil Unit.

We consider it unimportant that the Agency labeled as spent hydrocracking catalysts the record samples from the Convent Refinery in support of our study of selected petroleum refinery residuals. The record samples identified in your January 26, 2000 letter represent samples of spent catalyst identified as hydrocracking catalysts by Motiva's facility personnel at the Convent Refinery¹ and made available to EPA sampling personnel on August 30, 1994. EPA labeled these samples, at that time, as samples from hydrocracking units, based upon information provided to the Agency by facility personnel, and prior to any regulatory determination on the part of EPA. The actual regulatory status of any spent catalyst is based on EPA's final listing determination, without regard to any characterization of particular waste samples by an individual facility prior to the Agency's final listing determination.

Once again, the description of Motiva's Convent Refinery H-Oil Unit provided in your letter indicates that the unit is a dual purpose hydroprocessing unit. Therefore, we consider the spent catalyst removed from the Unit to be a spent hydrotreating catalyst and subject to the hazardous waste listing determination (hazardous waste K171). Should you have any additional

¹ The Agency notes that in "*Listing Background Document for the 1992-1996 Petroleum Refining Listing Determination*," Table 2.4, the record samples identified by Motiva (sample numbers R20-CC-01 and R8A-CC-01) are listed under "Star Enterprises."

questions regarding the regulatory status of the spent catalysts removed from Convent Refinery H-Oil Unit, please contact Patricia Overmeyer at (703) 605-0708.

Sincerely,

Elizabeth Cotsworth, Director
Office of Solid Waste