



Impact of U.S. EPA's DSW Revisions Rule On Recycling of Petroleum Spent Catalysts (Hazardous Wastes K171 & K172)

**EO 12866 Meeting with OMB
June 5, 2014**

Vanadium Producers & Reclaimers Association

- VPRA members conduct nearly all **reclamation of spent catalyst** in the U.S.:
 - Gulf Chemical, Freeport, TX
 - AMG Vanadium, Cambridge, OH
- VPRA supports the safe, environmentally responsible and complete reclamation (including valuable metals recovery) of spent catalysts
- VPRA representatives:
 - John Hilbert, President
 - Dale Scherger, Consultant
 - Vincent Atriano, Squire Patton Boggs, Counsel



Spent Catalysts

- Used to remove sulfur, nitrogen and metals from petroleum production
- Consist of metal compounds and an alumina base
- Unique properties:
 - High valuable metals content
 - Can include vanadium, nickel, molybdenum and cobalt
 - Can contain metal sulfides
 - May be self-heating, pyrophoric or reactive
 - Can be oil rich
 - May contain polynuclear aromatic hydrocarbons (PAHs) and benzene



Vanadium

- Is an alloying element used to strengthen steel
 - Allows a 40% reduction in mass for equivalent strength
- Used in virtually every structural application in the military, e.g.:
 - Tactical vehicles
 - Bridges
 - Aircraft
 - Armor
- No domestically available sufficient substitute exists



Spent Catalyst Reclamation—Valuable Metals Recovery

- 6 million lbs./year of vanadium (70% of domestic supply) comes from catalyst recycling
 - Same production from virgin ore would generate 1.2 billion lbs./year of wastes
 - Recycling spent catalyst generates minimal waste
 - Major energy savings compared to mining
- Recycling avoids total reliance on foreign imports of vanadium (Russia, China & South Africa)
- Other valuable metals recovered include molybdenum, alumina, nickel and cobalt



Special Hazards of Spent Catalysts

- U.S. EPA has previously stated that spent catalysts:
 - “may pose a substantial or potential hazard to human health or the environment”
 - pose “substantial risks to consumers of groundwater associated with releases from ... landfilling”
 - “present a hazard because of their pyrophoric and self-heating properties”
 - U.S. EPA has “observed smoking catalyst storage areas” and “actual environmental and health damages”

63 FR 42154 (8/6/98)



Special Hazards of Spent Catalysts, cont.

- Consequently, U.S. EPA designated spent catalysts as **“listed” hazardous wastes K171 & K172** under RCRA due to their characteristics of:
 - Ignitability;
 - Toxicity; and
 - Reactivity.
- 63 *FR* 42185, 42189 (8/6/98)
- Because of these special properties, only the domestic reclaiming companies have the experience and expertise to safely handle and reclaim spent catalysts



Efforts to Develop a Specific Conditional Exclusion with U.S. EPA

- Since 2001, VPPRA's members have been working with U.S. EPA to develop uniform rules to encourage full and proper reclamation of spent catalyst instead of improper disposal
- In 2006, VPPRA proposed a **conditional specific exclusion** for safe and complete reclamation of spent catalysts
- However, this specific conditional exclusion has not yet been finalized by U.S. EPA



U.S. EPA's 2008 DSW Rule

- Again noted that spent catalysts “were shown to pose unacceptable risk to human health and the environment when mismanaged”
- Stated that “EPA is planning to propose – in a separate rulemaking from today’s final rule – to ... conditionally exclude” spent catalysts when reclaimed
- Therefore, spent catalysts were not eligible for the generic exemptions in the 2008 DSW Rule

Revisions to the Definition of Solid Waste Final Rule, 73 FR 64668, 64714 (10/30/08)



2011 Proposed DSW Revisions Rule

- However, U.S. EPA's proposed revisions rule abruptly reversed course – spent catalysts would become eligible for the generic DSW exemptions
- But U.S. EPA still recognized that “the risk of these hazardous secondary materials spontaneously igniting when in contact with air is not a property that most metal recyclers would be expected to address, and thus, present additional risks that are not presented by other types of metal-bearing hazardous secondary materials”

*DSW Revisions Proposed Rule, 76 FR 44094, 44141
(7/22/11)*



VPRA's Concerns re Inclusion of Spent Catalysts in Generic DSW Exemptions

- Generic exemptions are not tailored to unique properties of spent catalysts
 - e.g., proposed "contained" definition would not adequately address special risks due to pyrophoric properties during storage
 - inappropriate one-year accumulation period for generators would magnify these risks
 - complete reclamation (metals recovery) is not required; encourages waste of valuable resources and provides potential for sham recycling and circumvention of export restrictions



VPRA's Concerns re Inclusion of Spent Catalysts in Generic DSW Exemptions, cont.

- Would create a **dual system of regulation** by greatly reducing regulatory standards for "generator-controlled" recycling
 - Generator-controlled recycling (both onsite or offsite) would be subject to minimal conditions, creating a significant regulatory loophole
 - Generators could perform *partial* recycling (e.g., removing only oil) and landfill or export the remaining solid phase metals and other materials, wasting valuable resources



VPRA's Concerns re Inclusion of Spent Catalysts in Generic DSW Exemptions, cont.

- During periods of low metals prices, generators will have a financial incentive to perform wasteful partial recycling in lieu of complete third-party reclamation
- Third-party reclamation would be subject to full RCRA requirements which would create a financial disincentive against full and responsible third-party reclamation
- Dual regulation makes no sense because environmental risk is *higher* for generator-controlled recycling compared to complete and responsible third-party reclamation



VPRA's Concerns re Inclusion of Spent Catalysts in Generic DSW Exemptions, cont.

- Would waste VPRA and U.S. EPA efforts over 10+ years to develop specific conditional exclusion tailored to unique properties of spent catalysts
 - Would undermine U.S. EPA's stated goal to "encourage reclamation in a way that does not result in increased risk to human health and the environment"
- 76 FR 44094



Advantages of VPRA's Specific Conditional Exclusion

- Would establish an environmentally responsible uniform system of regulation tailored to the unique characteristics of spent catalyst
- Would promote and ensure full and responsible metals reclamation
- Would eliminate landfilling, inappropriate partial treatment and uncontrolled exports without adequate safeguards against mismanagement



Requested Action

- Accordingly, VPPRA respectfully requests that OIRA return the DSW Revisions Rule to U.S. EPA for further consideration in accordance with E.O.s 12866 and 13563 with respect to:
 - Non-inclusion of spent catalysts (K171 & K172) within the generic DSW exemptions and
 - Promulgation of the conditional specific exclusion for reclamation of spent catalysts proposed by VPPRA

