TD*X Associates LP
148 South Dowlen Road, PMB 700
Beaumont, TX 77707

TD*X Associates

From the Desk of
Carl R. Palmer
TD*X Associates
PO Box 13216
Research Triangle Park, NC 27709
ph (919) 349-1583
FAX (509) 692-8791
E-mail: cpalmer@tdxassociates.com

July 30, 2018

Louisiana Department of Environmental Quality
Public Participation Group
PO Box 4313
Baton Rouge, LA 70821

VIA Email. Deq.publicnotices@la.gov
Full Document Download Link: https://tdxassociates.egnyte.com/dl/LQd1eDT0R1

SUBJECT: AI Number 198467,
Activity Number PER20170003
Public Comments and Hearing Request

Dear Sir or Madame;

TD*X Associates has reviewed the June 21, 2018 Draft Variance from Classification as a Solid Waste For a Verified Reclamation Facility (VRF) that proposes to approve the Thermaldyne LLC request to install a thermal desorption unit (TDU) and three centrifuges for the processing of Resource Conservation and Recovery Act (RCRA) regulated oil bearing hazardous waste materials without applying for or receiving a hazardous waste permit for their treatment storage and disposal facility. This letter presents my preliminary comments on the Draft VRF variance. We are also providing comments on Thermaldyne's variance request documents as it relates to this matter.

Considering the significant nature of this Variance for approval of a hazardous waste combustor, using a regulatory mechanism that has never before been used for hazardous waste thermal treatment, we request that a public hearing be granted to allow for input from the public on this matter, and that the public comment period be extended at least sixty days or 14 days following conclusion of any public hearing, whichever is longer. Furthermore, I request the applicant be required to submit an environmental assessment statement (EAS) as set forth in R.S. 30:2018 and thereafter, the LDEQ conduct a public hearing concerning this EAS.

The proposed variance is for Thermaldyne to receive Oil Bearing Hazardous Secondary Materials (OBHSM) from petroleum refineries and to process these otherwise listed hazardous wastes as a third-party (i.e. a "person" not part of or associated with the manufacturing process) in both centrifuges, and a thermal desorption unit (TDU) that combusts all of the vent gases in an

associated thermal oxidizer.

You will find in this letter and its attachments numerous significant comments that relate to the draft VRF variance. In summary, these comments are:

1. The United States Court of Appeals for the District of Columbia Circuit, in 2017 vacated EPA's Verified Recycler Exclusion (VRE) Rule on a finding that the rule was unreasonable. The LDEQ retained EPA's vacated VRE rule as part of its hazardous waste regulatory program. TD*X submits that the application of a VRE variance to Thermaldyne is unreasonable in that the variance is bereft of substantive provisions to protect human health and the environment. TD*X further notes that retaining and applying EPA's vacated VRE Rule is contrary and in violation of Louisiana's Hazardous Waste Control Law (La. R.S. 30:2171 et seq.). Specifically R.S. 30:2173 requires the term "Hazardous Waste" to be consistent with federal laws and regulations and R.S. 30:2186 also requires the criteria for identifying characteristic hazardous waste and listing hazardous waste be consistent with federal regulations, which would also include criteria for exclusion of Solid Waste (and thus Hazardous Waste). Use of the vacated VRE Rule excludes HSM from being a "Solid Waste" and thus a Hazardous Waste, is inconsistent with current federal laws and regulations. Application of the vacated VRE Rule is also inconsistent with and in violation of R.S. 30:2175 and 30:2180(A)(8).[a] The Court determined that the requirement for government issuance of a "variance" was unlawful, and thus vacated the VRE. With this court decision the Federal regulations revert back to the 2008 transfer-based exclusion (TBE) that only require the generator meet some limited legitimacy requirements, have a preparedness and prevention plan, and contain the waste. The TBE is also clearly inappropriate to apply to the proposed Thermaldyne reclamation facility.
2. Thermaldyne intends to combust a significant portion of the hazardous waste materials in their TDU. Furthermore, this VRF variance allows unlimited amounts of combustion of the HSM. That activity is hazardous waste thermal treatment and is fully regulated under RCRA and the joint authority of RCRA and the Clean Air Act (CAA). The combustion of hazardous waste is not legitimate recycling, and is not eligible for approval under a VRF variance. Furthermore, the combustion of the HSM under the proposed variance without a RCRA hazardous waste permit would be inconsistent with and in violation of R.S. 30:2184(B), which require the standards for recycling and resource recovery facilities to be to be no less restrictive than that for general hazardous waste TSD facilities. Thermaldyne should be directed to submit a RCRA hazardous waste permit application for this RCRA regulated thermal treatment that fully complies with EPA's hazardous waste combustion standards under MACT EEE. The permit application should also address the storage of hazardous waste materials prior to thermal treatment in the TDU.
3. If LDEQ intends to ignore RCRA hazardous waste permitting requirements and grant approval for this hazardous waste combustion facility under a VRF Variance, then in order

---

[a] R.S. 30:2175 requires Louisiana's Hazardous Waste Program to be consistent with RCRA and the minimum criteria set forth therein. R.S. 30:2180(A)(8) requires that all regulations adopted applicable to petroleum waste, which is classified as recyclable by the US EPA be consistent with federal regulations applicable thereto. The vacated VRE rule is not applicable. LDEQ applying same would be inconsistent with current applicable federal regulations applicable to refinery waste.

to meet LDEQ and (vacated) EPA requirements under the VRF, the Variance needs substantial revision to place conditions on Thermaldyne that satisfy the statutory "contained" requirement as well as the statutory requirement to properly manage residuals from the "recycling" activity, and to protect human health and the environment. Without the addition of these numerous conditions, Thermaldyne and LDEQ have not satisfied the criteria to be eligible for the VRF Variance, including the statutory requirements set forth in R.S. 30:2184(B) and R.S. 30:2193, and the Variance cannot be issued.

4. Whether Thermaldyne is approved under a VRF Variance, or is required to secure a RCRA permit for their hazardous waste combustion activity, or some combination of the two, it should be required to provide adequate financial assurance for facility closure as required by statute. As written in the VRF plans, the closure cost estimate may be grossly insufficient, considering the large amount of waste materials that can be stored on site at the time of facility closure. The present closure cost estimate is for $525,000. This shortfall could be as great as $25 million, or more.
5. Thermaldyne has failed to provide an environmental assessment statement required by R.S. 30:2018. The EAS provided for in this Section is required to be used by the LDEQ to satisfy the public trustee requirements of Article IX, Section 1 of the Constitution of Louisiana and is necessary to address the following issues regarding the proposed permit activity:
    - The potential and real adverse environmental effects of the proposed permit activities.
    - A cost-benefit analysis of the environmental impact costs of the proposed activity balanced against the social and economic benefits of the activity which demonstrates that the latter outweighs the former.
    - The alternatives to the proposed activity which would offer more protection to the environment without unduly curtailing non-environmental benefits.

    While R.S. 302018 specifically excludes "minor variances" from the requirement to submit an EAS, Thermaldyne's request for variance is far from "minor".
6. LDEQ failed to meet its requirements as public trustee pursuant to Article IX, Section 1 of the Constitution of Louisiana as interpreted by the Louisiana Supreme Court in Save Ourselves v. Louisiana Environmental Control Commission, 452 So.2d 1152 (La. 1984) and subsequent case law (Public Trust Doctrine). LDEQ has not assessed or evaluated the potential and real adverse environmental effects of the proposed variance. LDEQ has not conducted any cost-benefit analysis of the environmental impact costs of the proposed activity balanced against the social and economic benefits of the activity which demonstrates that the latter outweighs the former. Furthermore, LDEQ has not been presented with or considered any proposed alternatives which would offer more protection to the environment without unduly curtailing non-environmental benefits. LDEQ should require the requisite information from the applicant so it can conduct the assessment/evaluation required by the Public Trust Doctrine and meet its responsibilities as public trustee.

1. EPA's Verified Recycler Exclusion Regulation has been Vacated by Federal Court Action

LDEQ does not have authority to issue a valid VRF variance under the "Verified Recycler Exclusion" regulations. The federal regulation has been struck down and vacated on July 7, 2017 by a US Court of Appeals. Attachment 1 provides that ruling. LDEQ had previously adopted the vacated regulation, and has made a (verbal) claim that their adoption of the vacated rule provides for more stringent regulation than its replacement rule, the Transfer-Based Exclusion. However, as clearly shown by the administration of the VRF in this draft Variance for Thermaldyne, the court finding that the rule is arbitrary and provides no suitable standards for issuance of a VRF Variance is visionary and quite true. TD*X further notes that retaining and applying EPA's vacated VRE Rule is contrary and in violation of Louisiana's Hazardous Waste Control Law (La. R.S. 30:2171 et seq.). Specifically R.S. 30:2173 requires the term "Hazardous Waste" to be consistent with federal laws and regulations and R.S. 30:2186 also requires the criteria for identifying characteristic hazardous waste and listing hazardous waste be consistent with federal regulations, which would also include criteria for exclusion of Solid Waste (and thus Hazardous Waste). Use of the vacated VRE Rule excludes HSM from being a "Solid Waste" and thus a Hazardous Waste, and is inconsistent with current federal laws and regulations. Application of the vacated VRE Rule is also inconsistent with and in violation of R.S. 30:2175 and 30:2180(A)(8). The entire VRF Variance section of the LDEQ code should be considered invalid, and Thermaldyne should be directed to seek approval for their hazardous waste operations under a RCRA permit that provides for:

- storage of hazardous waste material prior to reclamation,
- 40 CFR Part 264 Subpart X permitting of the hazardous waste combustion in the TDU, including appropriate technical requirements from 40 CFR 63 Subpart EEE (i.e. MACT EEE), adoption of MACT EEE emission limits and operating parameter limits (OPLs) to maintain compliance with emission limits, performance of a comprehensive performance test (CPT) to demonstrate compliance with emission limits, and adoption of final OPLs based on the results of the CPT,
- Exempt recycling in centrifuges and tank systems for only waste materials that are legitimately recycled, such as oil bearing hazardous waste from petroleum refining, production and transportation practices when the reclaimed oil is burned as a fuel that meets the §279.11 fuel specification, but that the facility remains subject to VOC emission control standards under RCRA 40 CFR Part 264 Subparts BB and CC, in accordance with §261.6(c)(1),
- Full RCRA regulation of the residues of recycling, the desorber solids and any residual waste water prior to discharge under an LPDES discharge permit, all according to their original waste listings and their hazardous waste characteristics, as well as their being subject to all of the treatment standards under the RCRA Land Disposal Restrictions (LDR),
- Financial assurance, secondary containment, inspection and recordkeeping as appropriate for a RCRA permitted treatment storage and disposal facility (TSDF).

2. Thermaldyne's Thermal Desorption Unit is RCRA Regulated Thermal Treatment

EPA's permit doctrine, as well as recent EPA Region 6 enforcement actions against Rineco (2010) and US Ecology/TDX (2012) confirm that recycling of this petroleum refinery OBHSM in a TDU that combusts all or part of the vent gases at off-site third party locations is not exempt recycling, and does require full RCRA permitting under 40 CFR Part 264 Subpart X, incorporating appropriate technical requirements from the MACT EEE standards. The Rineco consent decree as issued by the Federal Court, and the US Ecology/TDX consent agreement and final order (CAFO) are provided as Attachment 2. Furthermore, LDEQ and EPA have imposed these same TDU requirements on Chemical Waste Management's Lake Charles facility that is installing two RCRA permitted TDUs approximately 125 miles from the Thermaldyne facility. EPA guidance on this is provided in letters in Attachment 3. The fundamental issue is that RCRA regulated thermal treatment cannot be exempted from full regulation simply because of a recycling status claim. Furthermore, the combustion of the HSM under the proposed variance without a RCRA hazardous waste permit would be inconsistent with and in violation of R.S. 30:2184(B), which require the standards for recycling and resource recovery facilities to be to be no less restrictive than that for general hazardous waste TSD facilities.

MACT EEE standards are promulgated by EPA under the joint authority of the CAA and RCRA. These standards were created to manage the combustion of hazardous waste even when the combustion of hazardous waste was incidental to the production of a product such as in cement kilns, light aggregate plants, industrial furnaces, or from steam boilers, etc. It is clear that a minor source is subjected to MACT EEE, as per 40 CFR §63.1200. Regarding even limited combustion in a 40 CFR Part 264 Subpart X Miscellaneous Unit, EPA also made it clear in the MACT EEE Final Rule [64 FR 52994 September 30, 1999, selected text provided in Attachment 7] that *since today's rule upgrades the air emission standards for certain source categories, these new standards also should be considered when determining the appropriate requirements for miscellaneous units, most notably those engaged in <u>any type</u> of thermal operation.* LDEQ's arbitrary decision in this Draft VRF Variance that OBHSM burned at a cement kiln, incinerator, or TDU reclamation facility at a TSDF is subject to MACT EEE, but that somehow the same identical material burned at a third-party offsite reclamation facility under the VRE is not subject to MACT EEE. With the only difference being a three page Variance with no enforceable conditions on the combustion and emission of toxic air pollutants that are known to be present in the petroleum refining OBHSM feedstream.

Since 2008 TD*X has operated a functionally similar TDU as proposed by Thermaldyne. That unit is installed at the US Ecology Texas facility in Robstown, TX. That facility is fully permitted under RCRA, including a 40 CFR Part 264 Subpart X permit for the recycling activities of the TDU. We have made a detailed technical review of the proposed Thermaldyne unit. This review is based on our detailed knowledge of the equipment and processes of thermal desorption, our existing characterization data on the OBHSM feedstream, and the public domain literature and permit documents for the proposed Thermaldyne unit. Attachment 4 provides a summary of that review in the form of a process flow diagram with material and energy balance, as well as predictions for regulated pollutant emissions. The TD*X prepared Thermaldyne PFD, material &

energy balance, and estimated emissions were also reviewed by El Dorado Engineering, an independent engineering firm that has profound expertise in thermal treatment unit design, assessment, emission testing and operation. A report is also provided that reviews the Thermaldyne air permit estimated emissions, detailing the lack of emission limits within the facility minor source air permit.

To be protective of human health and the environment, as well as to contain the hazardous constituents present in the hazardous secondary material feedstream, the air emissions must be controlled and restricted by an enforceable air permit, or an enforceable RCRA permit, or a combination of the two. In support of the feedstream analysis, TD*X tabulated actual OBHSM chemical content for regulated pollutants of mercury, semi-volatile metals (SVM; lead and cadmium) and low-volatile metals (LVM; arsenic, beryllium, and chromium), and organic chlorine that can form hydrochloric acid from combustion in the thermal oxidizer. All of these toxic air pollutants are restricted by emission limits in the MACT EEE standard. The data reviewed included all active waste profiles for oil bearing hazardous waste (OBHW) being received for reclamation at the TD*X facility. All of these pollutants have OPLs for the TD*X unit, and are closely tracked in the feedstream management plan. Then, the top ten in each pollutant category was tabulated, and statistical analysis performed to establish the 90% upper confidence limit (UCL) for that pollutant. The goal is to identify the likely feedstream concentration for evaluating a twelve-hour rolling average (HRA) emission of that regulated pollutant. HRA emissions are how to properly evaluate the performance of a combustor such as is being proposed by Thermaldyne, and this is the methodology used to appropriately limit emissions under MACT EEE, as per 40 CFR §63.1206(b)(14)(v)(B). TD*X considers it highly likely that each of these air pollutants would be present in the "twelve-hour" feedstream of petroleum refinery OBHSM based on actual materials of this type that are currently being provided for reclamation at our Robstown, TX facility. In order to be protective of human health and the environment, it is appropriate and essential for LDEQ to require Thermaldyne to manage the receipt and feeding of toxic air pollutants under a feedstream management plan that includes specific procedures to quantify the specific toxic constituents (mercury, SVM and LVM, chlorine) HRA feedrate to the TDU and restrict the constutuent's feedrate to below an OPL level that has been demonstrated to be in compliance with appropriate emission limits.

It is furthermore supported by our data that is included in Attachment 4 that 15% of the OBHSM feedstream is the actual oil content available for "reclamation" in the TDU.

Key conclusions from the reviews in Attachment 4 are that:

- At least 20% of the oil present in the OBHSM feedstream will be combusted in the TDU and its associated thermal oxidizer. That is at least 600 lb-oil/hr combusted out of 3,000 lb-oil/hr fed to the TDU dryer.
- The LDEQ minor source air permit does not restrict pollutant emissions from the TDU's thermal oxidizer. Numerous pollutants that are actually present in the OBHSM feedstream are not represented in the Thermaldyne air permit application, and are not restricted by the air permit. These are mercury, SVM, LVM and chlorine (that can generate hydrochloric acid when combusted). All of these pollutants are very likely to be present in hourly rolling

average concentrations in the feedstream at the levels shown in the Attachment 4 PFD. All exceed appropriate emission limits for hazardous waste combustors. Thermaldyne apparently acknowledges the presence of these hazardous air pollutants even though they have not represented them in the facility air permit materials. This is evidenced by these constituents being present in their VRF Application within the "Material Acceptance Plan" under section IV on the Generator Material Profile form. MACT EEE manages these toxic constituents that Thermaldyne has acknowledged are present and that they intend to process in their TDU, combust in their TDU process and release to the atmosphere without restriction.

- Mercury emissions are likely to exceed appropriate emission limits by a factor of 7,300 or more (59,345/8.1=7,326).
- SVM and LVM emissions are likely to exceed appropriate emission limits by a factor of 98 or more (2,265/23=98)
- Hydrochloric acid emissions are likely to exceed appropriate emission limits by a factor of 84 or more (1,794/21=84)
- None of these pollutants are restricted by either the LDEQ air permit, the draft VRF Variance, or Thermadyne's operating plans

It is the unavoidable characteristic of the thermal desorption process that it generates a non-condensible hydrocarbon gas when performing oil reclamation on petroleum refinery OBHSM. Furthermore, the process offgas also contains residual condensable hydrocarbons whose amount depends on the operating temperature of the unit's final condenser. Thermaldyne has chosen to combust these hydrocarbons in the TDU's thermal oxidizer. That is a normal choice for this technology, and in fact there is no operating unit of this type that does not use combustion to destroy the hydrocarbons in the process offgas. It was EPA's assertion, confirmed by a Federal Court in the 2010 Rineco matter, and reinforced in the 2012 US Ecology/TD*X CAFO, that a TDU that combusts this offgas as part of the process is performing fully regulated hazardous waste thermal treatment.

There is a further matter related to the combustion of the HSM in the Thermaldyne unit. LDEQ staff have stated that the HSM feedstream being managed in the TDU is considered not to be a RCRA regulated waste by virtue of the Variance being granted by LDEQ. LDEQ's (and EPA's vacated) standards for issuing this Variance have a mandatory requirement that the HSM must be "contained" in the recycling unit [Ref LAC 33 V 105.D.y.v(a)]. This requirement is directly incorporated from the vacated EPA regulation at §261.4(a)(24)(v)(A).

y. hazardous secondary material that is generated and then transferred to a verified reclamation facility for the purpose of reclamation is not a solid waste, provided that:

v. the hazardous secondary material generator satisfies all of the following conditions: (a).the material must be contained as defined in LAC 33:V.109, contained. A hazardous secondary material released to the environment will be considered discarded and a solid waste unless it is immediately recovered for the purpose of

> *recycling. Hazardous secondary material managed in a unit with leaks or other continuing releases is discarded and a solid waste;*

By LDEQ regulations, all HSM at the VRF must be contained. HSM that is released is discarded unless it is immediately recovered for recycling, and is therefore a Solid Waste, and a hazardous waste. The TDU cannot operate without continuously combusting the process gases derived from the thermal treatment of the HSM. That combustion is required or otherwise the HSM would be released to the environment, and not contained. The combustion is clearly not recycling but it is destruction of the OBHSM (not legitimate, not eligible for VRF or any other exclusion). That HSM has been discarded, and remains a solid waste. So, without a RCRA permit for the combustion, the HSM is still regulated under RCRA.

The TDU cannot be approved for a recycling variance under the VRF standard. It is properly regulated under RCRA Part 40 CFR 264 Subpart X. Thermaldyne should be directed to remove the TDU from the VRF Variance application and permit it separately under RCRA. LDEQ should certainly not approve the Variance with the TDU as part of the operation.

Also, since the materials destined for reclamation in the TDU would not be excluded from the definition of solid waste under the Variance, they would be shipped to the facility on a hazardous waste manifest. In that case, their storage prior to recycling is subjected to RCRA storage regulations. The Thermaldyne facility would require a RCRA storage permit.

3. Any LDEQ VRF Variance needs Criteria to meet "Contained" and "Residuals" Requirements as well as to be Protective of Human Health and the Environment

If LDEQ intends to ignore RCRA hazardous waste permitting requirements and grant approval for this hazardous waste combustion facility under a VRF Variance, then in order to meet LDEQ and (vacated) EPA requirements under the VRF, the Variance needs substantial revision to place conditions on Thermaldyne that satisfy the statutory "contained" requirement as well as the statutory requirement to properly manage residuals from the "recycling" activity, and to protect human health and the environment. Without the addition of these numerous conditions Thermaldyne and LDEQ have not satisfied the criteria to be eligible for the VRF Variance, and the Variance cannot be issued.

As previously shown in Section 2 above, it is mandatory under the VRF regulations that the HSM be "contained" while in the recycling unit. The minor source air permit does not adequately contain the emissions of known toxic air pollutants from the TDU operations on petroleum refinery HSM. These air pollutants are properly managed when the facility is required to meet the emission limits in MACT EEE. Those emission limits *should be considered when determining the appropriate requirements for miscellaneous units, most notably those engaged in any type of thermal operation* [reference USEPA, 64 FR 52994 September 30, 1999]. They are as given by 40 CFR §63.1219:

- Dioxins and furans emissions shall be less than 0.20 ng TEQ/dscm corrected to 7% oxygen in the Thermal Oxidizer (TO) stack from the combusted gas emission stream;
- mercury emissions shall be less than 8.1 µg/dscm corrected to 7% oxygen in the TO stack;
- semi-volatile metals (Cd, Pb) emissions shall be less than 10 µg/dscm corrected to 7% oxygen in the TO stack,
- low-volatile metals (As, Be, Cr) emissions shall be less than 23 µg/dscm combined emissions corrected to 7% oxygen in the TO stack,
- carbon monoxide emissions shall be less than 100 ppmV, or hydrocarbons emissions less than 10 ppmV as propane, over an hourly rolling average, dry basis, corrected to 7% oxygen in the TO stack,
- hydrogen chloride and chlorine gas emissions shall be less than 21 ppmV, combined emissions, expressed as chloride equivalent, dry basis, corrected to 7% oxygen in the TO stack,
- particulate matter emissions shall be less than 0.0016 gr/dscf corrected to 7% oxygen in the TO stack,
- the equivalent "destruction and removal efficiency" (DRE) shall be greater than 99.99% for one designated principal organic hazardous constituent (POHC), as per 40 CFR 264 Subpart O, based on the mass feed rate of the POHC fed to the TO and the mass emission rate of the same POHC present in the exhaust emissions from the TO,

At multiple places in the "Conditions" section of the Variance, Section III, the following requirements need to be added:

- adoption of the abovementioned emission limits from 40 CFR 63 Subpart EEE (i.e. MACT EEE) 40 CFR §63.1219,
- adoption of enforceable operating parameter limits (OPLs) to maintain compliance with emission limits, such as limits on the time, temperature and residence time in the thermal oxidizer, provision of sufficient excess air to the TO for complete combustion, limits on carbon monoxide concentration in the TO exhaust, limits on the exhaust temperature of the TDU condensing system, limits on the maximum internal pressure of the TDU dryer, limits on feedstream concentrations and/or mass feed rates of mercury, SVM, LVM and hydrogen chloride generating chemicals,
- installation and operation of an automatic waste feed cutoff (AWFCO) system in compliance with 40 CFR §63.1206(c)(3),
- performance of a comprehensive performance test (CPT) to demonstrate compliance with emission limits, and
- adoption of final OPLs based on the results of the CPT.

Without these requirements as conditions of the Variance, the HSM is not being continuously and properly contained by the recycling unit, and the unit cannot be approved under a VRF Variance.

These appropriate limits are not present in the LDEQ minor source air permit. It is noted that EPA stressed in their 2015 Final Rule for the VRF standards that HSM is presumptively "contained" in a facility that has a RCRA permit, with great emphasis. The meaning of that presumption is clear that the technical standards of RCRA were felt completely protective of human health and the environment, and satisfy the mandatory "contained" requirement. If LDEQ issues this VRF Variance without requiring these above itemized technical standards, they have not met the regulatory threshold for addressing unpermitted releases of the HSM to proximate populations, and should not issue the Variance.

It is appropriate to also mention that it is very likely that the wastewater discharged from the limited water treatment system proposed by Thermaldyne will have acute aquatic toxicity and cause impacts to the stream and intercoastal water way waters that it is discharged into. According to the present draft LPDES water discharge permit, the HSM residuals will not be contained as required by the LAC, and the VRF Variance as written is not protective. TD*X provided extensive comments on the draft LPDES water discharge permit for Thermaldyne. Reference EDMS Document ID 11192539, dated June 7, 2018.

By way of comparison, the TD*X unit in Robstown, TX has been approved as a Verified Recycler by the Texas Commission on Environmental Quality (TCEQ) following their standards that adopt the 2015 DSW VRE. That is because the recycling activities are fully covered by the facility RCRA Part B permit, with extensive conditions related to all aspects of the recycling. In fact, TCEQ anticipated that TD*X would recycle petroleum refinery HSM in the unit as an excluded HSM under the VRE. Numerous conditions of the RCRA permit address this possibility, including the following excerpt from Section 3.7 of the facility's RCRA Waste Analysis Plan, a RCRA enforceable attachment to the facility RCRA Part B Permit:

> *Pending confirmation that an oil bearing material does not possess chemical constituents that will impact the reclaimed oil ability to meet the reclaimed oil specifications, the following oil bearing materials are acceptable for processing in the Oil Reclamation Facility to generate new nonhazardous commercial products:*
>
> • *Non-hazardous materials, including non-hazardous solid waste, and oil bearing secondary materials that are not RCRA hazardous waste when recycled, ...*
>
> *...In particular, each waste stream's chemical composition shall be reviewed to ensure that the material will be managed in compliance with the Operating Parameter Limits for feed material for the facility's TDU that include limits on feed material content for chlorine, mercury, semi-volatile metals (SVM) and low volatile metals (LVM). The following sections enumerate the criteria that shall be established during this review....*

TCEQ requires that TD*X manage excluded HSM under the exact same permit conditions as RCRA regulated OBSM being reclaimed, and, in other provisions of the permit, under the same criteria as listed hazardous waste being treated for disposal, such as F001 impacted sludges. If HSM is being processed under the TCEQ permit, ALL requirements of RCRA still apply to the

operation of the TDU. That is why in their promulgation of the VRE, EPA relied on a State issued RCRA permit that addresses all aspects of the reclamation activity for presumptive compliance with the mandatory "contained" requirement of the VRE.

Another mandatory regulatory requirement for issuance of a VRF Variance is that all residuals generated from the reclamation facility must be managed appropriately. A review of Attachment 4 shows that 87% of the material received for treatment at the Thermadyne facility will become discarded as a residual after reclamation. Presently the VRF Variance allows the solid waste residual material to be discarded and dumped into local sanitary landfills, and the toxic wastewater to be discharged into the Intercoastal Waterway that flows into the Mississippi River. For reference, TD*X has already provided significant comments on the draft LPDES water discharge permit for the Thermaldyne facility, where TD*X clearly showed that the Thermaldyne wastewater will likely exhibit aquatic toxicity after the limited water treatment process and be discharged into an ephemeral stream in this toxic condition [reference EDMS document number 11192539, TD*X letter to LDEQ dated June 7, 2018].

Should a process that discards 87% of the material it receives be eligible for a VRF Variance that does not restrict the residuals management to be as protective as the original hazardous waste listings? Especially when the original solid residuals (i.e. the HSM) would have been disposed in a hazardous waste landfill in full compliance with the RCRA LDR. Under the current proposed VRF Variance the reclamation residuals are considered a newly generated waste subject to hazardous waste characteristic testing only, escaping any verification testing for the LDR, and then most likely sent to be dumped in a local municipal landfill.

Furthermore, it is important to understand that the revenue Thermaldyne will receive for selling the recycled oil from the facility will likely be only 5% of the revenue they receive for performing their "excluded recycling" hazardous waste disposal service. While this is not the only criteria when determining whether an activity is legitimate recycling rather than hazardous waste disposal, it brings to mind a comparison between Thermaldyne and the activities of the defunct sham recycler Marine Shale Processors.

The facility is presently described in the VRF documents as having a capacity of 182,500 tons/yr of hazardous secondary materials delivered exclusively as oil bearing secondary materials from petroleum refining. In their 1998 rulemaking on the management of oil bearing HSM generated at petroleum refineries, EPA made it clear their view on the management of residuals from these type of operations [63 FR 42128, August 6, 1998].

> ***Status of Residuals from Processing or Recycling Excluded Oil-Bearing Secondary Materials.*** *EPA received comments stating that the proposed rule did not clarify the status of residuals generated from the processing and recycling of excluded oil-bearing hazardous secondary materials.*[21] *Specifically, certain oil-bearing hazardous secondary materials generated at petroleum refineries are listed hazardous wastes if they are discarded instead of recycled as described in today's rule. However, the Agency is aware that these materials may be processed in various ways prior to insertion into the petroleum*

> *refinery, depending upon the nature of the oil-bearing material and the intended point of insertion into the refinery. Some of these processing steps may result in residuals that are not suitable for insertion, again based upon the choices available to the refinery. If these residuals are to be discarded, they are clearly solid wastes and would not retain their original hazardous waste listing because of the exclusion. The hazardous waste characteristics may or may not capture these materials, and therefore they could be disposed of outside the Subtitle C system. The Agency then became concerned about situations where, for example, a listed waste was generated and only minimally processed to recover oil for insertion into the refining process, leaving behind a largely unchanged residual that was to be discarded but was no longer defined as listed waste. The Agency agreed that this was a potential problem with the exclusion, and a subsequent request for comment letter was sent to interested parties on October 1, 1997. EPA requested comment on whether the interested parties viewed this situation as a potential loophole, and what, if anything, might be done to remedy it. Responses to EPA's request were somewhat mixed. Some commenters did not believe the loophole was a realistic construction of the effect of the exclusion, while others agreed that it was indeed problematic and needed to be addressed. After reviewing the information submitted by commenters, the Agency has decided that it would be an undesirable outcome if listed wastes were only marginally processed, generating residuals that were not recycled and escaped regulation. Therefore, the Agency has slightly modified the existing hazardous waste listing description in 40 CFR 261.31 for the F037 waste, to include in the listing description any residuals generated from recycling or processing oil-bearing secondary materials that (1) would have otherwise met a listing description when originally generated, and (2) are disposed of or intended for disposal.*

EPA clearly intends that *any residual* from recycling petroleum refinery oil bearing secondary materials should be managed as listed hazardous waste F037. The solids generated by the Thermaldyne centrifuges, if not sent to the TDU, should be F037. The desorber solids residual after the Thermaldyne TDU should be F037. Any waste water residuals from either the centrifuges or the TDU, if not discharged under a LPDES permit, should be F037. Without appropriate management of the Thermaldyne residuals as being listed hazardous waste F037, the VRF Variance has not met the statutory requirement for residuals management, and cannot be issued.

In support of this comment that the residuals from the Thermaldyne facility be managed as F037 listed waste, TD*X performed chemical analysis of three petroleum refinery listed hazardous wastes that were provided for reclamation at our Robstown, TX RCRA permitted recycling unit. All of these listed wastes did not exhibit a hazardous waste characteristic prior to reclamation. Neither did TD*X generated centrifuge solids residual from reclamation of refinery listed OBHSM liquids. But none of the solids meet the F037 LDR criteria. Under the VRF Variance as written, if these materials were provided to Thermaldyne for "reclamation" they could be disposed at a municipal landfill with minimal or no processing by simply verifying that they had less than 0.5 mg/l benzene and were therefore not characteristically hazardous (D018). They would not be verified for compliance with the RCRA land disposal restrictions (LDR) treatment standards. They would not be required to be verified to have very low levels of tarry and toxic polynuclear

aromatic hydrocarbons (PAH). Two of the three would not even be required to be processed in the TDU. All of which is contrary to and in violation of Louisiana Hazardous Waste Control Law (R.S. 30:2171 et seq). Detailed data relating to this analysis is provided in Attachment 5.

A further issue was made obvious by the lab analysis performed by TD*X on these HSM reclamation feedstock materials. It was not possible for the laboratory to verify whether all of the specific organic chemical constituents regulated by both the LDR and D-code toxicity characteristic were present at below regulatory threshold (RT) levels. This is documented in correspondence from the laboratory and narrative notes in the lab analytical reports. That problem occurs because all three HSM wastes had very high background oil content that prevented the lab test method from being performed accurately. High sample dilution (500-1000x) was required to analyze the samples and not damage the instrument or violate test method quality control requirements. If the sample reporting limit exceeds the RT, then no conclusion can be made regarding either a proper hazardous waste determination or certifiable compliance with the LDR. Full reclamation that completely removes the oil and toxic PAH organic chemicals that the material was listed for would allow complete and accurate lab analysis. This highlights EPA's concern about a reclaimer testing for only a hazardous waste characteristic, and not properly testing for full compliance with listed waste residuals management criteria, and thereby escaping proper management of the discarded residual. As a specific condition of the variance, LDEQ must require Themaldyne to test discarded desorber and/or centrifuge solids for compliance with the F037 LDR treatment standards, or the LAC requirement to protectively manage residuals has not been met.

LDEQ should require Thermaldyne to manage their residuals as F037 as a minimum, or if they prefer, under the original listing for which that specific material was generated (K048-K052, K169-K172, F037, F038, D018, D001).

Without a specific requirement that Thermaldyne manage their residuals as F037, they will not be required to treat their solid waste to be compliant with the Land Disposal Restrictions (LDR). They will simply consider their centrifuge cake and desorber solids to be "newly generated" waste and test it for the hazardous waste characteristic "D-codes". The only standard that will effectively apply at that point will be the benzene standard of 0.5 mg/L by TCLP, or in its place 10 mg/kg total benzene (by the "20 times dilution rule" for evaluating compliance with a TCLP treatment standard). It is likely that very little reclamation will be required to assure less than 10 mg/kg benzene in the treated solids. They will not be required to test for the LDR Universal Treatment Standards (UTS), because if the material is not a D-code waste, the LDR UTS does not apply, as per 40 CFR §268.40(e). It is well known that petroleum refinery OBHSM has high levels of tarry and toxic PAH compounds, and that these are required to be removed by the F037 LDR treatment standards, such as the F037 limit of 5.6 ppm for phenathrene. Removal of PAH compounds typically requires the TDU to be operated at solids discharge temperatures of 850°F or higher. Removal of benzene requires operation at only 400°F. Essentially no PAH removal occurs at 400°F, and those toxic organic materials will remain in the Thermaldyne desorber solids.

If this VRF Variance is granted without a specific requirement that residuals be managed as F037, it is a straightforward prediction that many refinery facilities will simply classify their OBHSM

F037 residuals differently as being excluded HSM, ship them to Thermaldyne for limited or partial reclamation, with those residuals being disposed by dumping them in local sanitary landfills excluded from management as hazardous waste. Quite quickly, other similar "reclamation" facilities will request the same treatment from LDEQ, and request a VRF Variance that does not require F037 management of residuals from petroleum refining HSM. Literally hundreds of thousands of tons of listed refinery hazardous waste could escape regulation under the RCRA LDR, and be dumped in Louisiana sanitary landfills without removal of their listed hazardous waste toxic organic compounds, rather than being managed in fully permitted secure RCRA landfills with organics removed to below treatment standards as intended by EPA. What a Pandora's box will be opened by LDEQ and Thermaldyne for the inappropriate management of hazardous waste residuals.

A predictable logical extension of LDEQ allowing unrestricted "recycling" of refinery HSM, without conditions that the residuals be protectively managed in compliance with the RCRA LDR, would be the operation of one or more sham recycling facilities to avoid expensive and protective hazardous waste disposal in a similar model as the defunct Marine Shale Processors, Inc. Marine Shale became the benchmark for sham recycling that led to development of the doctrine for legitimate recycling. Without appropriate and mandatory management of Thermaldyne's recycling residues as listed hazardous waste F037, their operations will drift to sham recycling, and dumping of partially reclaimed residuals in local Louisiana municipal waste landfills.

A similar case can be made for the proliferation of unpermitted hazardous waste combustors. Under the precedent being granted under this VRF Variance, thermal treatment processes could be developed and operated in ways that would combust even higher percentages of the oil present in OBHSM, while recovering only a very small fraction of oil from the facility. Or, considering the lack of meaningful restrictions in the Draft VRF variance, Thermaldyne will likely drift in this direction. This would lead to essentially unpermitted hazardous waste incinerators that would not be subject to MACT EEE, appropriate emission limits on toxic air pollutants, or RCRA permitting. At what point would LDEQ consider a facility to be performing regulated hazardous waste combustion as part of their "recycling" process, and therefore be subject to hazardous waste combustion emission limits like MACT EEE? When 5% of the oil content in the feedstream is combusted? 20%? 50%? 90% or more? We have asked this question to EPA since the earliest days of the use of thermal desorption for regulated waste treatment, and the answer has normally been less than 5%. LDEQ must include specific enforceable conditions in the VRF Variance requiring that Thermaldyne meet appropriate MACT EEE emission limits, or forever leave the door open for sham recyclers to combust hazardous waste without a permit or mandatory compliance with protective emission limits.

4. Thermaldyne's Financial Assurance Closure Cost Estimate is Grossly Understated

Under either the VRF Variance criteria, or even a full RCRA permit, Thermaldyne needs to provide financial assurance for the closure of the facility by a third party in the event they become financially insolvent. This "Closure Fund" is by regulation to be established in an amount representing the facility being closed when it is most expensive to do so.

Thermaldyne's closure cost estimate is provided in EDMS Document 11175352, VRF Detailed Closure Cost Estimate. It is important to note that there is essentially no regulatory limit in the VRF variance on the quantity of HSM that can be stored at the Thermaldyne facility awaiting reclamation. Certainly, the VRF prohibits "speculative accumulation" which is defined as storing more material than can allow the treatment of 75% in a year. The stated HSM processing capacity of the Thermaldyne facility is 182,500 ton/yr. Thus, if more than 25% of that amount, or 45,625 tons of HSM were stored, Thermaldyne would violate this statutory limit.

The Thermaldyne closure cost estimate provides for the disposal of only 300 tons of OBSM sludge. The estimate reasonably states the cost for disposal of this material is $595/ton, and allows another $2,200 per truck load, or $125/ton, for transportation of this sludge. That provides $215,900 to manage this important closure activity. Now, consider that the quantity requiring disposal and transportation could be as great as 45,625 tons. That would require the startlingly large amount of $32,850,000 to manage. The total amount being provided in the Thermaldyne closure fund appears to be $525,107, if they make good on this requirement of the proposed VRF Variance.

Now, Thermaldyne might say that they would never store that large an amount of HSM on site. However, it is reasonable to ask, why not? There is currently no enforceable limit on the storage of HSM below 45,625 tons. It is also normal in the financial management of this type of facility for Thermaldyne to invoice the HSM generator for payment the full amount of the treatment price at the time material is received. So, regardless of the processing status of the unit, they would be strongly incentivized to receive and store HSM material. If the same $595/ton price is used, that incentive might be tens of millions of dollars. Very hard to resist for a commercial entity. Then, if those invoiced funds were somehow no longer available, and Thermaldyne became financially insolvent and abandons the HSM along with their operations, who pays the difference between the Closure Fund's $525,107 balance and the closure cost of over $32 million?

A similar, but less significant underestimate is present in Thermaldyne's closure fund. They provide for disposal of 20,000 gallons of hazardous liquid, in an amount of $43,980. However, their installed liquid storage capacity is about 140,000 gallons, or more. The corresponding shortfall is $263,880.

Either the VRF Variance, or a full RCRA permit, needs to require Thermaldyne to restrict their storage of HSM solids and liquids to less than the amount provided for in their Closure Fund. This most basic aspect of management of a hazardous waste facility cannot go unrestricted by LDEQ in their regulation of the facility.

5. Thermaldyne has Failed to Provide and EAS Required by R.S. 30:2018

Thermaldyne has failed to provide an environmental assessment statement required by R.S. 30:2018. The EAS provided for in this Section is required to be used by the LDEQ to satisfy the public trustee requirements of Article IX, Section 1 of the Constitution of Louisiana and is necessary to address the following issues regarding the proposed permit activity:

- The potential and real adverse environmental effects of the proposed permit activities.
- A cost-benefit analysis of the environmental impact costs of the proposed activity balanced against the social and economic benefits of the activity which demonstrates that the latter outweighs the former.
- The alternatives to the proposed activity which would offer more protection to the environment without unduly curtailing non-environmental benefits.

While R.S. 302018 specifically excludes "minor variances" from the requirement to submit an EAS, Thermaldyne's request for variance is far from "minor".

6. LDEQ Failed to Meet its Requirements as Public Trustee Pursuant to the Public Trust Doctrine

LDEQ failed to meet its requirements as public trustee pursuant to Article IX, Section 1 of the Constitution of Louisiana as interpreted by the Louisiana Supreme Court in Save Ourselves v. Louisiana Environmental Control Commission, 452 So.2d 1152 (La. 1984) and subsequent case law (Public Trust Doctrine). LDEQ has not assessed or evaluated the potential and real adverse environmental effects of the proposed variance. LDEQ has not conducted any cost-benefit analysis of the environmental impact costs of the proposed activity balanced against the social and economic benefits of the activity which demonstrates that the latter outweighs the former. Furthermore, LDEQ has not been presented with or considered any proposed alternatives which would offer more protection to the environment without unduly curtailing non-environmental benefits. LDEQ should require the requisite information from the applicant so it can conduct the assessment/evaluation required by the Public Trust Doctrine and meet its responsibilities as public trustee.

Concluding Remarks

LDEQ is using LAC33.V.105.O.1.f and 105.O.2.d to approve this variance. These code sections closely follow the recently court vacated Federal regulations 40 CFR §260.30(f) and §260.31(d) and §261.4(a)(24), respectively; ...Variances from Classification as a Solid Waste.

> *§260.30(f) Hazardous secondary materials that are transferred for reclamation under §261.4(a)(24) and are managed at a verified reclamation facility or intermediate facility where the management of the hazardous secondary materials is not addressed under a RCRA Part B permit or interim status standards.*

Two of the key (vacated) criteria for granting such a variance are:

> *§260.31(d)(5) If residuals are generated from the reclamation of the excluded hazardous secondary materials, the reclamation facility must have the permits required (if any) to manage the residuals, have a contract with an appropriately permitted facility to dispose of the residuals or present credible evidence that the residuals will be managed in a manner that is protective of human health and the environment, and*

> *§260.31(d)(6) The intermediate or reclamation facility must address the potential for risk to proximate populations from unpermitted releases of the hazardous secondary material to the environment (i.e., releases that are not covered by a permit, such as a permit to discharge to water or air), which may include, but are not limited to, potential releases through surface transport by precipitation runoff, releases to soil and groundwater, windblown dust, fugitive air emissions, and catastrophic unit failures), and must include consideration of potential cumulative risks from other nearby potential stressors.*

EPA addressed important criteria related to the Thermaldyne VRF Variance request in the 1998 exemption of the exact same OBHSM under 40 CFR §261.4(a)(12)(ii). In that rulemaking EPA and many commentors found that it was un-suitable for these petroleum refinery listed and characteristic wastes to be shipped for reclamation as exempt from RCRA to an off-site third party that was not a petroleum refinery.

This request to provide a variance for OBHSM from petroleum refineries is unnecessary and undermines the current promulgated regulations that were established to provide a minimum protection of the environment. The current industry practice provides a specific regulatory path for recycling this waste stream. There is no need for a specific solid waste variance to manage this material and, if issued, the variance would compromise the protections established in the current regulations.

Granting this variance from the definition of solid waste is inappropriate, and contradicts EPA permit doctrine and Region 6 consistent enforcement actions. It will allow a marginally sited and permitted facility to operate outside of RCRA and its multiple layers of design and operating standards, as well as important testing and recordkeeping requirements. It will also circumvent public participation and critical review to establish compliance with the RCRA hazardous waste siting criteria. The variance is also inconsistent with very clear regulatory policy in EPA and Region 6 that has established that TDUs that combust the process gases from hazardous waste materials are fully regulated hazardous waste thermal treatment units. The Thermaldyne variance request should be denied, and they should be directed to file a RCRA TSDF permit application if they continue to desire to thermally treat regulated oil bearing hazardous waste materials.

Regulations have been developed that specifically address the environmental risk associated with managing oil bearing hazardous waste from petroleum refinery operations. The appropriate regulations for Thermaldyne's process are addressed in 40 CFR Part 261, Paragraph (a)(3)(iv)(C) which allows for the legitimate recycling of oil-bearing hazardous wastes from petroleum refining, production, and transportation practices and excludes the recovered oil that is used as a fuel from being considered hazardous waste if it meets the used oil fuel specifications. The recovery process (separation of the oil from the oil bearing waste) is a RCRA exempt recycling process, however as determined by EPA, the thermal destruction of the non-recoverable portion of the oil bearing waste requires a RCRA permit. In addition, the storage of the oil-bearing waste prior to entering the recycling process requires a RCRA storage permit.

Issuing a separate variance is not necessary and also introduces unnecessary environmental risk. The process defined by Thermaldyne already has a specific regulatory compliance path that is well defined within the regulations. The existing regulatory path ensures the oil-bearing waste is managed in a way protective of the environment prior to reclamation and ensures that management of residuals and thermal destruction of the off-gasses are properly managed.

EPA has already made clear statements in the 1998 rulemaking for the petroleum refinery OBHSM exclusions that differentiate "third-party" non-refinery facilities as being inappropriate for RCRA exclusion. Please refer to Attachment 6, EPA RO 14677, as well as the cited background document from the 1998 rule. Some of the sections that relate third-party non-refinery facilities have been highlighted.

Consider this excerpt from EPA's response in the 2003 Tetra letter [RO 14677]:

> The specific language of 40 CFR 261.4(a)(12)(i) regarding the 'transfers' you describe, reads:
>
> > "Oil-bearing hazardous secondary materials may be inserted into the same petroleum refinery where they are generated, or sent *directly* to another petroleum refinery, and still be excluded under this provision." [emphasis added]
>
> The term "directly" is further described in the preamble to the August 6, 1998 final rule where we stated:
>
> > "The Agency is also requiring that the materials excluded under this provision of today's rule be returned directly to a refinery for insertion. While this is not an issue if materials are recycled onsite, EPA has concerns...about situations where these materials are generated at one refinery for insertion into another, but are not directly sent and instead are sent to an intermediate non-refinery facility for processing." 63 FR at 42126-7.

EPA further emphasizes the prohibition of excluded OBHSM being reclaimed at third-party facilities in the June 1998 "Petroleum Refining Listing Determination Proposed Rule Response to Comment Document, Part I".

> *The Agency notes that the materials excluded under this provision of today's rule must be returned directly to a refinery for insertion into the refinery process. While this is not an issue if materials are recycled on site, EPA has concerns about situations where these materials are generated at one refinery for insertion into another. Such materials should not end up at an intermediate non-refinery facility without an accompanying hazardous waste manifest. In cases where materials generated at one petroleum refinery are to be recycled at another refinery, to meet the conditions of the exclusion the materials must be located either at the generating refinery, at the receiving refinery, or must otherwise be in transit between the two facilities. This is consistent with the argument that the*

> *exclusion is provided on the basis that the secondary materials are being used within the realm of on-going production in the petroleum refining sector.*

Later on page II-61 in this same RTC document, while responding to a comment from an off-site used oil recycling facility that desired to receive excluded OBHSM, EPA again strongly reiterates the position that the OBHSM exclusion was and is not intended to be utilized at "non-petroleum refining… off-site third party recycling facilities," even oil re-refining facilities.

> *It is not the Agency's intent in expanding the current exclusion from the definition of solid waste for oil-bearing materials returned to the petroleum refining process as feedstocks to allow for the widespread shipment of refinery residuals between third parties. Such an expansion of the exclusion provided for oil-bearing residuals could result in residuals being handled by facilities whose ability to properly manage the residuals is uncertain. EPA does not have the extensive data or management information necessary to evaluate such an extensive expansion of the current exclusion. Therefore, EPA is not expanding the scope of the exclusion to include the management of oil-bearing residuals at non-petroleum refining facilities that can recycle petroleum refinery wastes or to any other off-site third party recycling operations. Oil-bearing materials transferred to off-site facilities other than a refinery do not meet the conditions of the exclusion, as promulgated with today's final rule.*

It is acknowledged that Thermaldyne is not specifically requesting regulatory treatment under the Petroleum Refining OBHSM exclusions at 40 CFR §261.4(a)(12). However, their own request relies on those standards in establishing compliance with the mandatory four legitimacy factors required by EPA and LDEQ for all hazardous waste recycling. Therefore, that makes relevant the above discussion of the application of EPA permit doctrine on the 1998 Petroleum Refining OBHSM exclusions. Again, reiterating, Thermaldyne is not eligible to operate under that doctrine, and their variance request should be declined.

The Thermaldyne facility uses a TDU that is a thermal treatment unit for waste reclamation. The facility combusts a non-condensable portion of the waste received in an associated Thermal Oxidizer. When hazardous wastes are reclaimed, they remain hazardous waste under the EPA definition of solid waste (DSW) at 40 CFR §261.2. Hazardous waste reclamation facilities require a hazardous waste permit under the LDEQ regulations that implement EPA's RCRA regulations. Those permits contain numerous siting criteria, technical standards, operating and recordkeeping requirements, and undergo an administrative process embracing substantial public participation. Furthermore, EPA has determined that a TDU that combusts all or part of the vent gas from treatment of hazardous waste involves fully regulated hazardous waste thermal treatment and is thereby subject to the emission limits of 40 CFR Part 63 Subpart EEE (i.e. the MACT EEE). The Thermaldyne facility has met none of those requirements and is consequently unsuitable for either hazardous waste or hazardous secondary material reclamation. The variance request should be denied and Thermaldyne should be directed to file a RCRA TSDF permit application if they intend to reclaim RCRA regulated petroleum refinery OBHSM using regulated hazardous waste thermal treatment. Or, at the absolute minimum, LDEQ should include all of the abovementioned technical

requirements as specific conditions of any VRF variance that is issued.

By way of comparison, a facility that operates in full compliance with RCRA requires capital investment for the TDU 50% to 100% greater than one that does not contain the HSM as is being installed by Thermaldyne. In 2012 TD*X and US Ecology spent over $2 million to come into compliance with MACT EEE emission limits at their formerly "exempt" recycling facility after EPA's RCRA enforcement action imposed these RCRA requirements on the TDU. The operating cost for a fully RCRA compliant TDU, in terms of additional fuel, consumable materials and operating labor is also 50% or more greater. The planning and execution of the required emissions test alone is an expense of over $500,000. The expensive controls and limits on mercury emissions have established a market value for mercury being present in OBHSM of between $1000 and $3500 per pound of mercury. The largest hazardous waste thermal treatment unit in the world, located just 200 miles from Thermaldyne, has a daily feed rate restriction of 12 lb mercury per day when it operates in full compliance with appropriate mercury emission limits, even with its incredibly expensive mercury emissions control devices. The cost of RCRA compliant hazardous waste disposal of F037 solids in a secure landfill is 350-700% greater than the cost of dumping them in a municipal landfill that does not meet the same technical and administrative standards. The capital and operating cost of a water treatment system to remove the aquatic toxicity chemicals that Thermaldyne will leave in their wastewater is more than 400% greater than the minimal water treatment system being installed by Thermaldyne. Attachment 8 provides a comparative financial analysis of a unit operating with enforceable emission limits and listed waste F037 residuals requirements, and the Thermaldyne unit as approved under this VRF variance. Significant economic harm will be caused to TD*X and US Ecology if this variance is issued as proposed by LDEQ without additional appropriate technical and administrative requirements to control releases, manage residuals, and contain the HSM. This variance as written will undermine the technical and financial foundation of the hazardous waste disposal network that has been installed to support the important activities of the Gulf Coast Refining Complex since the first days of RCRA in 1982. A system that EPA acknowledged in their VRE rulemaking is by definition presumptively protective of human health and the environment, wherein EPA strongly encouraged that verified recycling be performed at fully permitted RCRA facilities. This variance as written is not protective.

As a final point, by my count this is the fifth attempt since early 2015 by Thermaldyne to seek authorization from LDEQ to operate their proposed hazardous waste thermal treatment facility as being exempt from the requirements of the RCRA hazardous waste regulations including their technical and administrative standards. That is three and a half years. Which is an adequate time period for them to provide a technically complete RCRA hazardous waste permit application and for LDEQ to review it, provide adequate public participation, and issue a binding RCRA permit for the operation of the facility. During all this time, from the earliest planning in 2015, Thermaldyne, LDEQ, and EPA have recognized that the appropriate permitting of this facility requires a RCRA permit or authorization that incorporates the emission limits from MACT EEE for the thermal treatment operations. One might conclude from the above that Thermaldyne either recognizes that they cannot meet RCRA requirements with their proposed facility, or rather does not intend to. Considering their statutory requirement under LAC33.V.103.A.1 *first, to protect*

the health and well-being of the people of the state of Louisiana and to prevent damage to property or to the environment by the improper management of hazardous waste, LDEQ is not required to support such a position that is not protective of human health and the environment.

We are also providing detailed itemized comments on both the published Draft Variance as well as the Thermaldyne variance request documents. These comments are provided on the following pages.

Sincerely,

Carl R. Palmer 2018.07.30 15:46:37 -04'00'

Carl R. Palmer, P.E.

cc: Dr. Kishor Fruitwala, USEPA Region 6
Ross Elliott, USEPA
Jessica Young, USEPA
Traci Atagi, USEPA

ITEMIZED COMMENTS ON LDEQ DRAFT VARIANCE, Dated 6/21/2018

These comments assume that LDEQ chooses to ignore the requirements for Thermaldyne to request and receive a RCRA hazardous waste permit to operate their thermal treatment facility, and instead proceeds with granting the VRF Variance. The comments are intended to assure that the VRF Variance complies with LDEQ regulations, as well as the corresponding (court vacated) EPA regulations for reviewing and granting a VRF Variance.

Fact Sheet, Section I. Introduction, Page 1, Paragraph 4

COMMENT 1.

In the last paragraph LDEQ is required to itemize the "other hazardous waste characteristic codes" that are approved under the variance. Are organo-chlorinated pesticides (D020, D016, D012, D031, D013, D014) and pentachlorophenol (D037) approved, which are known to be dioxin precursors when thermally treated? Most likely not. Similarly are the other chlorinated "D-codes" approved for unregulated hazardous waste thermal treatment? Most likely not. Are only D001 and D018 approved? Those are the only hazardous waste codes from petroleum refining that are oil bearing HSM. Is LDEQ granting Thermaldyne authority to treat toxicity characteristic wastes to remove the characteristic of toxicity of leachable metals (D004-D011) without a RCRA permit? Most likely not. Corrosives (D002) and reactives (D003) have not been addressed by Thermaldyne's variance request, and are similarly not acceptable for approval.

LDEQ must clearly state which characteristic codes are approved, and based on the submittal and technical review, the only appropriate one seems to be D018, Benzene Toxicity. It is possible that D001 ignitable waste is appropriate. However, Thermaldyne has not shown in their variance request documents that they have provisions in their facility to safely manage flammable liquids and solids. In fact, their proposed methods to manage flammable wastes in both an open pit in the "liquids containment area" and in the "solids containment area" inside of the Material Handling Building needs very careful review and fire safety assessment. In an enclosed building such as this, a very large amount of carefully controlled ventilation needs to be maintained to prevent the accumulation of flammable vapors from the flammable wastes. Flammable vapor detectors might be used to manage and monitor this ventilation. Extensive fire detection and suppression systems are also employed. Electrical classification studies are performed and most likely rated electrical controls are required that prevent spark and fire initiation. Special "T rated" lighting is required. Prohibition or sever restriction on combustion engine equipment is required. No engineering analysis such as this is described in the Thermaldyne submittal, nor evidence that LDEQ has required or performed this analysis. One drawing in the package makes reference to there being four fire hydrants on site. That is not evidence that they can safely manage flammable materials inside of the fully enclosed Material Handling Building. Of course, this is just the type of analysis that is required for a RCRA Part B permitted facility, particularly when appropriately applying the 40 CFR 264 Subpart I and J standards. Based on fire safety factors, it seems that D018 may be the only characteristic waste code for the HSM source material that should presently be approved by LDEQ under the VRF Variance. Furthermore, until the completion and documentation of this

important fire safety review, Thermaldyne should be specifically prohibited from receiving D001, or for that matter any flammable material (because K and F listed waste from petroleum refineries may also be flammable, but the D001 characteristic is not required to be given for listed waste). Thermaldyne should also be required to implement fingerprint analysis for receiving refinery OBHSM. At the US Ecology RCRA Part B facility in Robstown, TX, TD*X frequently is alerted by the RCRA required fingerprint laboratory that a refinery waste shipment exhibits the flammability characteristic when the profile has not designated the material as flammable. The TD*X facility meets NFPA and RCRA standards to receive and manage flammable materials, so this material can be safely managed when the flammable property of the waste is known. TD*X had already addressed these issues in the 2007 design of the facility even when it was being operated as an exempt recycling facility. However, TCEQ insisted on a careful study of this matter during the RCRA permit review when EPA required the TD*X facility to be brought into the US Ecology RCRA permit as part of their 2012 RCRA enforcement action.

COMMENT 2.

Another item in this section is that LDEQ states *that the crude petroleum oil contained in the OBHSM will be reclaimed and returned to and used as feedstock at a petroleum refinery.* Please note that Thermaldyne has also suggested that they are allowed to burn as a fuel reclaimed oil that meets the §279.11 used oil fuel specification. Is LDEQ denying that suggestion? If so, that management method for the reclaimed oil should be struck from Thermaldyne's Facility Operation Description Plan, and any other related document. Is LDEQ authorizing fuel burning in addition to use of the reclaimed oil as petroleum refinery feedstock? This important material management determination should not be left to Thermaldyne's interpretation, but clearly stated in the VRF Variance document. Reclaimed oil burned as a fuel that does not meet §279.11 used oil fuel specification remains hazardous waste, and is fully regulated under RCRA.

Fact Sheet, Section II.D. Written Comment Submission, Page 1, Paragraph 1

COMMENT 3.
There is a "typo" in the first sentence referring to the *feedstock variance*. That is a holdover from a previous document. It should state *VRF variance*.

Fact Sheet, Section IV. Reclamation Processing, Page 4, Paragraph 2

COMMENT 4.
The document states the source of the OBHSM as being *OBHSM consists of sludges, byproducts, spent or other oil-bearing materials generated at petroleum refineries*. That is clearly EPA's intention when similar OBHSM was excluded under §261.4(a)(12). Note that Thermaldyne has also included *crude oil pipeline and terminal facilities associated with petroleum refining* in their descriptions of the waste sources. Has LDEQ like EPA made a determination that those activities are not suitable for exempt management under this VRF Variance? If not, the VRE rules and application of same are inconsistent, in violation of the Louisiana Hazardous Waste Control Law (R.S. 30:2171 et seq.) If so, Thermaldyne should be directed to remove references to them from

the Material Acceptance Plan, and other documents.

COMMENT 5.
Similar to comment 2, the last sentence of paragraph 2 does not mention fuel burning as an option for the reclaimed oil.

Fact Sheet, Section IV. Reclamation Processing, Financial Assurance Page 4, Paragraph 6

COMMENT 6.
The closure cost estimate does not represent the reasonable cost for closure when operating at the maximum inventory of waste materials. The resulting shortfall of closure funding is potentially many millions of dollars. Thermaldyne should revise their closure cost estimate to include the maximum stored volume of HSM solids and liquids at the time of closure. By statute this estimate is for third party closure at the maximum inventory, not some planned event where Thermaldyne can ramp down the stored HSM inventory. Also refer to Comment 12 regarding an enforceable limit on the maximum allowable stored waste volume.

Fact Sheet, Section V. Review of Regulatory Criteria Page 4, Paragraph 7

COMMENT 7.
In the first sentence there is a typographical error where citations and text refer to the "feedstock" variance process. The first sentence should be corrected to state:

> *LAC 33:V.105.O.2.d.i-vi sets forth the criteria that LDEQ uses to evaluate requests for a variance from classifying as a solid waste those materials that are transferred for reclamation under LAC 33:V.105.D.1.y and are managed at a verified reclamation facility or intermediate facility where the management of the hazardous secondary materials is not addressed under a RCRA part B permit or interim status standards.*

COMMENT 8.
TD*X has performed a detailed review of the Thermaldyne VRF application documents, air and water permits for the facility, and performed extensive data review and calculations to evaluate performance of the thermal desorption unit. Only thru the application of additional specific conditions in the variance will the facility meet the regulatory requirements in LDEQ code related to VRF variances, and be protective of human health and the environment. Consequently, the last sentence of paragraph 7 is only correct, if written as follows, and all of the additional conditions that are described later in these comments are incorporated into the variance:

> *LDEQ has reviewed each of the criteria and determined that the reclamation of OBHSM at the Thermaldyne facility meets or exceeds the requirements of LAC 33:V.105.O.2.d.i-vi and LAC 33:V.105.R as long as the facility is operated in accordance with the enumerated conditions of this Variance.*

In particular, the Variance must incorporate conditions that specifically address the following:

- Financial Assurance. The Thermaldyne closure cost estimate is too low as stated in both Comment 6 above, and in Section 4 of this letter. Furthermore, the Variance must incorporate a storage limit on solid and liquid HSM so that the closure fund remains adequate for the required third party closure of the facility when operating with maximum inventories. Otherwise the Variance with its incorporated by reference Thermaldyne Closure Cost Estimate fails the criteria requiring adequate financial assurance as given in LAC 33:V.105.O.2.d.ii. If appropriate conditions related to closure funding are not adopted, then the variance cannot be granted because it violates the LAC.
- Residuals Management. The Thermaldyne facility will generate tens of thousands of tons/yr of residual "desorber solids" and centrifuge cake from the reclamation of the HSM. The variance as written does not include any requirement to test these materials for compliance with the RCRA LDR. Neither does it appropriately apply the non-specific source listed hazardous waste code F037 to the residual solids, as presented in extensive discussion in Section 3 of this letter. Neither is the waste water considered listed waste F037 if it is discarded as a residual and not discharged under an LPDES permit. Neither is any "reclaimed oil" that fails to meet specifications and would then become discarded considered F037. Without incorporation of conditions requiring management of the residuals from the reclamation as being listed waste code F037, the facility fails to meet the criteria requiring management of residuals to be protective of human health and the environment as given in LAC 33:V.105.O.2.d.v. If appropriate conditions requiring residuals being listed as F037 are not adopted, then the variance cannot be granted because it violates the LAC.
- Releases of HSM. According to both the Variance and the facility minor source air permit, the process gases continuously generated by the reclamation of oil bearing HSM in the TDU are combusted without emission limits and released to the environment. Extensive comments on this matter are provided in Section 2 and 3 of this letter. In the absence of a permit for this combustion, such as a RCRA hazardous waste Part B permit allowing combustion of the process gases from regulated hazardous waste materials, the HSM is not "contained" as required by LAC 33:V.105.D.y.v(a), and the facility fails to meet the criteria given in LAC 33:V.105.O.2.d.vi that releases of the HSM to proximate populations be prevented. If appropriate conditions requiring compliance with the technical standards from MACT EEE to be required for the combustion of the hazardous waste materials are not adopted, then the variance cannot be granted because it violates the LAC.

COMMENT 9.

These comments are also related to the management of Releases of HSM that are as of this time not controlled by an air permit. The minor source air permit for the Thermaldyne facility does not require VOC emissions control of the large quantity of VOCs that will be emitted from the storage of the hazardous waste prior to reclamation, and the "feed preparation" of the hazardous waste in the Material Preparation Building. An air permit modification request has been submitted to LDEQ, but no permit required control device has been required by LDEQ as of yet to control VOC emissions from the Material Handling Building. The facility air permit for the TD*X unit in

Robstown, TX discloses that five rolloff boxes and five 16'x16' feed bins having an exposed surface area of 1,760 sq.ft. will generate 0.46 ton/yr of uncontrolled regulated VOC hazardous air pollutant (HAP) emission. Those emissions were calculated using the methodology of the EPA model ChemDat8 from the IWAIR Technical Background Document that was specifically developed for estimating emissions from hazardous waste treatment facilities. The Thermaldyne facility as described has a storage area for open VOC containing waste in the Material Handling Building of roughly 170' by 100', or a VOC generating area 10 times greater. Therefore it is reasonable to estimate that the uncontrolled VOC HAP emissions from the Thermaldyne Material Handling Building would be on the order of 10 x 0.46 ton/yr, or 4.6 ton/yr. Those emissions are not presently controlled or even authorized by an air permit. It seems that Thermaldyne is proposing that those emissions be controlled by capturing 75% of them with an ID fan on the building and then filtering the captured emissions with an activated carbon filter having a represented control efficiency of 99%. Normal control efficiency for carbon filters that have breakthruough monitoring is 95%, and this lower figure should be used by both LDEQ and Thermaldyne. So, the controlled VOC HAP emissions from the Thermaldyne Material Handling Building will be roughly 4.6 ton/yr x (1-75% capture) + 4.6 x (75% capture)x(1-95% control) = 1.3 ton/yr VOC HAP. Depending on dispersion modelling to assess the risk of that emission to the maximally exposed member of the public, that may or may not be an acceptable air emission rate of toxic VOC air pollutants. However, at this time these VOC HAP emission controls are not permit required, nor have they received review by the LDEQ air permit branch.

A condition should be added to the variance to address these VOC HAP emissions from the Material Handling Building, and furthermore, to require breakthrough monitoring of the activated carbon filter. Without breakthrough monitoring, the efficiency would be much lower than 95%, and possibly at 0% if Thermaldyne does not change the carbon frequently or at all. If the facility were permitted under RCRA, Part 264 Subpart CC VOC emission controls would likely be required for the Material Handling Building as it is described in the Thermaldyne documents.

A final comment related to VOC emissions is that a large portion of the HSM received at the Thermaldyne facility is regulated at the point of generation under the EPA's Benzene Waste Operations NESHAPS (BWON), as per 40 CFR Part 61 Subpart FF. These BWON regulated wastes will be shipped to Thermaldyne under the management method that requires Thermaldyne to certify that they have controlled VOC emissions in accordance with the BWON standards. These requirements are numerous, and apply to the storage of containers, the operation of tanks and oil water separators, the operation of waste management units, and the operation of closed vent systems and control devices. BWON compliance includes substantial design, operation, monitoring, testing, inspection and recordkeeping requirements. The Thermaldyne minor source air permit does not appropriately require Thermaldyne to comply with BWON. This is probably because Thermaldyne has not properly informed LDEQ of the presence of BWON control required material in their HSM feedstream. However, EPA and refineries well know that the BWON control requirements apply to refinery OBHSM, and they will apply to that material even when it is managed for recycling at the Thermaldyne facility. The Variance should include a requirement for Thermaldyne to comply with BWON. If it does not, VOC emissions will be released and not contained, and the Variance cannot therefore be issued because it violates LAC 33:V.105.O.2.d.vi.

LDEQ Variance from Classification as Solid Waste

Cover Page with Elliot B. Vega signature line, Un-numbered

COMMENT 10.
In the first paragraph, LDEQ repeats the statement addressed in Comment 2 above that Thermaldyne will *return the recovered oil back to petroleum refinery production.* It is noted that Thermaldyne has suggested that they intend to also burn the reclaimed oil as a fuel if it meets the §279.11 used oil fuel specification. If LDEQ has rejected that management option for the reclaimed oil, it should be stated explicitly here, and the Thermaldyne documents should be revised accordingly.

Verified Reclamation Facility Variance

Page 2 of 3. Condition B
COMMENT 11.
The first sentence has a typo where it refers to *this feedstock variance*. This should rather state *this verified reclamation facility variance*.

Page 2 of 3. Condition D
COMMENT 12
This condition is not sufficient as written, as discussed above in Comments 6 and 8, and in Section 4 of the letter. Another sentence should be added to the condition requiring that Thermaldyne limit their storage of solid and liquid HSM at the facility to less than the amount specifically itemized in the Closure Cost estimate. If that condition is not included, the variance does not meet LAC 33:V.105.O.2.d.ii, and the variance cannot be granted because it violates the LAC. Suggested language for this condition is: *At all times of facility operation, Thermaldyne shall limit their storage of solid and liquid HSM at the facility to less than the amount specifically itemized in the current Itemized Closure Cost Estimate for "Hazardous Liquid Disposal from Cleaning Equipment" and "Disposal of Hazardous Sludge/OBSM", or equivalent line items, including the transportation related to these line items. This includes material awaiting reclamation, or stored in containers or in the Material Handling Buildings, or stored anywhere on the Thermaldyne property.*

Page 2 of 3. Condition G
COMMENT 13
This section should be largely rewritten and expanded. Residuals from recycling of petroleum refinery OBHSM are properly managed as listed hazardous waste F037. This was discussed extensively in both Comment 8 above, and in Section 3 of this letter. Without the appropriate condition that discarded residuals from the reclamation facility are all listed as F037 hazardous waste, the variance cannot be issued because it violates the LAC 33:V.105.O.2.d.v.

Appropriate required language for this condition G is as follows:

> Thermaldyne shall maintain in place the permits and/or disposal contracts, as applicable, to manage residuals. Discarded residuals generated from the recycling of Oil Bearing Hazardous Secondary Materials from petroleum refining are by definition listed hazardous waste F037. Solids from centrifuging that are not processed in the TDU are discarded residuals. Solids from the TDU after reclamation are discarded residuals. Wastewater that is not discharged under a LPDES discharge permit is a discarded residual. Recovered oil that does not meet refinery specifications is a discarded residual. All of these discarded residuals are to be managed as F037 listed hazardous waste, subject to the treatment standards under 40 CFR §268.40. Thermaldyne shall make a hazardous waste determination for other newly generated wastes at the facility, such as spent filter media from the facility. Those newly generated residuals are a new point of generation of material. Upon intent to be discard any of these residuals they must be properly characterized and managed in accordance with Louisiana Solid Waste and Hazardous Waste Regulations, as applicable.

Page 2 of 3. Condition H
COMMENT 14
This section should be greatly expanded by adding conditions that restrict emissions from the combustion of hazardous secondary materials in the TDU. This was discussed both in Comment 8 above, and in Section 2 and 3 of this letter. If appropriate conditions requiring compliance with the technical standards from MACT EEE to be required for the combustion of the hazardous secondary materials are not adopted, then the variance cannot be granted because releases of the HSM to proximate populations has not been prevented, and this violates the LAC 33:V.105.O.2.d.vi.

The following additional conditions must be added to Condition H:

H1. Thermadyne shall operate the TDU such that the exhaust from the Thermal Oxidizer stack is in compliance with emission limits of 40 CFR Part 63 Subpart EEE, as defined in 40 CFR §63.1219. This includes the following emission limits:

- Dioxins and furans emissions shall be less than 0.20 ng TEQ/dscm corrected to 7% oxygen in the Thermal Oxidizer (TO) stack from the combusted gas emission stream;
- mercury emissions shall be less than 8.1 µg/dscm corrected to 7% oxygen in the TO stack;
- semi-volatile metals (Cd, Pb) emissions shall be less than 10 µg/dscm corrected to 7% oxygen in the TO stack,
- low-volatile metals (As, Be, Cr) emissions shall be less than 23 µg/dscm combined emissions corrected to 7% oxygen in the TO stack,
- carbon monoxide emissions shall be less than 100 ppmV, or hydrocarbons emissions less than 10 ppmV as propane, over an hourly rolling average, dry basis, corrected to 7% oxygen in the TO stack,
- hydrogen chloride and chlorine gas emissions shall be less than 21 ppmV, combined emissions, expressed as chloride equivalent, dry basis, corrected to 7% oxygen in the TO stack,

- particulate matter emissions shall be less than 0.0016 gr/dscf corrected to 7% oxygen in the TO stack, and
- the equivalent "destruction and removal efficiency" (DRE) shall be greater than 99.99% for one designated principal organic hazardous constituent (POHC), as per 40 CFR 264 Subpart O, based on the mass feed rate of the POHC fed to the TO and the mass emission rate of the same POHC present in the exhaust emissions from the TO.

H2. Thermaldyne shall provide a written description of the TDU automatic waste feed cutoff (AWFCO) system compliant with 40 CFR §63.1206(c)(3), and adopt, with LDEQ written concurrence, appropriate operating parameter limits (OPLs) that will assure continued compliance with Condition H1 emission limits. Compliance with these AWFCOs and OPLs is a condition of the variance. Appropriate OPLs shall include, as a minimum:

- the minimum exhaust gas temperature of the thermal oxidizer,
- the maximum gas velocity (minimum residence time) in the thermal oxidizer,
- provision of sufficient excess air to the thermal oxidizer for complete combustion,
- limits on carbon monoxide concentration in the thermal oxidizer exhaust,
- the maximum internal pressure of the TDU dryer,
- the maximum temperature of the outlet of the TDU condensing system,
- maximum feed rates to the TDU for mercury, SVM, LVM, and chlorine

H3. Prior to operation of the TDU Thermaldyne shall submit a "trial burn" plan or "comprehensive performance test" plan specifically addressing demonstrating their TDU compliance with 40 CFR Part 63 Subpart EEE emission limits.

H4. Thermaldyne shall perform the CPT defined in Condition H3 within the first 720 hours of operation of the TDU on HSM at the facility.

H5. After completion of the CPT, the TDU shall be operated thereafter using OPLs that were established during the CPT when in full compliance with emission limits from Condition H1. Operations on OBHSM shall immediately cease if any of the emission limits are exceeded during the CPT, and corrective measures implemented consistent with RCRA permit doctrine.

Page 2 of 3. Condition F.

COMMENT 15

Thermaldyne should be prohibited from receiving flammable materials in the OBHSM feedstream until a fire safety study is completed, and the safety of handling these materials in the Material Handling Building is verified. If that study is not completed prior to issuance of the variance, the VRF Variance needs to have a specific condition documenting that prohibition. Condition F seems like the appropriate location to add the following text:

> *Thermaldyne is prohibited from receiving flammable OBHSM, either material that exhibits the D001 characteristic, or listed waste that is flammable and not required to be listed D001 because of that specific source or non-specific source listing determination.*

Thermaldyne shall implement onsite fingerprint analysis to verify that each load received at the facility is not flammable prior to placement of that material into the Material Handling Building.

Page 2 of 3. Condition K
COMMENT 16
It is mandatory that Thermaldyne meet this "contained" requirement for LDEQ to issue the VRF variance. However, the minor source Air Permit No. 3120-00116-00 is insufficient and will not meet the requirements set forth in LAC 33:V.109, *contained.* One remedy is that the minor source Air Permit could be modified consistent with COMMENTS 8, 9, 14, 22, 28, 31 and 37, as well as Sections 2 and 3 of this letter before LDEQ grants the Variance. Specifically, TD*X notes that the HSM is not "contained" if LDEQ does not add the above conditions H1 thru H5 as identified in Comment 14. Therefore, if the air permit is not modified, the following sentence should be added to Condition K:

Thermaldyne shall also comply with this variance Conditions H1 through H5 to contain and control emissions of the HSM.

Page 3 of 3. Section IV. Attachments and Documents Incorporated by Reference
COMMENT 17
The last document in Table 1 is not for the VRF. It is for the previous "Feedstock Variance" request made by Thermaldyne. It should be removed from Table 1, and replaced if LDEQ requires a similar document in its place.

COMMENTS ON THERMALDYNE PLANNING DOCUMENTS THAT ARE INCORPORATED BY REFERENCE INTO THE VRF VARIANCE.

Table 1 on Page 3 of the variance includes the incorporation by reference of the following documents that were prepared by Thermaldyne:

Name of Plan/Document	Date	EDMS Document ID #
HW-1 Form & HSM Addendum	6/20/2018	11171476
Facility Operation Description Plan	6/21/2018	11175351
Material Acceptance Plan	6/21/2018	11175350
Contingency Plan	6/21/2018	11175354
Closure Cost Estimate	6/21/2018	11175352
VRF Variance Application	10/26/2017	10852151
VRF Variance Request Letter	6/21/2018	11175348
Response to NOD #1	2/14/2018	10984054

It is important that these documents be consistent with the final variance conditions, and that they do not contradict any condition, or make a condition difficult to interpret or enforce. It is also important that these documents be complete and accurate. TD*X has made a review of these documents with that end in mind. However, LDEQ should direct Thermaldyne to do the same, and incorporate appropriate language in the final plans that is consistent with the variance conditions.

HW-1 Form & HSM Addendum

COMMENT 18.
On page 2, Item 10.A. If LDEQ appropriately designates the residuals from the centrifuges and TDU that are discarded from the reclamation facility to be listed hazardous waste code F037, then the facility will be a Large Quantity Generator, and should check the Box A.1.a.

COMMENT 19.
On page 3, Item 11.A. Waste code F037 should be entered in the table, as a minimum.
On page 5, Addendum, Item 2.b. Waste code D001 should be eliminated until further fire safety review is performed on the Material Handling Building. See previous Comment 1.

Facility Operation Description Plan

COMMENT 20.
Section 1.2, Page 3, last paragraph, first sentence.
LDEQ has not approved burning the recovered oil as a fuel. Delete the phrase "or as fuel (e.g. oil and hydrocarbons)".

COMMENT 21.
Section 2.1, Page 5.
This describes the placement of essentially liquid hazardous waste into a "concrete lined pit." EPA containment standards do not consider a concrete pit to be adequate primary containment for liquid waste material. Concrete is known to crack and leak, and is not suitable primary containment. It is not suitable to "prevent releases … to soil and groundwater" as is mandated by the VRE criteria. Normally, such a below ground pit will be constructed of welded steel, and supported by being surrounded by concrete. In any event, the design of the pit to function as primary containment should be certified by a licensed Professional Engineer to be suitable for all of the service conditions. An appropriate standard for this certification would be 40 CFR Subpart 264 Subpart J. Documentation of this type of design and certification is not available in the package. It should be made a condition of LDEQ review, or possibly a condition of the VRF Variance that it be provided prior to placement of any HSM in the "Liquid Containment Area."

In addition, TD*X notes that the application does not provide site specific geology, the identification and classification of groundwater resource. Further there is insufficient information to determine the location of the nearest drinking water wells and how groundwater resources will be protected. The LDEQ should consider requiring ground water monitoring as a requirement and/or a measure to mitigate the potential for impacts to groundwater resources.

COMMENT 22.
Section 2.2, Page 5. This section describes Thermaldyne's intention to store VOC contaminated bulk solid waste on the floor of the Material Handling Building. The VOC emissions from the building are not covered by an air permit. It is noted that these emissions were represented in a recent air permit modification that is under review by LDEQ. TD*X preliminary review of the VOC emissions representation and control is that the emission rate before control is extremely low and may not be adequately represented, and that the VOC controls do not comply with either RCRA 40 CFR 264 Subpart CC, or the BWON requirements. VOC emissions control plan and the technical standards that are intended to be met should be described in this document, or it does not meet the mandatory "contained" requirements of the VRF variance criteria.

COMMENT 23.
Section 3.0, Page 5. It is noted that Thermaldyne repeats here a statement that "OBHSM will be reclaimed via a centrifuge process and/or an indirect heated thermal desorption process." This makes clear their intent that not all of the solid residuals from the centrifuge are intended to be "reclaimed" in the TDU. That intent to discard those residuals makes it essential for LDEQ to establish that they are indeed listed hazardous waste F037, and not "a new point of generation." EPA doctrine requires discarded material from recycling of refinery OBHSM to remain listed waste F037 to assure its proper management and compliance with the LDR.

COMMENT 24.
Section 3.2, page 6. In this section Thermaldyne states their intent to receive OBHSM from *associated operations such as pipelines and tank terminals* that are not petroleum refining facilities. The LDEQ VRF Variance does not authorize that. That phrase should be struck from

the sentence.

COMMENT 25.
Section 3.2.3, Page 8. It is noted that Thermaldyne states their intent that the treated solids "may be cooled with treated waste water." Treated wastewater at the facility will contain soluble organic chemicals, in particular phenol, acetone, and possibly other hazardous waste organic constituents present as emulsified or free oil. The waste water is not tested for any of these constituents, and is certainly not tested for compliance with F037 non-wastewater treatment standards prior to what amounts to be their land disposal. This intent to mix wastewater with the TDU desorber solids makes it imperative that the solids be sampled after this mixing, and verified for compliance with the LDR treatment standards for F037.

COMMENT 26.
Section 3.2.5, Page 9, top of page. LDEQ has not approved burning the recovered oil as a fuel. Delete the sentence "If the reclaimed oil is to be used as fuel, it can undergo filtration or centrifuging to remove sediments and moisture. (e.g. oil and hydrocarbons)".

COMMENT 27.
Section 3.2.5, Page 9, second paragraph. Thermaldyne repeats their intent to use wastewater from the process to mix with the "residue of from the thermal process" which is TDU desorber solids. However, in this instance it is not clear that the wastewater will even be processed thru the wastewater treatment plant prior to this mixing. This further emphasizes the need to require that the solids be sampled after this mixing, and verified for compliance with the LDR treatment standards for F037.

COMMENT 28.
Section 3.2.5, Page 9, fourth paragraph. Thermaldyne states that the API separator has a fixed cover for VOC "emission control." This oil water separator is required to be covered and vented to a closed vent system with a control device under both RCRA 40 CFR Part 264 Subpart CC and the BWON standards. Thermaldyne does not describe either a closed vent system or control device. Those are mandatory for this unit.

COMMENT 29.
Section 5.0, Page 9, sixth paragraph. Add "conditions of the VRF Variance, " to the sentence, so that it reads "All residuals will be managed in accordance with *conditions of the VRF Variance,* applicable regulations and in a manner protective of human health and the environment."

COMMENT 30.
Section 5.1, Page 10, top of page. Add "as listed hazardous waste F037" to the sentence, so that it reads "If wastewater is not recycled or treated in the onsite system, it will be collected in containers and shipped offsite for treatment or disposal *as listed hazardous waste F037* at a permitted facility in accordance with applicable regulations.

COMMENT 31.
Section 5.2, Page 10. This section should be expanded, and edited. The air permit modification describes different VOC controls on the Material Handling Building from what is described here. Also, the 2015 air permit that is cited does not require the VOC or dust controls that are described for the Material Handling Building. Furthermore, no carbon breakthrough monitoring is described. for even a well-designed activated carbon filtration system with breakthrough monitoring, the agency accepted BDAT control efficiency by TCEQ is only 95%, not the 99.9% represented here by Thermaldyne. Without breakthrough monitoring on carbon filters, a much lower control efficiency is assigned by TCEQ; one that does not meet BWON and RCRA standards. Since this document will be a binding condition of the VRF Variance, it should accurately describe Thermaldyne's air emissions control plans. If a RCRA permit were being issued, the appropriate standards for VOC controls would be to apply Subparts I, J, BB and CC to the facility, and MACT EEE requirement to the TDU including all appropriate emission limits. Because benzene contaminated BWON control required material from petroleum refineries is present in the Thermaldyne feedstream, the BWON standards would apply to containers, tanks, oil/water separators, the waste management unit, the closed vent system and control devices. The BWON standards include lengthy provisions for design, monitoring, testing, inspection and recordkeeping to verify that benzene and VOC emissions are contained and controlled. The air emissions compliance plan to meet all of these requirements would be many pages, not only two paragraphs as is present in this plan document. Now, it may be true that LDEQ has reviewed all of these matters and is convinced that the Thermaldyne facility will meet the VRF Criteria to contain releases of the HSM. However, the documentation of that review is not present, either in the Thermaldyne VRF variance document submittal, or in the minor source air permit and it's submittals. It is difficult to verify that LDEQ can issue the Variance without the control of releases of the HSM that is required by LAC 33:V.105.O.2.d.vi.

COMMENT 32.
Section 5.3, page 10. Thermaldyne states their intent to sample the residual desorber solids prior to adding contaminated waste water to them. It is well known that waste water from a TDU and centrifuge system contains soluble organic matter, and possibly free oil and emulsified oil. It is mandatory that all sampling of residual desorber solids be performed after wastewater is added to them, whether the wastewater is treated or not. Even if the wastewater were demonstrated to meet the F037 wastewater LDR criteria. Sampling residual desorber solids prior to wastewater addition represents inappropriate disposal of that residual, and cannot be allowed under the VRF Variance. The last sentence in Section 5.3, first paragraph must be rewritten as follows:

> *Sampling of the waste residuals from both the TDU processed material, and the centrifuge solids if discarded, will be carried out after any wastewater is added to the solids.*

COMMENT 33.
Section 5.3, page 10. Based on extensive comments in this letter, it has been well established that the residual desorber solids, centrifuge solids if discarded, reclaimed oil if discarded, and wastewater if not discharged under an LPDES permit, are all listed hazardous waste F037. That

must be a condition of this VRF Variance, or it cannot be issued in compliance with LAC. This section must be rewritten to include the following text, as a minimum:

> *Notwithstanding any other representation by Thermaldyne, the residual desorber solids if discarded, centrifuge solids if discarded, reclaimed oil if discarded, and wastewater if discarded and not discharged under an LPDES permit, are all listed hazardous waste F037 and shall be managed accordingly. If only D018 source material is managed and completely segregated from other OBHSM waste in the TDU and centrifuge processes, and Thermaldyne has not mixed other specific and non-specific listed waste source material with the D018 source material, then that material may be considered a new point of generation.*

Section 9.5, page 13. Speculative Accumulation
COMMENT 34.
It is noted that under the criteria given in bullet three Thermaldyne must verify on January 1 that no more than 25% of their total annual production remains stored at the facility. Their stated and permitted annual capacity is 182,500 tons of HSM. Therefore, Thermaldyne's storage of essentially hazardous waste materials has no limit up to 46,625 tons. That is an amount so large that it represents essentially unlimited storage. See previous Comment 6 and 12. Thermaldyne should state their practical storage limit in this plan. Or at least confirm that they will store no more than is provided for in the most recent closure cost estimate and their associated financial assurance closure fund.

Material Acceptance Plan, EDMS Document ID 11175350

Section 2.0, pdf page 3.
COMMENT 35.
The last paragraph should be deleted, as LDEQ has not approved materials from other than petroleum refining in the VRF Variance. Delete the following text:

> *Thermaldyne will also accept OBHSM from operations related to petroleum refineries such as petroleum pipelines and terminal facilities. OBHSM from these related sources should consist of materials that meet the same acceptance criteria for recoverable oil.*

For the same reason, also delete the text from 2.1.1 on the next page.

> *...or it must be related to distribution operations such as pipeline or terminals*

Section 3.1, pdf page 5. OBHSM Characterization
COMMENT 36.
This section refers to a Generator Material Profile form. It is noted that the form includes a request for the generator's certified representation of the presence of mercury, chlorine (organic), and four

of the five MACT EEE restricted LVM/SVM metals (As, Cr, Cd, Pb). Thermaldyne evidently expects these toxic air pollutants to be present in their feedstream. They have not represented emissions of any of these in their minor source air permit applications. They have not agreed to perform emissions testing to verify that they are removed to below emission limits in their thermal oxidizer exhaust. They have not agreed to implement OPLs to assure continued compliance with emission limits. Specific review criteria and management methods to manage the presence of these restricted air pollutants would be appropriately placed in this Material Acceptance Plan, as it takes the place of a RCRA facility's permit required Waste Analysis Plan (WAP).

Section 3.1, pdf page 5. Last paragraph
COMMENT 37.
Thermaldyne states here that

> *Where significant concentrations of volatile metals are detected in a sample, the corresponding material should only be accepted for treatment by the thermal desorption unit if the treatment temperature will be sufficiently below the boiling point of the metal (in order to prevent evaporation of the metal), unless it has been assessed that the metal will not cause unacceptable contamination of the condensate and suitable off-gas abatement systems are in place, which will ensure that any volatilized metals are fully removed from the gas before it is discharged to atmosphere.*

Without question Thermaldyne is referring here to the presence of mercury in the waste feed, and mercury emissions from their thermal oxidizer stack. "Volatile Metals" is the exact reference made to mercury in the permit doctrine related to MACT EEE. At the operating temperature of the Thermaldyne unit, mercury is the only volatile metal. Furthermore, legitimate recycling of oil from OSBHM requires the removal of oil constituents with boiling point ranges (550 to 930°F) that completely include the boiling point of mercury (674°F). The TDU cannot be operated to reclaim oil and simultaneously prevent evaporation of mercury. All mercury present in the OBHSM feedstream will be evaporated and become a source of air pollution from the TO stack. Furthermore, at concentrations up to about 75 ppm, 100% of mercury present in the feedstream will be emitted to the atmosphere in the TO exhaust using the pollution control equipment being installed by Thermaldyne. And also, at that feedstream concentration, the mercury emission rate will be more than 7300 times greater than is allowable when the unit is operated in compliance with appropriate mercury emission limits for the facility.

This paragraph needs to be revised to simply state that *mercury presence in the feedstream will be identified, and limited to below a level that has been demonstrated to be in compliance with emission limits for the facility thermal oxidizer*. Thermaldyne should adopt a preliminary OPL for mercury that they can reasonably show will keep the TO emissions in compliance. Then, adopt a final OPL after performance of emission testing based on the actual amount of mercury being fed the TDU while the unit is verified to be operating in compliance with emission limits. The appropriate emission limit was discussed extensively in Sections 2 and 3 of this letter. Finally, in this Material Acceptance Plan, Thermaldyne should clearly state the mercury OPL (normally in a specific pound per hour of mercury being fed to the TDU), and how they intend to manage the

feedstream to assure continued compliance with this limit. TD*X estimate of an appropriate mercury feedstream OPL for Thermaldyne would be 0.00008 lb/hr.

Section 3.1, pdf page 6. second paragraph
COMMENT 38.
Thermaldyne categorically states that *OBHSM containing PCBs and other chlorinated substances will not be accepted for treatment by thermal desorption.* No test method is given. Is it to be inferred that 0.01 ppm or even less of any "chlorinated substance" will be prohibited from receipt at the facility? TD*X has found that chlorinated substances are not unusual in the petroleum refinery OBHSM feedstream, and carefully manages their receipt in our RCRA permitted recycling operations. Our facility currently has no acid gas scrubber, similar to the configuration as Thermaldyne is proposing. Our facility has adopted a chlorine feedstream OPL of 0.22 lb-Cl/hr that is a RCRA enforceable part of our TDU operating plan. This value is based on no removal of chlorinated organics in the "VRU" and all of their emission as HCl in the TO exhaust. That is what is known as the maximum theoretical emission concentration (MTEC) in the MACT EEE doctrine. A similar limit of 0.34 lb-Cl/hr would be appropriate for Thermaldyne based on detailed evaluation of their proposed process.

COMMENT 39.
Thermaldyne should be required to add an OPL for LVM/SVM into Section 3.1. Like mercury, this limit should be based on the actual amount of LVM/SVM being fed during an emissions test where the unit is verified to be operating in compliance with emission limits.

Section 3.2, pdf page 6. third paragraph
COMMENT 40.
See previous Comment 6, 12 and 34. Thermaldyne should state their practical storage limit in this plan. Or at least confirm that they will store no more than is provided for in the most recent closure cost estimate and their associated financial assurance closure fund.

Section 3.3, pdf page 6. Screening
COMMENT 41.
This section provides for what is known in regulated hazardous waste management as "fingerprint analysis." This section should require mandatory verification of the characteristic of flammability, and prohibit the receipt of any flammable material until an adequate fire safety study is completed, and the resulting required fire safety features are installed in the Material Handling Building.

Contingency Plan, EDMS Document ID 11175354

Section 1.3, pdf page 5. Background
COMMENT 42.
Thermaldyne should delete the first sentence in the last paragraph of the section that states *Thermaldyne will also accept similar OBHSM from distribution operations related to petroleum*

refineries such as petroleum pipelines and terminal facilities. Refer to Comments 4, 24, and 35. LDEQ has not approved these feedstreams in the VRF Variance.

COMMENT 43.
A very interesting statement is then made that *The reclamation process at Thermaldyne will generate residuals; however, the residuals do not typically exhibit the* (sic) *any hazardous waste characteristics*. This clearly discloses Thermaldyne's intent to dispose of discarded solid residuals from the TDU, and possibly the centrifuge, as being non-hazardous, and also not tested for compliance with the RCRA land disposal restrictions. This sentence should be re-written and replaced as follows:

> *The reclamation process at Thermaldyne will generate residuals that are managed in full compliance with LDEQ Solid and Hazardous waste regulations, as well as in compliance with the conditions of the VRF Variance.*

Closure Cost Estimate, EDMS Document ID 11175352
COMMENT 44.
Critical review of this estimate is required in relation to the stored waste material at the time of closure. Refer to Comment 6, 8 and 12, and Section 4 of this letter. It is strongly recommended that the cost items related to closure at the time of maximum inventory be revised to a higher value. That amount of stored waste volume should a condition of the variance so that LDEQ does not become saddled with an insufficient closure fund if Thermaldyne becomes financially insolvent.

VRF Variance Application, EDMS Document ID 10852151
It is noted that this is a very large 296 page document. Some of the pages are the three original plans that were updated and included above, as well as the Variance Request Letter, that is below. No additional comments are provided by TD*X on these superseded plans and letter.

pdf page 41. Enlarged Site Plan
COMMENT 45.
This drawing appears to show a storm water sump and underground drainage line with its inlet near the discharge end of the TDU. This storm water inlet appears to provide drainage for the entire TDU and centrifuge processing concrete pad. The pipe appears to discharge into a ditch on the western property boundary. This design is completely inappropriate. That storm water will be contaminated by oil, toxic metals, solids from industrial activity, and listed hazardous waste residuals F037. In no way should storm water from the processing pad be directed without treatment to a ditch. That inlet needs to be capped with concrete if it already exists. All pad storm water and wash water should be collected and treated as process wastewater until it is discarded as a waste residual or the water portion is treated and discharged to the LDPES outfall.

VRF Variance Request Letter, EDMS Document ID 11175348

pdf page 1.
COMMENT 46
The first paragraph needs revision to state only what LDEQ is approving in the operation.

Thermaldyne, LLC (Thermaldyne) is proposing a facility to receive and process oil-bearing hazardous secondary material (OBHSM) generated at petroleum refineries ~~and related oil and gas operations, such as pipeline systems and tank terminals~~. Thermaldyne intends to reclaim the oil contained in the OBHSM via centrifuge and thermal desorption processes. The recovered oil will be transferred back to refineries for reinsertion into the refining process ~~or sold as fuel in the fuel blending market~~.

COMMENT 47.
In the third paragraph, Thermaldyne makes the partially correct statement, that *The same OBHSM has historically qualified for the exclusion under LAC 33:V.105.D.1.1.* It is important to state that the EPA clearly has only authorized excluded reclamation treatment of petroleum refining OBHSM to be performed at refinery sites, and has prohibited reclamation such as proposed by Thermaldyne as a third-party to be performed under the sited exclusion. Either the sentence should be deleted, or it should be revised to state … *however, EPA has prohibited third-party reclamation such as proposed by Thermaldyne to be performed under this referenced exclusion.*

pdf page 2.
COMMENT 48.
The first sentence should be edited as follows. *The facility will limit the OBHSM that it receives to those generated at petroleum refineries ~~and related operations such as distribution facilities and pipelines~~.* LDEQ has only approved petroleum refining OBHSM in this VRF Variance.

COMMENT 49.
Referring to the 8-inch curb height, an 8-inch curb is not sufficient to collect a 25-yr 24-hr rainfall event in Port Allen, plus stored liquid waste volume at 110% of the largest tank. That is the RCRA Subpart J standard that is required for this type of containment unit. The storm itself has 9.1-inch rainfall. A higher curb is required, or the facility does not meet the "contained" requirement under LAC. In addition, no other justification, evaluation or bases is provided to confirm 8-inch curb/berm is sufficient. [reference. https://hdsc.nws.noaa.gov/hdsc/pfds/pfds_map_cont.html] Furthermore, it is noted that the area of the Thermaldyne facility is designated as a source area for groundwater resources and the proposed VRF application is insufficient to prevent the potential for waste material and contact surface water to impact waters of the state, including groundwater.

pdf page 5.
COMMENT 50.
The following paragraph should be deleted. LDEQ has not approved that activity in the VRF Variance.

Thermaldyne will also accept similar OBHSM from distribution operations related to

petroleum refineries such as petroleum pipelines and terminal facilities. This OBHSM will consist of materials that meet the same acceptance criteria for recoverable oil.

pdf page 6.
COMMENT 51.
The following paragraph should be deleted. LDEQ has not approved that activity in the VRF Variance. Similar statements on page 8 should also be deleted. Fuel burning is not authorized by LDEQ in the VRF Variance.

Oil not returned to petroleum refineries will be sold to third parties. In this scenario, the oil will be sold as a fuel stock at prices determined by the fuel blending market. The price will be determined based on the specifications of the recovered oil and the current price of similar materials on the fuel blending market. The oil will have similar chemical and physical characteristics to the oil currently sold to the fuel blending market.

pdf page 10.
COMMENT 52.
Regarding discussion of the wastewater residual, text should be inserted at its end… *and the conditions of the VRF Variance.*

pdf page 10.
COMMENT 53.
Regarding air emissions, a sentence should be inserted at the end of this paragraph… *Air emissions will also be constrained by emission limits and performance requirements according to the conditions of the VRF Variance.*

pdf page 10 and 11.
COMMENT 54
Based on significant previous discussion regarding the residual solids from the TDU being listed hazardous waste code F037, the text on Solids needs revision.

Residual solids exiting the TDU and any centrifuge solids that are not further reclaimed in the TDU will be transferred to roll-off containers. According to EPA permit doctrine, and specific conditions of the VRF Variance, these solids when discarded are listed hazardous waste F037. The residual solids from each batch of OBHSM being reclaimed will be characterized in accordance with approved EPA methods for compliance with the EPA Land Disposal Restrictions (LDR) for hazardous waste. Based on this analysis, these solids will be ~~classified as either industrial solid waste or hazardous waste, and~~ managed accordingly by shipping them for secure disposal in an offsite RCRA permitted landfill or for further offsite RCRA permitted treatment if they do not comply with the LDR. Management will include storage of residual solids in appropriate containers, proper labeling, manifesting, offsite disposal, and recordkeeping.

pdf page 12.
COMMENT 55
Regarding fugitive air emissions, the following text edits are required. The basis for these were discussed earlier in this document.

> *The thermal treatment process will be conducted in a sealed chamber to minimize air ingress and to prevent the release of fugitive emissions. Operation at this negative chamber pressure will be an Operating Parameter Limit interlock for the unit. Negative pressure will be maintained in the enclosed receiving building to reduce fugitive emissions. VOC emissions control devices will be maintained on the liquid storage tanks and containers, the oil water separators, and the material handling building to control emissions according to the Federal Benzene Waste Operations NESHAPs standards. Solid residuals will be stored in closed containers. As noted, it is extremely unlikely that residual material will be released to the environment and, therefore, will not pose a risk to offsite receptors.*

Response to NOD #1, EDMS Document ID 10984054

This document appears to be mistakenly included. It was drafted for the previous Feedstock Variance request.

Follow this Full Document Download link, for all Attachments in a bookmarked report.

Thermaldyne_TDU_Draft_VRF_Variance_Comments.pdf

https://tdxassociates.egnyte.com/dl/LQd1eDT0R1

ATTACHMENT 1

United States Court of Appeals for the District of Columbia Court, July 7, 2017.
No. 09-1038, in the matter of American Petroleum Institute v. Environmental Protection Agency

United States Court of Appeals
FOR THE DISTRICT OF COLUMBIA CIRCUIT

Argued November 3, 2016 Decided July 7, 2017

No. 09-1038

AMERICAN PETROLEUM INSTITUTE,
PETITIONER

v.

ENVIRONMENTAL PROTECTION AGENCY,
RESPONDENT

AMERICAN CHEMISTRY COUNCIL, ET AL.,
INTERVENORS

Consolidated with 15-1083, 15-1085, 15-1088, 15-1089, 15-1094

On Petitions for Review of a Final Regulation Promulgated by the United States Environmental Protection Agency

---

Jeremy C. Marwell and *Thomas Sayre Llewellyn* argued the causes for Industry Petitioners. With them on the briefs were *Stacy R. Linden*, *Matthew A. Haynie*, *Aaron J. Wallisch*, *Laura E. Boorman*, *Kevin A. Gaynor*, *John P. Elwood*, *Roger R. Martella, Jr.*, *Joel Visser*, *Linda E. Kelly*, *Quentin Riegel*, and *Leslie A. Hulse*. *Wayne D'Angelo*, *Harry M. Ng*, and *Michael R. See* entered appearances.

Kenneth M. Kastner was on the brief for *amici curiae* Eastman Chemical Company and Solvay USA Inc. in support of Industry Petitioners.

James S. Pew argued the cause for Environmental Petitioners. With him on the briefs was *Khushi K. Desai*.

Daniel R. Dertke, Attorney, U.S. Department of Justice, argued the cause for respondents. With him on the brief were *John C. Cruden*, Assistant Attorney General, *Douglas M. Bushey*, Attorney, U.S. Department of Justice, and *Alan Carpien*, Attorney, U.S. Environmental Protection Agency.

Donald J. Patterson, Jr. argued the cause for Industry Intervenor-Respondents. With him on the brief were *Eric L. Klein*, *Aaron J. Wallisch*, *Laura E. Boorman*, *John L. Wittenborn*, *Wayne D'Angelo*, *Kevin A. Gaynor*, *John P. Elwood*, *Jeremy C. Marwell*, *Leslie A. Hulse*, *Linda E. Kelly*, *Quentin Riegel*, *Roger R. Martella, Jr.*, *Joel Visser*, *James W. Conrad, Jr.*, *Thomas Sayre Llewellyn*, *Stacy R. Linden*, and *Matthew A. Haynie*. *Douglas H. Green* entered an appearance.

David R. Case, *James S. Pew*, *Khushi K. Desai*, and *Vincent Atriano* were on the joint brief for respondent-intervenors and movant-intervenor Gulf Chemical and Metallurgical Corp.

Before: TATEL and KAVANAUGH, *Circuit Judges*, and WILLIAMS, *Senior Circuit Judge*.

Opinion for the Court filed PER CURIAM.

Opinion dissenting in part filed by *Circuit Judge* TATEL.

PER CURIAM: This case arises from the Environmental Protection Agency's latest effort to define the term "solid waste" under the Resource Conservation and Recovery Act. In 2015, EPA promulgated a final rule governing when certain hazardous materials qualify as "discarded" and hence are subject to the agency's regulatory authority. Environmental and Industry Petitioners have each petitioned for review of that rule, arguing that numerous aspects of it are unlawful and arbitrary and capricious. For the reasons explained, we grant the Industry petition for review with respect to Factor 4 of the legitimacy test and to the Verified Recycler Exclusion and we dismiss the Environmental petition for review.

I. Introduction

The Resource Conservation and Recovery Act ("RCRA"), 42 U.S.C. §§ 6901-6992k, empowers EPA to manage solid and hazardous waste. The statute defines solid waste as "garbage, refuse, sludge . . . and other discarded material." 42 U.S.C. § 6903(27). Hazardous waste is a subset of solid waste that may pose a substantial threat to human health or the environment when improperly managed. § 6903(5)(B). If a material qualifies as hazardous waste, it is subject to regulation under RCRA Subtitle C, §§ 6921-6939g, which imposes comprehensive reporting and operating requirements. Material that is not solid waste, and therefore not hazardous waste, is exempt from Subtitle C.

Pursuant to its RCRA authority, EPA has promulgated a rule defining solid waste as "discarded material" not otherwise excluded from the agency's regulations. 40 C.F.R. § 261.2(a)(1). A separate regulation lists materials that fall outside the definition of solid waste. § 261.4. Central to the issues before us, EPA considers certain materials that are destined for recycling to be discarded and hence solid waste

subject to RCRA regulation. *Definition of Solid Waste*, 80 Fed. Reg. 1,694, 1,738/3 (Jan. 13, 2015) (the "*Final Rule*").

For our purposes, the relevant history begins in 2007, when EPA proposed a rule deregulating many hazardous secondary materials. See *American Petroleum Institute v. EPA*, 683 F.3d 382, 385 (D.C. Cir. 2012) ("*API II*"). Secondary materials are substances generated as the remainder of industrial processes; they include spent materials, byproducts, and sludges. See 40 C.F.R. § 260.10. EPA's proposed rule—which became a final rule in October 2008—excluded hazardous secondary materials from the definition of solid waste in two circumstances: first, if the company that generated the materials controlled the recycling of those materials; and second, if the generator transferred the materials to an off-site recycler it had audited to ensure compliance with proper recycling practices. *Revisions to the Definition of Solid Waste*, 73 Fed. Reg. 64,668, 64,669/3-70/1-2 (Oct. 30, 2008) (the "*2008 Rule*"). These two exemptions were known, respectively, as the "Generator-Controlled Exclusion" and the "Transfer-Based Exclusion." *Id.* at 64,670/1, 64,675/2 (capitalization added). To qualify for either, secondary materials had to be recycled "legitimately," a term EPA defined by reference to certain "legitimacy factors." *Id.* at 64,675/2-3. EPA adopted this legitimacy requirement to distinguish "true" recycling from "sham" recycling in which companies claim to reuse materials they in fact discard. *Id.* at 64,700/2.

Several organizations challenged the *2008 Rule*. One, the American Petroleum Institute, argued that the rule unlawfully regulated materials called spent petroleum refinery catalysts, which are byproducts of the oil refining process. *API II*, 683 F.3d at 387. Another group, the Sierra Club, asserted that the rule "was not sufficiently protective of human health and the environment," in violation of RCRA. *Id.* at 389. A third entity,

Gulf Chemical and Metallurgical Corporation ("Gulf"), moved to intervene to defend the rule's treatment of spent catalysts.

Before this court heard oral argument, EPA entered a settlement agreement with the Sierra Club. *Id.* Pursuant to that agreement, the Sierra Club withdrew its petition, and EPA agreed to propose a new solid waste rule. *Id.* As promised, EPA published a notice of proposed rulemaking in July 2011. *Definition of Solid Waste*, 76 Fed. Reg. 44,094 (July 22, 2011) (the "*Proposed Rule*"). A year later, we held that API's challenge to the 2008 rule was unripe given the forthcoming final rule. *API II*, 683 F.3d at 384. We deferred any action on Gulf's motion to intervene, which is dealt with in a separate order published today.

EPA promulgated the *Final Rule* on solid waste—the one before us now—in January 2015. 80 Fed. Reg. at 1,694/1. The 2015 *Final Rule* differs from the *2008 Rule* in several ways, four of which are relevant here. First, the *Final Rule* revises the definition of "legitimate" recycling and expands the scope of the legitimacy factors to cover all recycling. *Id.* at 1,719/3-20/1. Second, it establishes that spent catalysts—which were ineligible for exclusions under the *2008 Rule*—could qualify for the exemptions in the 2015 regulation. *Id.* at 1,738/1. Third, the rule defers a decision on whether to add conditions to 32 previously promulgated exclusions from the definition of solid waste, which EPA calls the "pre-2008" exclusions. *Id.* at 1,741/2. Fourth and finally, the rule replaces the transfer-based exclusion with the "Verified Recycler Exclusion," a new standard governing when transferred materials qualify as solid waste. *Id.* at 1,695/2. We provide additional detail on each of these provisions later in this opinion.

Multiple organizations petitioned for review of the 2015 rule. Their petitions, which are consolidated in this case,

challenge the regulation on multiple fronts. Industry Petitioners argue that both the legitimacy test and the Verified Recycler Exclusion exceed EPA's RCRA authority. Industry Petitioners also challenge EPA's treatment of two specific materials: spent catalysts and off-specification commercial chemical products. Environmental Petitioners argue that the Verified Recycler Exclusion is too permissive and that EPA should have added containment and notification conditions to the 32 pre-2008 exclusions. We consider these challenges in turn.

II. Legitimacy Factors

Industry Petitioners first attack EPA's new legitimacy test. Before EPA can regulate a hazardous secondary material as hazardous waste, it must determine that the material has been "discarded" under 42 U.S.C. § 6903(27). Items recycled through "immediate reuse in" an "industry's ongoing production process," are not discarded within the meaning of that section and are outside EPA's hazardous waste regulations. See *American Mining Congress v. EPA*, 824 F.2d 1177, 1183-85 (D.C. Cir. 1987) ("*AMC*"); see also *Ass'n of Battery Recyclers, Inc. v. EPA*, 208 F.3d 1047, 1052-53 (D.C. Cir. 2000) (explaining that "immediate" in *AMC* means "direct," not instantaneous). But because EPA's waste disposal regulations are acknowledged to be very costly to meet, "there is an incentive for some handlers to claim they are recycling when, in fact, they are conducting . . . disposal." *Final Rule*, 80 Fed. Reg. at 1,719/3. To prevent such evasion, EPA polices the line "between 'legitimate' (*i.e.*, true) recycling and 'sham' (*i.e.*, fake) recycling." *Id.* at 1,720/1.

Until recently, EPA's policy on sham recycling existed chiefly in uncodified guidance, notably a memo issued in 1989 by Sylvia K. Lowrance, Director, EPA Office of Solid Waste (Apr. 26, 1989) (the "*Lowrance Memo*"). The memo discussed

over a dozen factors for evaluating recycling, all aimed at determining "whether the secondary material is 'commodity-like,'" i.e., is it being handled like a valuable industrial input or like a worthless industrial byproduct. See *id.* at 2 & attachment.

The *Final Rule* updates and codifies this effort to draw the distinction between legitimate and sham recycling. It requires that all recycling of hazardous secondary materials meet a legitimacy test set forth in 40 C.F.R. § 260.43(a) or else be labeled "sham" and subjected to full RCRA regulation. 40 C.F.R. § 261.2(g). Like the *Lowrance Memo*, the rule is rooted in the assumption that legitimate recycling should involve some "recognizable benefit," *Final Rule*, 80 Fed. Reg. at 1,722/1, independent of merely "avoid[ing] the requirements of" RCRA regulation, *id.* at 1,719/3.

To satisfy the legitimacy test for recycling of a particular material, firms must prevail on all of four factors, § 260.43(a)(1)-(4), which are in addition to whatever elements a specific exclusion might require, see *Final Rule*, 80 Fed. Reg. at 1,720/2. First, the hazardous secondary material must "provide[] a useful contribution to the recycling process." § 260.43(a)(1). Second, "[t]he recycling process must produce a valuable product or intermediate." § 260.43(a)(2). Third, the persons controlling the secondary material must "manage the hazardous secondary material as a valuable commodity." § 260.43(a)(3). Fourth, "[t]he product of the recycling process must be comparable to a legitimate product or intermediate." § 260.43(a)(4). Factors 1 and 3 address the process, Factors 2 and 4 the product.

Industry Petitioners do not attack EPA's authority to formulate and apply a legitimacy test, nor do they fault EPA's premise that legitimate recycling involves "valuable" materials

being used for a "recognizable benefit." *Final Rule*, 80 Fed. Reg. at 1,697/3, 1,722/1. At that level of generality, EPA's policy seems to be a reasonable method for identifying materials that are "part of the waste disposal problem" and thus subject to EPA's RCRA authority over discarded materials. *Safe Food & Fertilizer v. EPA*, 350 F.3d 1263, 1268 (D.C. Cir. 2003). Industry Petitioners instead attack EPA's planned means to implement that policy. They complain that mandating Factors 3 and 4 across all recycling results in EPA's "unlawfully regulat[ing] non-discarded materials." Industry Pet'rs' Br. 16 (capitalization omitted).

A. Factor 3

We begin with Factor 3, which requires secondary materials to be handled as "valuable commodit[ies]." 40 C.F.R. § 260.43(a)(3). Where there is an analogous raw material, the firm can meet this standard by handling the secondary material "in an equally protective manner." *Id.* If there is no raw analogue for comparison, EPA requires that the secondary material be "contained." *Id.* "Contained" means "held in a unit (including a land-based unit . . .) that meets" multiple enumerated criteria, including that the unit be "labeled or otherwise ha[ve] a system (such as a log) to immediately identify the hazardous secondary materials" therein. 40 C.F.R. § 260.10 (entry for "*Contained*"). "[L]and-based unit[s]," *id.*, encompass, at least for some materials such as scrap metal, simply lying on the ground, see *Final Rule*, 80 Fed. Reg. at 1,721/3, 1,736/2.

EPA previously claimed that any "interdiction in time" during a secondary material's trajectory from initial output to recycling, e.g., for storage, could be considered discard and thus trip the material into EPA's RCRA authority. *Battery Recyclers*, 208 F.3d at 1052 (internal quotation marks omitted). We rejected that rule. "To say that when something is saved it

is thrown away is an extraordinary distortion of the English language." *Id.* at 1053. Industry Petitioners read that holding to bar EPA from ever regulating how recycled materials are contained. Their reading goes too far. EPA can impose a containment requirement so long as it is such that an inference of "sham" or illegitimacy would logically flow from a firm's non-compliance. And given EPA's explanation that a material may be "contained" if it is simply piled on the ground, *Final Rule*, 80 Fed. Reg. at 1,721/3, 1,736/2, and meets specific requirements that petitioners do not challenge as unreasonable (with one exception, the "labelling" requirement discussed below), the standard does not on its face appear to ask for anything beyond what could be expected of firms engaged in legitimate recycling.

Industry Petitioners express concern about having to label or log unwieldy molten metals and acidic sludges to satisfy EPA's insistence on material being "contained." But EPA offers an alternative to labelling in the conventional sense—provision of "a system (such as a log) to immediately identify the hazardous secondary materials in the unit." § 260.10. Thus, in substance, the requirement is not precisely one of labeling or logging, but only of assuring that it somehow be possible for the material to be "immediately identif[iable]." *Id.* While doubtless EPA's language could be interpreted unreasonably, we cannot see that the requirement itself is unreasonable.

B. Factor 4

Factor 4 presents more difficulty. EPA explains this factor as an effort to prevent recyclers from loading products with hazardous secondary materials that "provide[] no recognizable benefit to the product," *Final Rule*, 80 Fed. Reg. at 1,722/1, and are simply "along for the ride," *id.* at 1,726/2. Although EPA does not require a material's "hazardous component[s]"

themselves to provide a "useful contribution" to the product, see *id.* at 1,723/3 (discussing Factor 1), the agency is concerned that a purported recycler might "incorporate[] hazardous constituents into the final product when they were not needed to make that product effective as a way to avoid proper disposal of that material, which would be sham recycling," *id.* at 1,726/1-2.

The factor sets up two tracks, 40 C.F.R. § 260.43(a)(4)(i)-(ii), one covering products for which there is an analogue of undoubted legitimacy, the other addressing products with no such analogue. EPA refers to these together as the "technical provisions." *Final Rule*, 80 Fed. Reg. at 1,729/1. But as EPA recognizes that the criteria set forth under these two tracks don't draw a satisfactory line between genuine and sham, it also offers a rather complicated exception—aimed at preventing products from being labelled a sham when they in fact pose no "significant human health or environmental risk." § 260.43(a)(4)(iii). But Factor 4's complex provisions fall short of the aim. As we shall see, Factor 4 imposes tasks tangential to disposal *vel non* (and thus tangential to EPA's authority), even when EPA has offered little reason to doubt a product's legitimacy.

The second track is the more reasonable of the two. When there is no analogue, the recycled product will pass if it was created by looping secondary materials back "to the original process . . . from which they were generated" or if it meets "widely recognized commodity standards and specifications." § 260.43(a)(4)(ii)(A)-(B). Those standards or specifications need not address the hazardous aspects of the product. *Final Rule*, 80 Fed. Reg. at 1,728/2-3. And EPA has explained that compliance with "customer specifications" may suffice for "specialty" products. *Id.* at 1,728/1. Although that gloss on "specifications" appears only in EPA's discussion of the with-

analogue track, the *Final Rule* offers little indication that the same word in the no-analogue track is meant to read differently on this matter. Compare *id.* at 1,727/3-28/1 (with-analogue), with *id.* at 1,728/2-3 (no-analogue). Putting all this together, if a recycled product, lacking an analogue, fails to satisfy customer specifications, falls short of relevant commodity standards, and is not derived from a closed-loop type process, EPA treats it as discarded (subject to the ultimate exception). These tests focus largely on the utility of the recycling in question, a reasonable inquiry when deciding legitimacy. See *id.* at 1,728/3 (commodity standards and specifications criteria mean that "market forces [will] dictate" legitimacy); *id.* at 1,729/1 ("looping" criterion appropriate because this type of recycling "conserves the use of raw materials" without adding new hazards).

The other track in Factor 4's technical provisions, applying where the recycled product has an analogue, is more explicitly tuned to the "along for the ride" metaphor. It requires that the recycled product exhibit no hazardous "characteristic" that is absent from the product's analogue. 40 C.F.R. § 260.43(a)(4)(i)(A); see also *Final Rule*, 80 Fed. Reg. at 1,727/1 ("The characteristics are ignitability, corrosivity, reactivity, and toxicity."). This criterion—fenced in as it is by the definitions of those characteristics, see 40 C.F.R. §§ 261.21-.24—also seems reasonable: one would expect analogous products to have similar attributes. But the track goes on from there. Even if the recycled product and its analogue share the same hazardous characteristics, the amount or "levels" of hazardous constituents in the product must be "comparable to or lower than" its analogue's. § 260.43(a)(4)(i)(B). If the product fails that test, it can still be legitimate if it "meet[s] widely-recognized commodity standards and specifications." *Id.* Unlike in the no-analogue track, here the commodity standards and specifications must

"specifically address [] hazardous constituents." *Id.* Otherwise EPA will regard the product as discarded (subject to the ultimate exception).

We have left EPA some leeway in applying the idea that genuine recyclers cannot include hazardous material just "along for the ride" in their products. Thus in *American Petroleum Institute v. EPA*, 216 F.3d 50 (D.C. Cir. 2000) ("*API I*"), we rejected a challenge under "*Chevron* step one" to a rule that treated "recovered oil" as discarded if it included "extra materials . . . that provide *no benefit* to the industrial process." *Id.* at 58-59 (emphasis added). But we hinted that such a rule should reasonably avoid "incidentally regulat[ing] oil containing chemicals [whose presence in the recycled oil was] not caused by sham recycling (and therefore not discarded)." See *id.* at 59.

Judged by that perhaps opaque standard, EPA's "along for the ride" metaphor suffers at least one of the usual dangers of metaphors—imprecision. The record contains examples of hazardous secondary materials that are beneficially recycled into valuable products (recognized as such by EPA), even though those products contain hazardous constituents that do not, in themselves, contribute to the value of the final product. See, e.g., *Final Rule*, 80 Fed. Reg. at 1,721/1-2 (zinc-containing secondary materials), 1,729/3 (lead-containing secondary materials). In those cases, even if EPA could technically say that some small excess of hazardous constituents has been left in the final product, the mere fact of their presence would not constitute a reasonable basis for dubbing the product or the process a sham. After all, it can be costly to extract tiny amounts of hazardous constituents—potentially on the order of "parts per million," see *id.* at 1,727/2-3—from secondary materials destined for recycling, and no statute has given EPA authority to compel firms to

engage in such extraction where failing to do so imposes no health or environmental risk. To rule otherwise would be to disregard the statute's stated "objective[]" of "encouraging . . . properly conducted recycling." 42 U.S.C. § 6902(a)(6).

EPA made this very point in *Safe Food* to defend its exclusion for recycled zinc fertilizers even though those fertilizers could have "considerably higher" contaminant levels than the corresponding "virgin commercial fertilizer." 350 F.3d at 1269. After reviewing EPA's data on the threat posed by the additional contaminants, we agreed that the excesses of the contaminant levels that EPA allowed (as consistent with legitimate recycling) over those in virgin fertilizer samples "lose their significance when put in proper perspective—namely, a perspective based on health and environmental risks." *Id.* at 1270.

No such perspective is allowed by the "comparable to or lower than" standard for products with analogues. That standard sets the bar at the contaminant level of the analogue without regard to whether any incremental contaminants are significant in terms of health and environmental risks. This problem is reduced, but not eliminated, by firms' option to meet "widely-recognized commodity standards and specifications," 40 C.F.R. § 260.43(a)(4)(i)(B)—including "customer specifications" if the product is made-to-order, *Final Rule*, 80 Fed. Reg. at 1,728/1. Many products might fail this alternative, not because they represent sham recycling, but because the relevant commodity standards or specifications don't address the hazardous constituent levels of concern to EPA. Industry Petitioners contend, and EPA does not contradict, that such standards usually refer to minimum levels of *desired elements* rather than maximum levels of *specific impurities*. Doubtless this track will ensnare some sham recycling, but it does so with a test that is not a "reasonable tool

for distinguishing products from wastes." See *Safe Food*, 350 F.3d at 1269.

EPA, having recognized some of the shortcomings in these provisions, created an exception purporting to account for them. See *Final Rule*, 80 Fed. Reg. at 1,729/1. A recycler may avoid the sham label if it "prepare[s] documentation showing why the recycling is, in fact, still legitimate" and notifies regulators. 40 C.F.R. § 260.43(a)(4)(iii). The legitimacy "can be shown" by "lack of exposure from toxics in the product, lack of the bioavailability of toxins in the product, or other relevant considerations which show that the recycled product does not contain levels of hazardous constituents that pose a significant human health or environmental risk." *Id.*

In explaining this exception, EPA has indicated that the question is whether the recycled product will be used beneficially in a manner that reasonably protects against the risks its residual hazardous constituents present. See *Final Rule*, 80 Fed. Reg. at 1,729/1-3. Absence of these circumstances would indicate that the true purpose of the recycling is disposal. Hence, EPA explained in the rulemaking that "lead contaminated foundry sand[]" would be sham recycled when packaged as "children's play sand" but that the same material can be legitimately recycled for "mold making in a facility's sand loop." *Final Rule*, 80 Fed. Reg. at 1,729/2-3. The sand is (in a sense) equally hazardous in both cases, but the latter use is legitimate "because . . . there is little chance of the hazardous constituents being released into the environment or causing damage to human health"; "there is lead throughout the foundry's process" (i.e., the sand isn't introducing new hazards); and "there is a clear value to reusing the sand" in that industry. *Id.* at 1,729/3. Recyclers can also meet this exception by analyzing the "increased risk" of their product relative to its analogues, if any. *Id.* We read this as saying, in light of EPA's

brief, that a recycler can show its product is legitimate by documenting that any incremental risk it presents is not "significant" to health and the environment. See Respondent Br. 42-43 (citing *Safe Food*, 350 F.3d at 1269-71).

Contrary to Industry Petitioners' claims, the general criteria embodied in the Factor 4 exception seem permissible, indeed consistent with our ruling in *Safe Food*. Industry Petitioners also argue that the exception affords EPA unlimited discretion to find discard. The language of Factor 4 and its exception is rather open-ended, so judicial review of EPA's subsequent interpretations would normally be highly deferential, *Auer v. Robbins*, 519 U.S. 452, 461-62 (1997), potentially leaving petitioners at the mercy of a different reading in the future. But we note that Factor 4's exception is tuned specifically to "significant human health or environmental risk[s]." 40 C.F.R. § 260.43(a)(4)(iii). And EPA has simultaneously provided an explanation of how to apply the exception along with an example of how a specific material might pass or fail it. *Final Rule*, 80 Fed. Reg. at 1,729/2-3 (foundry sand). These aspects of the rulemaking sufficiently constrict the range of possible interpretations: "[a]n interpretation at odds with the agency's expressed intent at the time of adoption enjoys no judicial deference." *AT&T Corp. v. FCC*, 841 F.3d 1047, 1054 (D.C. Cir. 2016).

The exception nonetheless falls short of saving the rule, due to the draconian character of the procedures it imposes on recyclers. See Industry Pet'rs' Br. 29, 33. To qualify for the exception just described, a firm must contemporaneously document how its recycling is "still legitimate," notify regulators of that finding, and keep the documents "on-site for three years after the recycling operation has ceased." 40 C.F.R. § 260.43(a)(4)(iii). Failing any of these steps will make a sham

out of what would otherwise have been a legitimate product. See *Final Rule*, 80 Fed. Reg. at 1,721/1, 1,735/3-36/1.

EPA is correct that these notice and recordkeeping mandates will create useful "oversight" and may be correct that they constitute only a "minimal burden" on recyclers. *Id.* at 1,730/1, 1,732/1. But paperwork is not alchemy; a legitimate product will not morph into waste if its producer fails to file a form (or loses a copy two years later). EPA insists that it can impose burden-shifting rules even in drawing the line between what it may and may not regulate. Respondent's Br. 58. True enough; but the generality is applicable only if the products subjected to the burden-shifting are such that it would normally be reasonable to expect them to qualify as "discarded" in the absence of affirmative evidence from the recycler. Thus in *American Chemistry Council v. EPA*, 337 F.3d 1060 (D.C. Cir. 2003), we affirmed EPA's decision to put the burden on regulated entities to initiate a "delisting" process preemptively to establish that a given "mixture or derivative" of hazardous waste is not itself hazardous. *Id.* at 1065. Waste handlers would evidently have to undertake this process, concededly "cumbersome," in advance of any EPA enforcement. *Id.* But there EPA had found that "many mixtures of and derivatives from hazardous wastes are themselves hazardous," an inference that those materials' origin in hazardous waste renders highly plausible. *Id.* Further, the rule included exceptions to "prevent [EPA] from casting too wide a net over" materials outside its jurisdiction. *Id.* Compare Dissent at 8. The same might be said of the no-analogue track and the hazardous characteristic criterion. But we cannot say the same for the with-analogue track's "comparable to or lower than" test, even as qualified by the exception for products meeting commodity standards or specifications.

Never in the rulemaking does EPA make out why a product that fails those criteria is likely to be discarded in any legitimate sense of the term. See *Motor Vehicle Mfrs. Ass'n v. State Farm Mut. Auto. Ins. Co.*, 463 U.S. 29, 42 (1983) (agency rules must be "justified by the rulemaking record").

Environmental Intervenors argue that the necessary backing for Factor 4 lies in EPA's report, *An Assessment of Environmental Problems Associated with Recycling of Hazardous Secondary Materials* (Dec. 10, 2014) (the "*Problems Study*"). See Respondent-Intv'rs' Joint Br. 13-14, 16. By its own account, the report was "not exhaustive"; it restricted itself to 250 "easy to find" instances of environmental damage associated with recycling. *Problems Study* at 4 (identifying sources of "potentially relevant" data that the study did not exhaust). Compare Dissent at 11. The study seems to support a proposition, surely indisputable, that recycling can go awry. Further, the authors claim to have identified various causal factors, characterized rather vaguely and clearly overlapping, such as "Improper Disposal of Residuals," "Abandoned Materials," and "Improper Management of Hazardous Secondary Materials." *Problems Study* at 6-8. But none of these bears any obvious relation to the "comparable to or lower than" standard of the with-analogue track. Reading the report liberally, we see around a dozen instances (out of the 250) involving recycled products that possibly would have flunked the technical provisions. See *id.* app'x 1 at 22-23; 26-27; 45-47; 114-15, 121-22; 128-30, 247-48, 258-59, 298-300, 304, 319-320, 339-40, 404-05, 443-44. And some of these products could have already been considered hazardous waste for failing other legitimacy criteria or for being "placed on the land in a manner that constitutes disposal," 40 C.FR. § 261.2(c)(1)(A). See, e.g., *Problems Study* app'x 1 at 299 (recycler allegedly "planned to sell [] contaminated ash as fill material to the public").

Thus the study in no way purports to establish that there is any particular probability, much less a reasonable probability, that the recycled products exceeding the "comparable to or lower than" standard will cause damage to health or the environment. But the quality or relevance of the study makes no difference in this context, as EPA did not rely on it to justify its assumption that materials which fail the technical provisions are "discarded." The study appears to enter EPA's Factor 4 discussion only implicitly via the foundry sand example, and the most EPA inferred from that was that certain recycled products "may or may not be legitimate, depending on the use." *Final Rule*, 80 Fed. Reg. at 1,729/2-3. That conclusion doesn't take us beyond EPA's bare assertion that "high levels of hazardous constituents . . . could indicate" discard. *Id.* at 1,726/1.

In *API I*, we were satisfied by EPA's mere "concern[]" that some test samples had "unexpected" levels of contaminants (EPA had no evidence that those results were due to adulteration). 216 F.3d at 58. We stressed, though, that "a refiner in a specific case" could show that the product was not adulterated and not discarded. *Id.* at 59. Thus, the rule involved at most a rebuttable presumption, which we have said can "be sustained without an evidentiary showing . . . so long as the agency articulates a rational basis." *Sec. of Labor v. Keystone Coal Mining Corp.*, 151 F.3d 1096, 1101 (D.C. Cir. 1998). But our cases show that here a "rational basis," *id.*, means a reason, grounded in common sense or logic, to suppose the inference "so probable that it is sensible and timesaving to assume [its] truth . . . until the adversary disproves it," *Nat'l Mining Ass'n v. Babbitt*, 172 F.3d 906, 912 (D.C. Cir. 1999) (quoting *Keystone*, 151 F.3d at 1100-01) (rejecting presumption for which the agency had "not offered any support, scientific or otherwise").

EPA has not offered a sufficient "rational basis." Because a recycler "in a specific case" won't be able to recover from failing to file paperwork and failing the technical provisions, see *API I*, 216 F.3d at 59, EPA must offer more than timorous assertions such as "could indicate" and "may or may not be legitimate," *Final Rule*, 80 Fed. Reg. at 1,726/1, 1,729/2-3.

The dissent sees nothing wrong with EPA's exception procedure. But our colleague's view is significantly colored by an assumption, not made by EPA, that the "comparable to or lower than" standard is inherently reasonable and may not even require an exception. Compare Dissent at 3-4, 9, with *Final Rule*, 80 Fed. Reg. at 1,729/1. The dissent argues that the standard is reasonably limited to situations where constituent levels are "significantly" higher or exceed a "small acceptable range." Dissent at 5 (citing *Final Rule*, 80 Fed. Reg. at 1,727/2). But significant as to what? Acceptable against what measure? The rulemaking gives no answer, certainly none linking directly to the "significant human health or environmental risk" criterion used in the exception. § 260.43(a)(4)(iii). Similarly absent is any reference to utility or market acceptance as embodied in the "commodity standards" clauses of subparagraphs (i) and (ii). If either of those perspectives governed the "comparable to or lower than" standard, why would EPA devote separate provisions to them? Not even EPA argues that the "comparable to or lower than" standard is reasonably limited to any such circumstances; we will not adopt a tortured interpretation to infer that it is. See generally *Final Rule*, 80 Fed. Reg. at 1,727/2-3 (explaining standard via examples of "zinc galvanizing metal" and "solvent"). Because the "comparable to or lower than" standard (and, by extension, the with-analogue track) is not reasonably focused on items that are "part of the waste disposal problem," *Safe Food*, 350 F.3d at 1268, the exception process must be adequate to offset that fault. It is not.

For these reasons Factor 4 is unreasonable as a requirement applied, through 40 C.F.R. § 261.2(g), to all hazardous secondary material recycling. (EPA has also written the legitimacy factors into specific exclusions. See, e.g., 40 C.F.R. § 261.4(a)(23)(ii)(E). Petitioners do not challenge Factor 4 as applied to those individual exclusions.)

C. Used Oil Recycling

Industry Petitioners also ask us to invalidate EPA's legitimacy factors as applied to used oil recycling. This request misreads EPA's rules, which exempt used oil from the legitimacy factors along with all the other "requirements of [40 C.F.R.] parts 260 through 268." 40 C.F.R. § 261.6(a)(4).

III. Verified Recycler Exclusion

The *Final Rule* also amended EPA's stance on "reclamation," a type of recycling that occurs when secondary materials are "processed to recover a usable product, or . . . regenerated." 40 C.F.R. § 261.1(c)(4), (7). A dead battery is reclaimed, for example, by extracting the still-valuable lead from it. § 261.1(c)(4). The other modes of recycling are "use[]" and "reuse[]," which occur when "[a] material is . . . [e]mployed as an ingredient . . . in an industrial process to make a product" or "[e]mployed . . . as an effective substitute for a commercial product." § 261.1(c)(5), (7). In the 1980s, EPA adopted a rule manifesting its belief that certain hazardous secondary materials are so "waste-like" that reclaiming them is equivalent to discard. *Hazardous Waste Mgmt. Sys.*, 50 Fed. Reg. 614, 619/1 (Jan. 4, 1985). The materials so classified are spent materials, listed sludges, listed byproducts, and scrap metal—although EPA has a specific exception for the latter. See 40 C.F.R. § 261.2(c)(3) & tbl.1. "Listed" means catalogued by EPA as hazardous in § 261.31 or § 261.32. See *Hazardous Waste Mgmt. Sys.*, 50 Fed. Reg. at 619/1. Because

processing something is hardly akin to throwing it away, we held that this reclamation rule improperly regulated materials that were "neither disposed of nor abandoned, but [were] passing in a continuous stream or flow from one production process to another." *AMC*, 824 F.2d at 1190, 1193.

EPA nonetheless kept the reclamation-equals-discard rule, apparently on the reasoning that *AMC* merely "granted the petition for review" without ordering vacatur. See *Revisions to the Definition of Solid Waste*, 72 Fed. Reg. 14,172, 14,176/3-77/1 (Mar. 26, 2007). Instead EPA sought to "implement the *AMC I* opinion" by adding exclusions for specific materials or processes. See, e.g., *Identification and Listing of Hazardous Waste*, 59 Fed. Reg. 38,536, 38,537/1 (July 28, 1994) (adding exclusion for petroleum-refining secondary materials), codified as amended at 40 C.F.R. § 261.4(a)(12). Materials-specific and process-specific exclusions form a large part of the pre-2008 exclusions discussed in the introduction to this opinion. See *Proposed Rule*, 76 Fed. Reg. at 44,139/1-3 (listing pre-2008 exclusions). Further, EPA adopted two general exclusions, which unlike almost all of the pre-2008 exclusions, depend on whether the recycling is performed by a third-party. The first general exclusion, the Generator-Controlled Exclusion, governs reclamation "under the control of the generator," § 261.4(a)(23), and is not challenged here. The other addresses reclamation of materials transferred to and reclaimed by a third-party, and has come in two successive editions. EPA adopted the first edition, the Transfer-Based Exclusion, as part of its *2008 Rule*, 73 Fed. Reg. at 64,669/3-70/1, previously codified at 40 C.F.R. § 261.4(a)(24)-(25) (2014), and replaced it with the current edition, the Verified Recycler Exclusion, in the *Final Rule*, 80 Fed. Reg. at 1,706/3, codified at § 261.4(a)(24).

Under the Transfer-Based Exclusion, the party offloading the materials (the "generator") could send them to a reclaimer that possessed a RCRA permit (or interim status). 40 C.F.R. § 261.4(a)(24)(v)(B) (2014). Alternatively, the generator could send materials to a reclaimer that lacked such a permit or status, if the generator had made "reasonable efforts to ensure that [the chosen] reclaimer intends to properly and legitimately reclaim the hazardous secondary material and not discard it." *Id.* The "reasonable efforts" involved investigating and "affirmatively answer[ing]" specific questions that the regulation posed about the reclaimer. *Id.*

The Verified Recycler Exclusion is quite similar to its predecessor but makes two changes that Industry Petitioners challenge. First, the new exclusion requires the generator to meet special "emergency preparedness" standards in its custody of the materials before shipment. See 40 C.F.R. § 261.4(a)(24)(v)(E) (referring to standards at § 261.400 *et seq.*). For example, the generator's facility must be "maintained and operated to minimize the possibility of a fire, explosion, or any unplanned . . . release of hazardous secondary materials" that "could threaten human health or the environment." § 261.410(a). And the generator must (with some exceptions) have certain emergency preparedness processes and equipment in place, such as communications and "fire control" systems. See § 261.410(b)-(f).

Second, the Verified Recycler Exclusion eliminates the "reasonable efforts" option afforded by the Transfer-Based Exclusion and requires that generators send their secondary materials to reclaimers who either have a RCRA permit (or interim status), as in the Transfer-Based Exclusion, or a RCRA variance—in effect an EPA (or state-level) approval of a firm to operate a third-party "reclamation facility." See 40 C.F.R. § 261.4(a)(24)(v)(B); § 260.31(d) (quoted language); see also

§ 271.3 (authorizing states to implement RCRA if they meet certain conditions); *Final Rule*, 80 Fed. Reg. at 1,695/2 (describing the new rule); *id.* at 1,715/1, 1,768/2-3 (describing role of "authorized state[s]").

The separate Generator-Controlled Exclusion carries the same emergency preparedness requirements, § 261.4(a)(23)(ii)(F), but it significantly does not mandate a permit, interim status, or variance. It instead asks generators to maintain a "written description of how the recycling meets all four [legitimacy] factors." § 261.4(a)(23)(ii)(E).

Industry Petitioners insist that EPA had no reason, in its 2015 shift to a Verified Recycler Exclusion, to tighten the conditions of its predecessor. Though EPA disagrees, it concedes that "withdrawing the transfer-based exclusion" entirely "would result in hazardous secondary material that is currently being legitimately recycled and not discarded being regulated as hazardous waste," *Final Rule*, 80 Fed. Reg. at 1,708/3, in effect, regulation in excess of EPA's authority as defined in *AMC*. In this perhaps topsy-turvy universe, all spent materials, listed byproducts, and listed sludges being reclaimed are subject to *full* RCRA control unless affirmatively excluded. Because EPA chose to *retain* a rule that improperly treats as discarded materials that are "no longer useful in their original capacity though destined for immediate reuse," *AMC*, 824 F.2d at 1185, it has obliged itself to creating sufficient exceptions to counter that rule's overbreadth.

Given the parties' agreement that some general exclusion for third-party reclamation is necessary, the question before us is whether EPA acted reasonably in adding emergency preparedness requirements and in supplanting the reasonable efforts option with the variance procedure. Specifically, EPA must show that "the new policy is permissible under the statute,

that there are good reasons for it, and that the agency *believes* it to be better" than the old one. *FCC v. Fox Television Stations, Inc.*, 556 U.S. 502, 515 (2009).

Although no party challenged the Industry Petitioners' standing on this issue, we noted EPA's assertion in the record that in the almost seven years under the Transfer-Based Exclusion no entity had taken advantage of the reasonable efforts option. See *Final Rule*, 80 Fed. Reg. at 1,708/1-2, 1,709/1. If in the real world the option drew no takers for seven years, could its removal really inflict an injury? Wondering if petitioners' claim of injury was truly plausible, as required by our cases, see, e.g., *Food & Water Watch, Inc. v. Vilsack*, 808 F.3d 905, 913 (D.C. Cir. 2015), we ordered briefing on the issue.

In their supplemental brief, Industry Petitioners supplied the explanation: not long after the Transfer-Based Exclusion was promulgated, "EPA announced that it was seriously considering repeal," which "placed the [] exclusion under a cloud of uncertainty." Industry Pet'rs' Supp. Br. 2. Unpermitted entities chose to wait and see if the reports of the rule's imminent demise were true. See *id.* Accordingly, there is no apparent reason to doubt that, as Industry Petitioners insist, EPA's retention of the reasonable efforts option would have led some entities to make use of it.

As to *Fox*'s required justifications for a change in policy, EPA is quite clear which rule, 2008 or 2015, it "*believes* [] to be better." 556 U.S. at 515. EPA bemoaned that the Transfer-Based Exclusion allowed third-party reclaimers to operate without as much oversight as Subtitle C regulation would require. *Final Rule*, 80 Fed. Reg. at 1,707/3. This lack of oversight, EPA believes, "could lead to the potential for an increased likelihood of environmental" damage, thus justifying

the *Final Rule*'s changes. *Id.* at 1,708/1; see *id.* at 1,711/2 (describing *2008 Rule*'s "major regulatory gap" from "lack of oversight and public participation").

For the remainder of the *Fox* analysis we address the two challenged provisions separately.

A. Emergency Preparedness Requirements

First up are the emergency preparedness requirements and whether their promulgation meets the requirements of showing consistency with the statute and good reasons for the new rule. *Fox,* 556 U.S. at 515. For reasons to qualify as "good" under *Fox*, they must be "justified by the rulemaking record." *State Farm*, 463 U.S. at 42. Here EPA's reasons for its changes overlap with its statutory justification—to "identif[y] hazardous secondary materials that are legitimately recycled and not discarded," *Final Rule*, 80 Fed. Reg. at 1,709/2—so we analyze the two together.

With the emergency preparedness provisions, EPA's reasoning is mostly a retread of what we encountered with Factor 3. As with the handling requirements, it advances the mandated precautions as an effort to reduce the risk of discard and to test the generator's intent to recycle. See *id.* at 1,710/2. Here, to be sure, these prophylactic duties go beyond Factor 3's in specificity. Compare 40 C.F.R. § 261.410 (emergency), with § 260.10 (containment). And the inference of "discard" from feckless preparations is less obvious than such an inference from lack of containment (as defined by EPA).

But EPA made findings (unchallenged here) that fires and explosions are a common cause of environmental damage and that planning against such mischance reflects a generator's intent to reduce losses of hazardous secondary materials—materials that a firm intending genuine reclamation would

presumably regard as valuable. See *Final Rule*, 80 Fed. Reg. at 1,710/2; *Problems Study* at 7. EPA also found that the secondary materials to be recycled under the Verified Recycler Exclusion (i.e., those materials that are transferred to third parties and that don't qualify for other exclusions) are "often" of negative value to generators, which "typically pay" the reclaimer to take the materials or receive a payment inadequate to cover the costs of transfer. See *Final Rule*, 80 Fed. Reg. at 1,707/2; see also *A Study of Potential Effects of Market Forces on the Management of Hazardous Secondary Materials Intended for Recycling* 3 (Nov. 21, 2006) (the "*Market Study*") (noting that commercial recyclers accept materials "usually for a fee"). Because generators are likely to view these materials more as albatross than asset, it is reasonable for EPA to require additional assurances, beyond those of Factor 3, that the generator values them as elements of a genuine recycling effort.

Petitioners do not claim that the preparation requirements are an unreasonable test of intent, other than to say that they are "highly prescriptive," Industry Pet'rs' Br. 53-54, an epithet that most readers of the Code of Federal Regulations would likely apply to every paragraph. In fact the mandated preparations seem rather basic. If an entity balks at the prospect of keeping a "telephone" and "[p]ortable fire extinguisher[]" on site, § 261.410(b)(2)-(3), it may not really belong in the business of handling toxic and inflammable secondary materials. And in practice it may not even have to do that much: EPA stands ready to waive these and other preparedness requirements when they're not necessary. See § 261.410(b), (d), (e).

As we said of the containment requirements, there is some risk that these mandatory precautions might be read unreasonably. For example, the obligation "to minimize the possibility of" accidents might be taken, standing alone, to

require all preventive measures no matter the cost. § 261.410(a). But we are satisfied that such a reading would contravene EPA's explanation in the rulemaking, that the rule tests whether the generator intends "to reduce potential loss of valuable hazardous secondary materials." See *Final Rule*, 80 Fed. Reg. at 1,710/2.

B. Administrative Approval Requirements and Remedy

Petitioners focus more persuasively on EPA's abolition of the reasonable efforts option and its replacement with a requirement of a variance for third-party reclamation. Under the Transfer-Based Exclusion, a generator could send materials to any reclaimer it chose, provided that, after making a reasonable investigation, it "affirmatively answer[ed]" five questions about the reclaimer. 40 C.F.R. § 261.4(a)(24)(v)(B) (2014). These asked if the reclaimer (1) was employing a legitimate recycling process; (2) had notified regulators of its operations and its financial stability; (3) had *not* been the subject of recent enforcement actions; (4) had adequate skill and equipment to perform the recycling safely; and (5) had adequate processes for disposing of any residual wastes generated during the recycling. *Id.* The rule required the generator to have met this obligation "in good faith" and to have based its analysis for each question on an "objectively reasonable belief." *2008 Rule*, 73 Fed. Reg. at 64,700/1. A generator that failed to meet that standard could be liable for a RCRA violation. *Id.* at 64,699/3-64,700/1.

The new rule keeps the general framework for evaluating reclaimers but broadens the inquiry and assigns it to regulators, not the generator. If the reclaimer lacks a RCRA permit or interim status, it must secure a regulatory variance under 40 C.F.R. § 260.31(d) from the EPA Administrator or applicable state regulator. See *Final Rule*, 80 Fed. Reg. at 1,715/1. And the questions, transmogrified into criteria for administrative

grant, are expanded to include a sixth, requiring the reclaimer to "address the potential for risk to proximate populations from unpermitted releases of the hazardous secondary material." § 260.31(d)(1)-(6). EPA asserts that this "additional oversight" is required "to ensure that [] hazardous secondary material is legitimately recycled and not discarded." *Final Rule*, 80 Fed. Reg. at 1,709/1. Here again, EPA's "good reasons" and its claim for permissibility under the statute overlap, but not as persuasively as with the emergency preparation requirements.

Recall that EPA has a Generator-Controlled Exclusion which is targeted at the same types of material as the Verified Recycler Exclusion: hazardous secondary materials reclaimed in a manner that doesn't qualify for pre-2008 exclusions. EPA insists that these materials generally have little value as recycling inputs, a trait from which one can reasonably infer a greater susceptibility to illegitimate or improper recycling. See *id.* at 1,707/1-2; see also EPA, *Revisions to the Definition of Solid Waste Final Rule Response to Comments Document*, at 77 (Dec. 10, 2014) (the "*Comments Document*") (acknowledging that "high value" secondary materials are less likely to be discarded but arguing that EPA has "already promulgated exclusions for such materials").

But this risk of discarding low-value materials would apply whether the reclamation occurs in-house or externally. And yet while the Generator-Controlled Exclusion and Verified Recycler Exclusion share some conditions, only the latter requires an administrative approval. Industry Petitioners charge that EPA has acted on the basis of an unreasonable presumption that transfer carries an undue risk of discard. Such a presumption would contradict our holding in *Safe Food* that "[a]s firms have ample reasons to avoid complete vertical

integration, firm-to-firm transfers are hardly good indicia of a 'discard'" under RCRA. 350 F.3d at 1268 (citation omitted).

EPA counters that its reasoning is more nuanced, that it rests not on transfer alone, but on the confluence of low-value materials and transfer. These factors combine to form "perverse incentives . . . to over-accumulate [] hazardous secondary materials" without recycling them. *Final Rule*, 80 Fed. Reg. at 1,708/2; see also *id.* at 1,716/1 (justifying separate exclusion for transferred "spent solvents" because third-party reclaimers have "little economic reason to accumulate" these "higher-value" materials). EPA's theory is certainly more clever than Industry Petitioners give it credit for, but EPA fails to provide sufficient linkage between theory, reality, and the result reached. See *State Farm*, 463 U.S. at 43 ("[T]he agency must examine the relevant data and articulate a satisfactory explanation for its action including a 'rational connection between the facts found and the choice made.'" (quoting *Burlington Truck Lines v. United States*, 371 U.S. 156, 168 (1962))).

EPA's reasoning relies heavily on a theoretical study predicting that when the value of a recycled product is low, or the market for it "weak or unstable," the "acceptance fee" generators pay when off-loading materials "may be an important component of the [reclaimer's] overall revenue." *Market Study* at 18; see also *id.* at 3. EPA asserts that this incentive leads "commercial third party recyclers to maximize the amount of hazardous secondary material they can accept to increase profits," thus creating risks of "over-accumulat[ion]" and "discard." *Final Rule*, 80 Fed. Reg. at 1,752/1. But having found that some types of recycling are typified by transfers of materials low or unstable in value, see *Market Study* at 88-89, and having surmised that those conditions could lead to "market failure," *id.* at 3, the study disclaims any analysis of

whether such failures actually occur and to what degree: "limitations on the availability and quality of data prevented us from conducting [] empirical tests," *id.* at 43.

EPA is free to rely on theoretical or model-based approaches, as long as that reliance is reasonable in context. As our dissenting colleague points out, Dissent at 10-11, we long ago recognized that "[r]easoned decisionmaking can use an economic model to provide useful information about economic realities, provided there is a conscientious effort to take into account what is known as to past experience and what is reasonably predictable about the future." *American Public Gas Ass'n. v. FPC*, 567 F.2d 1016, 1037 (D.C. Cir. 1977). And more recently, as our colleague also points out, Dissent at 11, we deferred to EPA's use of particle-trajectory modeling when the agency found it to be "particularly illuminating," noted that it was "more precise" in some cases than historical data, and "took reasonable steps to account for [its] limitations," *Mississippi Comm'n on Environmental Quality v. EPA*, 790 F.3d 138, 166-71 (D.C. Cir. 2015). Thus what we seek is some indication of a reasonable concurrence between model and reality. Here the *Market Study* cautions that its hypothesized "sources of market failure," e.g., skewed incentives leading to discard and environmental damage, "do not necessarily correlate directly to observable characteristics of the firm or market." *Market Study* at 48-49. Thus, the study offers EPA reasons (based on seemingly sensible notions of market actors' incentives) to think that the incidence of discard might be somewhat higher in the presence of specific characteristics (e.g., low-value materials and third-party transfer) than in their absence. But it offers no data to support the view that the increased incidence actually exists nor to show how great the increase is. That type of information (or a sufficient explanation for its absence) is quite important in cases such as this, where EPA is determining that an activity nominally

outside of its jurisdiction should be banned absent regulatory pre-approval. Thus EPA's reliance on the study, standing alone, does not provide a sufficient basis for the administrative approval provisions.

EPA claims to have the necessary support in its *Problems Study*, a document whose faults we've already discussed. Of the study's 250 instances of recycling gone awry, 238 involved third-party recycling as opposed to on-site recycling. *Problems Study* at 8. Based on these "easy to find" cases, *id.* at 4, EPA inferred that discard could occur under the old Transfer-Based Exclusion unless "additional oversight" was imposed, *Final Rule*, 80 Fed. Reg. at 1,708/2. But far from confirming the *Market Study*'s assumptions, the *Problems Study* is even more tentative in its treatment of third-party recycling. It cautions that the greater proportion of problems at off-site recyclers might be because "on-site recycling is simply a less common practice." *Problems Study* at 8. (The study made no effort to explain how the proportions of on-site and off-site reclamation in the examples reviewed matched those of the real world.)

From the study, EPA concluded that "the vast majority of environmental damages—approximately 94%—occur at off-site commercial recyclers." *Final Rule*, 80 Fed. Reg at 1,699/2. But by focusing only on recycling gone wrong, that statistic tells us nothing about such episodes' overall likelihood in any particular setting. Compare Dissent at 11-12. The dissent offers a helpful example: imagine that 94% of plane crashes are associated with Airline A; can we say that this airline is less safe than its competitors? Dissent at 12. Before we can land at that conclusion, we'd need first to know something about the distribution of flights among airlines. If Airline A performs 94% of the set of flights that happened to be studied, its crash-percentage would seem decidedly average. Compare *Problems Study* at 8 (noting that on-site recycling may be "less

common"). Or maybe Airline A flies only the most dangerous routes. Context gives clues. The *Problems Study* leaves us grasping.

After commenters attacked EPA's interpretation of this study, EPA responded that because most recyclers lack any duty to notify regulators, the agency does not have access to better data about recycling practices. *Final Rule*, 80 Fed. Reg. at 1,740/3-41/1-2. Indeed, we commonly "defer to an agency's decision to proceed on the basis of imperfect scientific information, rather than to invest the resources to conduct the perfect study." *Cablevision Sys. Corp. v. FCC*, 649 F.3d 695, 717 (D.C. Cir. 2011) (internal quotation marks omitted). But limited data do not justify unlimited inferences. Agency reliance on imperfect information makes sense only where that information supports the agency action.

The *Market Study* and *Problems Study* at most support a belief, carried over from the Transfer-Based Exclusion, that third-party reclaimers present distinct risks compared to on-site reclaimers. These risks would accordingly justify special conditions, such as the variance criteria for which the Generator-Controlled Exclusion has no analogue. The first five of these criteria, which petitioners do not challenge, seem properly focused on whether the third-party reclaimer has the inclination and ability to recycle legitimately. See 40 C.F.R. § 260.31(d)(1)-(5). (We cannot readily say the same of the sixth, discussed below.)

But the imposition of a requirement of advance administrative approval cannot be justified merely on the differences that EPA has identified between on-site and third-party reclamation. EPA must explain why the risk that purported third-party recyclers will in reality "discard" the materials is so high that reclamation under the Verified

Recycler Exclusion may only proceed on the basis of prior agency approval. On this key aspect of third-party reclamation, EPA's *Problems* and *Market* studies say nothing useful.

EPA invokes yet another study, *An Assessment of Good Current Practices for Recycling of Hazardous Secondary Materials* (Nov. 22, 2006). This analysis, performed before adoption of the Transfer-Based Exclusion, discussed the extent to which generators voluntarily audited their third-party recyclers to ensure that "their materials are not mishandled." *Id.* at 7. The study found that "auditing is being practiced by many responsible companies" but that "small generators do not audit as regularly as larger customers" and that smaller generators' audits may not be as thorough. *Id.* at 20. In 2008, EPA evidently did not find much alarm in this data; it made the reasonable efforts option available for small and large generators alike. By 2015, EPA was less sanguine about the study's results, warning that "many smaller generators would not have the technical expertise or resources to" adequately assess third-party reclaimers. See *Final Rule*, 80 Fed. Reg. at 1,711/3 & n.17. EPA is free to reasonably revise its interpretation of that study, but even this updated reasoning cannot support the *Final Rule*. EPA admits in the rulemaking that "many large companies do conduct environmental audits of recycling facilities." *Id.* at 1,711/3. A risk that some smaller generators would misapply the reasonable efforts option does not explain why EPA should treat larger generators as prone to making inadequate assessments.

Along with their challenge to the variance procedure, Industry Petitioners also claim that the sixth variance criterion is, in substance, vague and unreasonable. This criterion involves something of a "cumulative" nuisance standard; it requires third-party reclaimers to account for how any "unpermitted releases" from their facilities might combine with

"other nearby potential stressors" to create "risk[s] to proximate populations." 40 C.F.R. § 260.31(d)(6). The more environmental problems there already are in an area—such as "other industrial facilities, landfills, transportation-related air emissions, poor housing conditions (*e.g.*, lead-based paint), leaking underground tanks, pesticides, and incompatible land uses"—the less appropriate it might be for the reclaimer to add yet another stress. See *Final Rule*, 80 Fed. Reg. at 1,714/3-15/1.

Thus the criterion *assumes* discard, i.e., behavior regulable under RCRA, and seeks to constrain its environmental impact, rather than testing for discard's existence. It identifies one of the many *problems related to waste disposal*, but not whether the reclaimer is actually contributing to *the waste disposal problem*. Were we dealing with materials that were lawfully identified as hazardous waste, this test might be valid for some purposes. But the Verified Recycler Exclusion covers materials that might be labeled waste only because of a reclamation-equals-discard rule that EPA has all but conceded is overbroad. *Id.* at 1,708/3. This criterion therefore cannot stand as a means of identifying discard.

As for remedy, Industry Petitioners ask that we keep the Verified Recycler Exclusion in place while removing its objectionable provisions. They seek this remedy because not all of the *Final Rule*'s changes were to their detriment. Whereas the Transfer-Based Exclusion disqualified spent catalyst generators from relying on it, 40 C.F.R. § 261.4(a)(24)(iii) (2014) (spent catalysts referenced as K171 and K172), the Verified Recycler Exclusion removed that bar. As at least one of petitioners' members is a spent catalyst generator, an unalloyed return to the Transfer-Based Exclusion would be for it a hollow victory.

We will "sever[] and affirm[] [] a portion of an administrative regulation" only when we can say without any "'substantial doubt' that the agency would have adopted the severed portion on its own." *New Jersey v. EPA*, 517 F.3d 574, 584 (D.C. Cir. 2008) (internal quotation marks omitted). Thus we have severed provisions when "they operate[d] entirely independently of one another." *Davis Cty. Solid Waste Mgmt. v. EPA*, 108 F.3d 1454, 1459 (D.C. Cir. 1997). Here, though, we are not sure that EPA's regulatory and deregulatory efforts were wholly independent. The rulemaking shows that EPA entertained two different options for removing the spent catalyst bar: first as part of the plan to repeal the Transfer-Based Exclusion entirely and replace it with "alternative Subtitle C regulat[ions]" for which "spent catalysts would be eligible," *Proposed Rule*, 76 Fed. Reg. at 44,141/3 & n.54; second as part of the Verified Recycler Exclusion that EPA adopted, *Final Rule*, 80 Fed. Reg. at 1,738/1. At no point in the record does EPA propose keeping the Transfer-Based Exclusion and repealing its spent catalyst disqualifier.

Would EPA have so proposed had it known the Verified Recycler Exclusion would be vacated? There is some evidence pointing in that direction, but doubts remain. EPA explained that its spent catalyst decision was due in large part to changes to the "contained" standard at 40 C.F.R. § 260.10; these revisions addressed the risk of fire that originally led EPA to bar spent catalysts. See *Final Rule*, 80 Fed. Reg. at 1,738/1. EPA also removed the spent catalyst disqualifier from the Generator-Controlled Exclusion, which is generally less restrictive than the Verified Recycler Exclusion. See *id.* These facts suggest that EPA might have removed the disqualifier absent the other changes in the Verified Recycler Exclusion. But when commenters attacked EPA's proposal to remove the spent catalyst bar and advocated a more stringent approach, EPA responded that, to fulfill the goal of allowing only

legitimate recycling, there was no need to impose the suggested "additional conditions." *Comments Document* at 265-66. EPA's answer assumed that that the new Verified Recycler Exclusion and the new containment standard were together sufficient to regulate transferred spent catalysts. We cannot clearly infer what EPA would have done absent that exclusion.

The only changes in the Verified Recycler Exclusion that we can sever without any "substantial doubt" are the emergency preparedness requirements, 40 C.F.R. § 261.4(a)(24)(v)(E), which are as we explained lawful, and an expanded containment requirement, § 261.4(a)(24)(v)(A), which was not challenged. These new provisions address some of EPA's perceived "regulatory gaps" in the Transfer-Based Exclusion, *Final Rule*, 80 Fed. Reg. at 1,706/3, and they do not depend on any vacated portions of the Verified Recycler Exclusion. On remand, EPA can of course renumber its rules as necessary to accommodate the returning Transfer-Based Exclusion provisions.

EPA has not commented on the requested remedy, probably because the remedy section in Industry Petitioners' opening brief was quite confusing, and their desire to sever and affirm was made evident only in their reply. If EPA, or any party, wishes to disabuse us of our substantial doubt with a petition for rehearing, we will of course reconsider as necessary. See *MD/DC/DE Broadcasters Ass'n v. FCC*, 253 F.3d 732, 740 (D.C. Cir. 2001) (citing *Virginia v. EPA*, 116 F.3d 499, 500-01 (D.C. Cir. 1997)).

Having concluded that the Verified Recycler Exclusion is unreasonable, we need not address Environmental Petitioners' argument that the exclusion is too lenient.

IV. Remaining Challenges by Industry Petitioners

Industry Petitioners have two remaining challenges. The first is that EPA cannot subject spent catalysts to the Verified Recycler Exclusion. The second is that EPA cannot treat off-specification commercial chemical products as secondary materials. The first is rendered moot by our restoration of the Transfer-Based Exclusion, and no more needs to be said about it here. The second is also outside our jurisdiction, but for reasons requiring more explanation.

During the rulemaking, a commenter asked EPA to confirm that commercial chemical products are not "hazardous secondary material[s]" as that class is defined in 40 C.F.R. § 260.10. *Comments Document* at 313. EPA answered, much to Industry Petitioners' chagrin, that "a commercial chemical product listed in 40 CFR 261.33 could be considered a hazardous secondary material if it is off-specification or otherwise unable to be sold as a product." *Id.* at 314; see Industry Pet'rs' Br. 58-65. The question and EPA's answer concern an issue that is antecedent to the *Final Rule*'s definition of discarded hazardous waste. The rule identifies when secondary materials become waste as a result of being sham recycled, but that delineation necessarily builds on prior law and regulations governing when materials are secondary. We cannot assess EPA's statement on that subject unless we can find the issue within our original jurisdiction, which is limited to actions by EPA "promulgating" regulations, etc. 42 U.S.C. § 6976(a)(1).

Tellingly, the comment and EPA's response are interpreting provisions in 40 C.F.R. § 260.10 and § 260.33 that were left untouched by the *Final Rule*. See *Comments Document* at 313-14. Because of the limits on our jurisdiction, we cannot entertain the claim unless EPA's statement was more than just an interpretation of a prior rule; it must interpret part of the *Final Rule* or be itself an effective "legislative rule."

See *Cement Kiln Recycling Coal. v. EPA*, 493 F.3d 207, 226 (D.C. Cir. 2007). Industry Petitioners' allegation, though, is that EPA's response abandoned a prior policy, embodied largely in guidance materials, without properly recognizing that change. Industry Pet'rs' Br. 64-65. Such a challenge is properly before the district court, not this tribunal (Industry Petitioners make no claim of pendent jurisdiction). See 42 U.S.C. § 6976(a)(1). We express no opinion on when EPA may consider commercial chemical products to be secondary materials.

V. Challenges by Environmental Petitioners

Environmental Petitioners challenge EPA's approach to the pre-2008 exclusions. As noted above, before 2008, EPA had promulgated 32 exclusions from the definition of solid waste—that is, it had exempted 32 different materials, products, or processes from Subtitle C regulation. In its *Proposed Rule*, EPA proposed subjecting facilities that qualified for these exclusions to four new requirements, three of which are relevant here: legitimacy, containment, and notification. 76 Fed. Reg. at 44,138/3-39/1-2. The proposed legitimacy condition set forth the factors that facilities had to satisfy in order to prove they are engaged in legitimate, rather than sham, recycling. Under the proposed containment condition, facilities had to store all hazardous secondary materials in units that meet certain safety, quality, and labeling criteria. *Id.* at 44,140/1. And the proposed notification condition obligated regulated parties periodically to submit information to EPA so that the agency could monitor compliance. *Id.* at 44,140/1-2. EPA based these conditions on a study of environmental damage cases involving hazardous waste (an earlier version of the *Problems Study*) and EPA's finding that most of cases in that study were associated with secondary materials exempted under a pre-2008 exclusion. *Id.* at 44,138/1-2.

In the final rule, however, EPA opted to apply only the legitimacy condition to all pre-2008 exclusions and deferred a decision about whether to do the same with containment and notification. Specifically, EPA stated that it was "deferring action on applying the contain[ment] [and notification] standard[s] to the pre-2008 exclusions and exemptions until [it could] more adequately address commenters' concerns." *Final Rule*, 80 Fed. Reg. at 1,766/2-3. Commenters had raised unanticipated objections, EPA explained, regarding the difficulties of implementing a universal containment provision and the burdens imposed by a notification requirement. *Id.*

Environmental Petitioners take issue with EPA's decision to defer action on containment and notification. Drawing on language from the *Proposed Rule*, they argue that EPA fundamentally changed its position without explanation: whereas the agency originally viewed containment and notification as "minimum requirements necessary to define when recycled hazardous secondary materials are not discarded," 76 Fed. Reg. at 44,138/3-39/1, it ultimately determined that containment and notification conditions were expendable. This unexplained reversal, Environmental Petitioners contend, was arbitrary and capricious.

We need not—indeed cannot—reach the merits of this challenge. RCRA's judicial review provision vests this court with exclusive power to review "action[s] of the Administrator in promulgating any regulation, or requirement under this chapter or denying any petition for the promulgation, amendment or repeal of any regulation under this chapter." 42 U.S.C. § 6976(a)(1). This provision gives us jurisdiction over only "three types of actions by EPA: promulgation of final regulations, promulgation of requirements, and the denial of petitions for the promulgation, amendment or repeal of RCRA regulations." *API I*, 216 F.3d at 68; see *Molycorp, Inc. v. EPA*,

197 F.3d 543, 545 (D.C. Cir. 1999) (characterizing 42 U.S.C. § 6976(a)(1) as "a limitation on our jurisdiction"). Critically here, we have held that "[a] decision by an agency to defer taking action is not a final action reviewable [under RCRA]." *API I*, 216 F.3d at 68; see also *American Portland Cement Alliance v. EPA*, 101 F.3d 772, 777 (D.C. Cir. 1996). Because EPA expressly stated that it was deferring action on applying containment and notification conditions to the pre-2008 exclusions, we lack jurisdiction to review Environmental Petitioners' claim.

Environmental Petitioners resist this straightforward jurisdictional analysis. Citing *Montana v. Clark*, 749 F.2d 740 (D.C. Cir. 1984), and *Appalachian Power Co. v. EPA*, 208 F.3d 1015 (D.C. Cir. 2000), they argue that we may review EPA's decision to defer. But neither of these cases construes RCRA's judicial review provision. See *Appalachian Power Co.*, 208 F.3d at 1020-22 (interpreting the Clean Air Act's judicial review provision); *Clark*, 749 F.2d at 744 (interpreting the Administrative Procedure Act). And even if they did, those cases are easily distinguished. Whether we have authority to review an agency's express *rejection* of a request to amend longstanding regulations, *Clark*, 749 F.2d at 744, is irrelevant where, as here, EPA has merely *deferred*—rather than rejected—a particular action. Moreover, although "[t]he fact that a law may be altered in the future has nothing to do with whether it is subject to judicial review at the moment," *Appalachian Power Co.*, 208 F.3d at 1022, we lack jurisdiction to review EPA's deferred action not because EPA could change its mind down the road, but because it has yet to make up its mind in the first place.

Alternatively, Environmental Petitioners contend that we have jurisdiction over their challenge because EPA "reopened" comment on the pre-2008 exclusions and then declined to

revise them. Environmental Pet'rs' Br. 43. The reopener doctrine "permits a plaintiff to bring an otherwise-stale challenge . . . . when an agency has considered substantively changing a rule but ultimately *declined* to do so." *Mendoza v. Perez*, 754 F.3d 1002, 1019 n.12 (D.C. Cir. 2014). Environmental Petitioners' reopener argument falters for a simple reason: the doctrine has no applicability to this case because EPA never considered changing the *substance* of the pre-2008 exclusions. As it stated in the *Proposed Rule*, EPA was "not reopening comment on any substantive provisions of the regulatory exclusions or exemptions," but rather was proposing legitimacy, containment, and notification requirements "as means to better enforce the regulations." 76 Fed. Reg. at 44,138/3.

Of course, nothing in our conclusion forecloses judicial review of EPA's inaction once and for all. Environmental Petitioners may petition EPA to promulgate a rule imposing containment and notification conditions and, if their petition is denied, seek review in this court. See 42 U.S.C. § 6976(a)(1) (granting jurisdiction to review denials of rulemaking petitions). We conclude only that Environmental Petitioners are barred from obtaining review in the manner they now seek. And because we dispose of their challenge by concluding that we are without statutory jurisdiction, we have no reason to address Industry Intervenors' contention that Environmental Petitioners lack Article III standing. See *Sinochem International Co. Ltd. v. Malaysia International Shipping Corp.*, 549 U.S. 422, 431 (2007) (holding that "there is no mandatory 'sequencing of jurisdictional issues'" and that "a federal court has leeway 'to choose among threshold grounds for denying audience to a case on the merits'" (quoting *Ruhrgas AG v. Marathon Oil Co.*, 526 U.S. 574, 584-85 (1999))).

VI. Conclusion

The *Final Rule* is upheld in part and vacated in part as consistent with this opinion. Briefly put: Factor 3 is upheld; Factor 4 is vacated insofar as it applies to all hazardous secondary materials via § 261.2(g); the Verified Recycler Exclusion is vacated except for its emergency preparedness provisions and its expanded containment requirement; and the Transfer-Based Exclusion is reinstated. As a consequence of the latter, the removal of that exclusion's bar on spent catalysts is vacated, subject, as we noted above, to such arguments as parties may raise supporting a different outcome.

So ordered.

TATEL, *Circuit Judge*, dissenting from Parts II.B and III.B: In the mid-1970s, as industrial and technological developments spurred the national economy, the United States faced "a rising tide of scrap, discarded, and waste materials." 42 U.S.C. § 6901(a)(2). This mounting waste caused "serious financial, management, intergovernmental, and technical problems," *id.* § 6901(a)(3), and posed a grave threat "to human health and the environment," *id.* § 6901(b)(5). In response, Congress passed the Resource Conservation and Recovery Act (RCRA), 42 U.S.C. §§ 6901–6992k, a comprehensive scheme "to regulate hazardous wastes from cradle to grave in accordance with . . . rigorous safeguards and waste management procedures," *Chicago v. Environmental Defense Fund*, 511 U.S. 328, 331 (1994). Through RCRA, and central to this case, Congress sought to *prevent* environmental harm by ensuring that hazardous waste was "properly managed in the first instance thereby reducing the need for corrective action at a future date." 42 U.S.C. § 6902(a)(5).

Congress gave the Administrator of the Environmental Protection Agency (EPA) broad authority to effectuate this goal. *See id.* § 6912. Selected by the President and confirmed by the Senate for his or her expertise in environmental issues, the Administrator may promulgate "such regulations as are necessary to carry out his [or her] functions." *Id.* § 6912(a)(1). The judiciary, by contrast, has a limited role under RCRA. When reviewing rules issued by the Administrator, the courts, lacking environmental expertise and political accountability, are bound by two fundamental principles of judicial restraint.

First, because RCRA provides for review "in accordance with" the Administrative Procedure Act, *id.* § 6976(a), a reviewing court's task is to ask only whether the rule is "arbitrary, capricious, an abuse of discretion, or otherwise not in accordance with law," 5 U.S.C. § 706(2)(A). As the Supreme Court has made clear, once a court is satisfied that EPA is acting within its delegated authority, the "scope of [judicial]

review under the 'arbitrary and capricious' standard is narrow." *Motor Vehicle Manufacturers Association of the United States v. State Farm Mutual Automobile Insurance Co.*, 463 U.S. 29, 43 (1983). Courts are "not to ask whether a regulatory decision is the best one possible or even whether it is better than the alternatives." *FERC v. Electric Power Supply Association*, 136 S. Ct. 760, 782 (2016). This is especially true where, as here, agency action involves "a high level of technical expertise," *Marsh v. Oregon Natural Resources Council*, 490 U.S. 360, 377 (1989) (quoting *Kleppe v. Sierra Club*, 427 U.S. 390, 412 (1976) (internal quotation mark omitted)), and "predictive judgments about areas that are within the agency's field of discretion," *BNSF Railway Co. v. Surface Transportation Board*, 526 F.3d 770, 781 (D.C. Cir. 2008) (quoting *Wisconsin Public Power, Inc. v. FERC*, 493 F.3d 239, 260 (D.C. Cir. 2007)).

Second, when reviewing facial challenges to a rule—again as here—courts are required to assess the rule's validity across a broad spectrum of applications; they are not to imagine whether the rule might be arbitrary in "uncommon particular applications," which, of course, can be challenged later should they arise. *EPA v. EME Homer City Generation, L.P.*, 134 S. Ct. 1584, 1609 (2014). As Congress well knew when it authorized pre-enforcement facial review of RCRA rules, *see* 42 U.S.C. § 6976(a)(1), the fact that a petitioner—or for that matter a judge—"can point to a hypothetical case in which the rule might lead to an arbitrary result does not render the rule 'arbitrary or capricious,'" *American Hospital Association v. NLRB,* 499 U.S. 606, 619 (1991).

In this case, EPA promulgated a rule defining when hazardous materials qualify as "discarded" and thus may be subjected to RCRA's rigorous protections. The court never questions the Administrator's statutory authority to issue the

Final Rule, but nonetheless invalidates two of its critical features: Factor 4 of the legitimacy test, which distinguishes genuine from sham recycling; and the verified recycler exclusion, which ensures that companies claiming to recycle hazardous waste in fact do so. In reaching this result, the court displays a level of scrutiny that I believe conflicts with the APA's highly deferential standard of review and with the principles governing judicial review of facial challenges to rules. As a result, the court has deprived the public of two safeguards that the Administrator, exercising her statutory authority under RCRA, reasonably believed were needed to protect "human health and the environment." 42 U.S.C. § 6901(b)(5). I respectfully dissent.

I.

Factor 4 of the legitimacy test targets sham recyclers that incorporate hazardous materials into recycled products in order to avoid proper recycling or disposal. It does so by requiring that the product of a recycling process "be comparable to a legitimate product or intermediate." 40 C.F.R. § 260.43(a)(4). This approach makes sense: as the Administrator explained, "high levels of hazardous constituents" in an allegedly recycled product "could indicate that the recycler incorporated hazardous constituents into the final product when they were not needed to make that product effective." 80 Fed. Reg. 1,726. The *Final Rule* offers recyclers three alternative avenues for demonstrating compliance with Factor 4.

First, subparagraph (i) addresses recycled products that have raw analogues. Such products satisfy Factor 4 if they (A) "do[] not exhibit a hazardous characteristic . . . that analogous products do not exhibit" and (B) contain comparable concentrations of hazardous constituents or hazardous-constituent levels that meet widely used commodity standards. 40 C.F.R. § 260.43(a)(4)(i). In my view, this subparagraph

rationally effectuates Factor 4's general approach. EPA inferred that if a recycled product contains more hazardous constituents or properties than its raw analogue, sham recycling has occurred. 80 Fed. Reg. 1,727. Why else would those hazardous constituents or properties be present? By way of example, EPA pointed to paint made from recycled hazardous materials. If such paint contains significant amounts of cadmium (a hazardous constituent), but the same type of paint made from raw materials contains no cadmium, such a disparity "could indicate that the cadmium serves no useful purpose and is being passed through the recycling process and discarded in the product." *Id.*

We validated an almost identical technical judgment by the Administrator in *Safe Food and Fertilizer v. EPA*, 350 F.3d 1263 (D.C. Cir. 2003). Under the rule in that case, certain recycled materials were deemed non-discarded when (1) market participants treated them "more like valuable products than like negatively-valued wastes" and (2) "the [products] derived from the recycled [materials were] chemically indistinguishable from analogous commercial products made from virgin materials." *Id.* at 1269. In essence, this rule exempted materials from regulation based on their compliance with criteria that, like Factors 3 and 4, assess whether recyclers treat materials as valuable commodities and generate products chemically indistinguishable from analogous products. We held that these two factors, in conjunction, represented a "reasonable tool for distinguishing products from wastes." *Id.* As to the "identity principle"—subparagraph (i)'s counterpart—the court reasoned that where a recycled product is "indistinguishable in the relevant respects" from the analogous "virgin" product, it is "eminently reasonable" to treat both as "products rather than wastes." *Id.*

In spite of *Safe Food*, this court concludes that subparagraph (i) is too "imprecis[e]" to be reasonable. Maj. Op. at 12. In its view, some legitimately recycled products may contain "some small excess of hazardous constituents," and the presence of those hazardous materials "would not constitute a reasonable basis for dubbing the product or the process a sham." *Id.* But subparagraph (i) does not simply target products with "some small excess of hazardous constituents." Rather, it targets products with significantly more hazardous constituents or properties than an analogous raw product, *i.e.*, beyond "a small acceptable range" of difference. 80 Fed. Reg. 1,727. The Administrator explained: "If a product produced with hazardous secondary material exhibited a characteristic of hazardous waste that an analogous product did not exhibit, this would be an indication that sham recycling could be occurring as a *significant* hazardous constituent or characteristic would be in the product only as a result of the recycling of the hazardous secondary material." *Id.* (emphasis added).

Perhaps the presumption underlying subparagraph (i) does suffer from some "imprecision." Maj. Op. at 12. Yet because Industry Petitioners have mounted a facial attack on the *Final Rule*, this court has no authority to conjure up "hypothetical case[s] in which the rule might lead to an arbitrary result." *American Hospital Association*, 499 U.S. at 619. Where, as here, the Administrator's presumption of sham recycling based on elevated levels of hazardous constituents is reasonable across most applications, we must uphold it. *Id.* If someday the Administrator applies the rule to a recycler in an arbitrary and capricious manner—for instance, as the court fears, by selecting an unreasonably "small acceptable range of difference," *see* Maj. Op. at 19—that recycler "may bring a particularized, as-applied challenge to the [rule]," *EME Homer City Generation*, 134 S. Ct. at 1609.

The court's analysis of subparagraph (i) suffers from a second defect. Whether the presence of hazardous constituents provides sufficient evidence of sham recycling is exactly the type of technical judgment that RCRA delegates to the Administrator. Of course, the Administrator "must examine the relevant data and articulate a satisfactory explanation for its action." *State Farm*, 463 U.S. at 43. The court, however, never questions the Administrator's compliance with these two requirements. Instead, it second guesses the Administrator's "predictive judgments," *BNSF Railway Co.*, 526 F.3d at 781, about a matter—the precise level of hazardous constituents needed to demonstrate sham recycling—that "requires a high level of technical expertise" to which "we must defer," *Marsh*, 490 U.S. at 377.

Subparagraph (ii), which applies when a recycled product has no raw analogue, offers recyclers a second way to show compliance with Factor 4. These products qualify as legitimate if they "meet[] widely recognized commodity standards and specifications" or if "[t]he hazardous secondary materials being recycled are returned to the original process . . . from which they were generated." 40 C.F.R. § 260.43(a)(4)(ii).

The court concedes that subparagraph (ii) is reasonable, *see* Maj. Op. at 10–11, and for good reason. The *Final Rule* describes the agency's efforts to address commenters' concerns that in many cases of legitimate recycling "there may not be an analogous product with which a facility can compare the product of the recycling process." 80 Fed. Reg. 1,728. In response to these concerns, as well as other comments supporting an approach focused on commodity standards and closed-loop recycling, the Administrator carved out "recycling processes that [are] designed to use a specific hazardous secondary material to make a useful product and processes that

always incorporate[] a hazardous secondary material back into the generating process during manufacturing." *Id.*

Finally, subparagraph (iii)—a catchall for recyclers unable to comply with subparagraphs (i) or (ii)—allows recyclers to demonstrate legitimacy by showing either a "lack of exposure from . . . or bioavailability of . . . toxics" in the product. 40 C.F.R. § 260.43(a)(4)(iii). Even if they fail to make either showing, moreover, recyclers can still demonstrate legitimacy by pointing to any "other relevant considerations" showing that the product does not "pose a significant human health or environmental risk." *Id.* To make these showings, recyclers must "prepare documentation," including a "certification statement that the recycling is legitimate," which "must be maintained on-site for three years after the recycling operation has ceased." *Id.*

Although the court acknowledges that subparagraph (iii) reasonably draws the line between recycling and discard through a perspective based on health and environmental risks, Maj. Op. at 15 (citing *Safe Food*, 350 F.3d at 1269–70), it nonetheless concludes that subparagraph (iii) "falls short of saving the rule, due to the draconian character of the procedures it imposes on recyclers," namely, the requirement to prove legitimacy by preparing and maintaining "paperwork," *id.* at 15–16.

For their part, however, Industry Petitioners never argue that the rule's paperwork obligations are too rigorous. This is understandable. If subparagraph (iii) qualifies as draconian, then so too would countless other run-of-the-mill requirements that entities file applications and keep certificates on hand: like those for pilots, *see* 14 C.F.R. § 61.3; *id.* § 61.123, elevator operators, *see* D.C. MUN. REGS. tit. 12, § 3010A–3011A, and businesses selling alcohol, *see* D.C. CODE § 25-401; *id.* § 25-

711, just to name a few. Not even the procedures for gaining and maintaining admission to the District of Columbia Bar would pass muster, as they require candidates to prepare a character and fitness application and certify completion of a mandatory course on professional conduct. *See* D.C. COURT OF APPEALS R. 46; D.C. BAR BYLAWS, R. 2.

In any event, the court's conclusion runs headlong into precedent. In *American Chemistry Council v. EPA*, 337 F.3d 1060 (D.C. Cir. 2003), we considered a challenge to an EPA rule that presumed certain mixtures and derivatives of waste were "hazardous" and thus subject to regulation, yet permitted regulated entities to show otherwise. Upholding this rule, we concluded that the Administrator acted reasonably in "[p]lacing the burden upon the regulated entity to show the lack of a hazardous characteristic." *Id.* at 1065. This burden-shifting approach, we determined, alleviated unmanageable administrative obligations for the agency and comported with RCRA's command to "err on the side of caution." *Id.* at 1065–66.

Subparagraph (iii) works just like the rule we approved in *American Chemistry Council*. If a recycler is unable to satisfy subparagraph (i) or (ii), it is a presumptive sham recycler. Subparagraph (iii) then allows the recycler to prove otherwise by making the requisite showings through documentation. If anything, the rule here is more lenient than the one in *American Chemistry Council* because subparagraph (iii) provides for a "self-implementing certification process," 80 Fed. Reg. 1,730, rather than a "cumbersome . . . delisting process," *American Chemistry Council*, 337 F.3d at 1065.

According to the court, the *Final Rule* is unlike the one in *American Chemistry Council* because the Administrator never demonstrated that recyclers failing to meet subparagraph (i) are

presumptively discarding. Maj. Op. at 16–17. At bottom, then, the court's critique of subparagraph (iii) traces back to its conclusion that subparagraph (i) (and only subparagraph (i)) does not reasonably distinguish legitimate from sham recycling. But contrary to the court's view, EPA cogently explained why subparagraph (i) is reasonable across most applications, adding subparagraph (iii) only given the possibility that "there may still be instances where recycling is legitimate, but is unable to meet" subparagraph (i) or (ii). 80 Fed. Reg. 1,729. Subparagraph (iii) thus serves as a catchall provision designed to give industry even more "flex[ibility]," *id.*, not as a tacit acknowledgment that subparagraph (i) is deficient, *contra* Maj. Op. at 14. Rather than "substitute [its] own judgment for that of [EPA]," this court should defer to the agency's technical and policy decisions. *Electric Power Supply Association*, 136 S. Ct. at 782.

II.

The key difference between the verified recycler exclusion and its predecessor—the transfer-based exclusion—is that the new rule shifts oversight of off-site recyclers from the industry to the Administrator. 80 Fed. Reg. 1,709. Whereas before waste generators audited off-site recyclers to ensure their legitimacy, now the Administrator or a state authority issues a variance confirming that a recycler's practices are sound. *Id.* at 1,695.

The court never questions the Administrator's authority to promulgate this rule. Instead, invoking a single line from *Safe Food*—"firm-to-firm transfers are hardly good indicia of a 'discard,'" 350 F.3d at 1268—the court concludes that the Administrator had no basis for finding that transferred hazardous materials "carr[y] an undue risk of discard," Maj. Op. at 28.

Safe Food, however, held only that transferred materials are not *automatically* discarded simply because they are sent off-site. As we explained, although "we have never said that RCRA compels the conclusion that material destined for recycling in another industry is necessarily 'discarded,'" the statute "does not preclude application of RCRA to such materials if they can reasonably be considered part of the waste disposal problem." *Safe Food,* 350 F.3d at 1268. The verified recycler exclusion is consistent with *Safe Food*: it defines transferred materials as discarded if—and only if—the off-site recycler receiving the materials fails to meet certain criteria, which carefully discern whether allegedly recycled materials "can reasonably be considered part of the waste disposal problem." *Id.*

This approach finds ample support in the administrative record. When designing the verified recycler exclusion, the Administrator relied on multiple sources, including a report on market forces in the recycling industry and a study of the environmental problems associated with recycling hazardous secondary materials. 80 Fed. Reg. 1,707. The first of these, the market study, concluded that off-site commercial recyclers, which generate revenue primarily by receiving hazardous materials, have "economic incentives to accumulate waste beyond their ability to deal with it." *Id.* The second report, the problems study, found that of 208 cases in which hazardous waste recycling led to serious environmental damage, 94 percent were attributable to "off-site third-party recyclers." *Id.*

In the court's view, neither study justifies the rule. Although not impugning the market study on its merits, the court rejects it as lacking empirical analysis. But no rule of administrative law bars agencies from relying on studies that use economic models to assess market incentives. In fact, EPA often relies on theoretical models—that is, studies without

corroborating "data," Maj. Op at 30—and our court has long held that "[r]easoned decisionmaking can use an economic model to provide useful information about economic realities." *American Public Gas Association v. FPC*, 567 F.2d 1016, 1037 (D.C. Cir. 1977); *see also Mississippi Commission on Environmental Quality v. EPA,* 790 F.3d 138, 171 (D.C. Cir. 2015) ("EPA's application, interpretation and modification of [predictive] modeling [to set emissions standards] plainly fall 'within its technical expertise' and thus we owe it 'an extreme degree of deference.'" (quoting *ATK Launch Systems, Inc. v. EPA*, 669 F.3d 330, 338 (D.C. Cir. 2012))).

At any rate, the problems study provides plenty of empirical support for the conclusion that off-site recycling leads to discard. It surveyed cases since 1982 in which recyclers contaminated the environment by discarding hazardous waste, poisoning soil and groundwater "with remediation costs in some instances in the tens of millions of dollars." 80 Fed. Reg. 1,707. To identify these cases, EPA reviewed scores of sources, including the Superfund National Priorities List, national and state databases, comments from at least three different rulemakings, media reports, and information gleaned from contacts in EPA regional offices and state agencies. *See* EPA OFFICE OF RESOURCE CONSERVATION AND RECOVERY, AN ASSESSMENT OF ENVIRONMENTAL PROBLEMS ASSOCIATED WITH RECYCLING OF HAZARDOUS SECONDARY MATERIALS 4 (2014). This thorough canvassing revealed that a full 94 percent of cases involving serious environmental damage could be attributed to off-site recycling.

The court condemns the problems study for "focus[ing] only on recycling gone wrong." Maj. Op. at 31. As a result, the court reasons, the study "tells us nothing" about the relative risks of off-site recycling or the total damage caused by off-site recyclers. *Id.* But this focuses on the wrong question. As the

Administrator recognized, the salient question is not what percentage of all off-site recycling damages the environment, but rather what portion of serious damage from hazardous waste disposal is caused by off-site recyclers. The core issue here is whether EPA may target the very companies (off-site recyclers) most responsible for environmental damage. Given the agency's statutory obligation to prevent environmental harm from discarded hazardous waste, I see no reason why it cannot. Accordingly, that some off-site recycling is safe or that serious environmental damage is relatively unusual is beside the point.

Consider this issue in a different context. If there were 208 plane crashes and 94 percent were linked to one carrier, it would be eminently reasonable for an agency tasked with preventing plane crashes to require that carrier to demonstrate that its practices were safe, no matter how many flights the carrier completed or what percentage of total flights it performed. *Contra* Maj. Op. at 31–32. No one would argue that it was unreasonable to regulate the carrier because only a small percentage of its total flights crashed. Yet this court's approach would yield just that result.

In the end, the fundamental problem with the court's conclusion—that the Administrator needs more proof that off-site recycling is unsafe before requiring a variance—is that the court decides for itself a policy question Congress left to the Administrator. RCRA envisions a careful balance of authority between EPA and this court. Today the court upsets that balance.

ATTACHMENT 2

A - Rineco Consent Decree August 16, 2010

B - Rineco Consent Decree Modification January 3, 2012

C – US Ecology / TD*X Consent Agreement and Final Order October 4, 2012

IN THE UNITED STATES DISTRICT COURT
FOR THE EASTERN DISTRICT OF ARKANSAS
WESTERN DIVISION

UNITED STATES OF AMERICA,	)	
	)	
Plaintiff,	)	
	)	Civil Action No. 4-07-CV
v.	)	01189SWW
	)	
	)	
RINECO CHEMICAL	)	
INDUSTRIES, INC.	)	
	)	
Defendant.	)	
	)	

CONSENT DECREE

TABLE OF CONTENTS

I. JURISDICTION AND VENUE ..... -5-

II. APPLICABILITY ..... -5-

III. DEFINITIONS ..... -7-

IV. CIVIL PENALTY ..... -9-

V. COMPLIANCE REQUIREMENTS ..... -10-

VI. REPORTING REQUIREMENTS ..... -19-

VII. STIPULATED PENALTIES ..... -21-

VIII. FORCE MAJEURE ..... -26-

IX. DISPUTE RESOLUTION ..... -30-

X. INFORMATION COLLECTION AND RETENTION ..... -33-

XI. EFFECT OF SETTLEMENT/RESERVATION OF RIGHTS ..... -36-

XII. COSTS ..... -38-

XIII. NOTICES ..... -39-

XIV. EFFECTIVE DATE ..... -40-

XV. RETENTION OF JURISDICTION ..... -40-

XVI. MODIFICATION ..... -40-

XVII. TERMINATION ..... -41-

XVIII. PUBLIC PARTICIPATION ..... -42-

XIX. SIGNATORIES/SERVICE ..... -43-

XX. INTEGRATION ..... -43-

XXI. FINAL JUDGMENT ..... -44-

ED_002427A_00000313-00100

Plaintiff United States of America ("United States"), on behalf of the United States Environmental Protection Agency ("EPA"), filed a Complaint in this action on December 12, 2007, alleging that Defendant Rineco Chemical Industries, Inc. ("Defendant"), violated Sections 3005(a) and 3010 of the Resource Conservation and Recovery Act ("RCRA"), 42 U.S.C. §§ 6925(a) and 6930, and Arkansas Pollution Control and Ecology Commission ("APCEC") Regulation No. 23, which incorporates federal regulations approved by EPA pursuant to RCRA that are part of the federally-enforceable State hazardous waste program relating to the generation, transportation, treatment, storage, handling, and disposal of hazardous waste. On November 24, 2008, the Court issued an Order (doc.#85) which granted the United States' Motion for Leave to File an Amended and Supplemental Complaint, which in addition to the violations alleged in the Complaint, alleges that Rineco violated its RCRA Permit 28(H), Modules II(A), III(M), III(E), XV(A); and 40 C.F.R. §§ 264.31, 264.173, 264.1056, 264.1086(d)(3).

The Complaint alleges that Defendant has treated, stored, and disposed of hazardous waste in the Thermal Metal Wash unit ("TMW") at its facility located near Benton, Arkansas, without a RCRA permit, in violation of Section 3005(a) of RCRA, 42 U.S.C. § 6925(a),and APCEC Regulation No. 23 Part 264, Subpart X and Part 270, §§ 264.600, 270.1, 270.2, 270.10; that Defendant has failed

ED_002427A_00000313-00101

to file with the EPA or the State of Arkansas ("State") a notification and description of hazardous waste activity performed in the TMW unit at Defendant's facility in violation of Section 3010 of RCRA, 42 U.S.C. § 6930; and that Defendant has failed to establish financial assurance requirements for closure of the TMW and related storage units at Defendant's facility in violation of 40 C.F.R. §§ 264.140 - 264.151 and APCEC Regulation No. 23 §§ 264.140 - 264.151.

In addition to the allegations in the Complaint, the Amended and Supplemental Complaint alleges that Defendant has failed to design, maintain, construct, and operate the TMW and other units at Defendant's facility in such a manner as to minimize the possibility of a fire, explosion, or any unplanned sudden or non-sudden release of hazardous waste or hazardous waste constituents to air, soil, or surface water, in violation of Defendant's RCRA Permit 28(H), Module II(A), 40 C.F.R. § 264.31, and APCEC Regulation No. 23 § 264.31; failed to equip numerous open-ended values and lines with caps or plugs in violation of Defendant's RCRA Permit 28(H), Module XV(A), 40 C.F.R. § 264.1056, and APCEC Regulation No. 23 § 264.1056/265.1056; and stored hazardous waste in an open container for more than fifteen (15) minutes in violation of Defendant's RCRA Permit 28(H), Module III(E), 40 C.F.R. § 264.173, RCRA Permit 28(H), Module III(M), 40 C.F.R. §

ED_002427A_00000313-00102

264.1086(d)(3), and APCEC Regulation No. 23 §§ 264.173, 264.1086(d)(3).

On March 4, 2009, the Court issued a Memorandum and Order (doc. #91) in which the Court granted the United States' Motion for Summary Judgment (doc. #40) as to liability on each of the five claims asserted in the Complaint and denied Defendant's Motion for Summary Judgment (doc. #13). The Court further ordered that the matter would proceed as to any appropriate civil penalties and as to the three remaining claims in the Amended and Supplemental Complaint. Nothing in this Consent Decree shall supercede the findings of fact or conclusions of law set forth in the Court's Order dated March 4, 2009.

Defendant denies any liability to the United States arising out of the transactions or occurrences alleged in the United States' Complaint and the United States' Amended and Supplemental Complaint. Defendant also denies the truth of any allegations in the Complaint or the Amended and Supplemental Complaint except the allegations pertaining to venue and subject matter and personal jurisdiction.

The Parties recognize, and the Court by entering this Consent Decree finds, that this Consent Decree has been negotiated by the Parties in good faith and will avoid litigation between the Parties and that this Consent Decree is fair, reasonable, and in the public interest.

ED_002427A_00000313-00103

NOW, THEREFORE, with the consent of the Parties, IT IS HEREBY ADJUDGED, ORDERED, AND DECREED as follows:

I. JURISDICTION AND VENUE

1. This Court has jurisdiction over the subject matter of this action, pursuant to 28 U.S.C. §§ 1331, 1345, and 1355, and Section 3008(a) of RCRA, 42 U.S.C. § 6928(a), and over the Parties. Venue lies in this District pursuant to 28 U.S.C. §§ 1391(b) and (c), and 1395(a)(1), because the violations complained of and the claims asserted herein arose in this district, and because Defendant conducts business at facilities located in this district. For purposes of this Decree, or any action to enforce this Decree, Defendant consents to the Court's jurisdiction over this Decree and any such action and over Defendant and consents to venue in this judicial district.

II. APPLICABILITY

2. The obligations of this Consent Decree apply to and are binding upon the United States, and upon the Defendant and any successors, assigns, or other entities or persons otherwise bound by law.

3. No transfer of ownership or operation of the Facility, whether in compliance with the procedures of this Paragraph or otherwise, shall relieve Defendant of its obligation to ensure that the terms of the Decree are implemented. At least thirty (30) Days prior to such transfer, Defendant shall provide a copy

ED_002427A_00000313-00104

of this Consent Decree to the proposed transferee and shall simultaneously provide written notice of the prospective transfer, together with a copy of the proposed written agreement, to EPA Region 6, the United States Attorney for the Eastern District of Arkansas, and the United States Department of Justice, in accordance with Section XIII of this Decree (Notices). Defendant may assert that such proposed written agreement to be provided under this Paragraph is protected as Confidential Business Information ("CBI") under 40 C.F.R. Part 2.

4. Defendant shall provide a copy of this Consent Decree to all officers, employees, and agents whose duties include responsibility for compliance with any provision of this Decree, as well as to any contractor entity retained to perform work required under this Consent Decree. Defendant shall condition any such contract upon performance of the work in conformity with the terms of this Consent Decree.

5. In any action to enforce this Consent Decree, Defendant shall not raise as a defense the failure by any of its officers, directors, employees, agents, or contractors to take any actions necessary to comply with the provisions of this Consent Decree, unless Defendant establishes that such failure resulted from a Force Majeure event as defined in Section VIII of this Consent Decree.

ED_002427A_00000313-00105

III. DEFINITIONS

6. Terms used in this Consent Decree that are defined in RCRA or in regulations promulgated pursuant to or authorized by RCRA shall have the meanings assigned to them in RCRA or such regulations, unless otherwise provided in this Decree. Regulations referred to by their federal citations also shall include reference to their State counterparts (e.g. 40 C.F.R. § 264.601 also includes reference to APCEC Regulation No. 23 § 264.601). Whenever the terms set forth below are used in this Consent Decree, the following definitions shall apply:

a. "ADEQ" shall mean the Arkansas Department of Environmental Quality and any of its successor departments or agencies;

b. "Amended Complaint" shall mean the Amended and Supplemental Complaint filed by the United States in this action;

c. "Complaint" shall mean the Complaint filed by the United States in this action;

d. "Consent Decree" or "Decree" shall mean this Decree;

e. "Day" shall mean a calendar day unless expressly stated to be a business day. In computing any period of time under this Consent Decree, where the last day would fall on a Saturday, Sunday, or a federal holiday, the period shall run until the close of business of the next business day;

ED_002427A_00000313-00106

f. "Defendant" shall mean Rineco Chemical Industries, Inc., a corporation incorporated under the laws of the State of Arkansas and licensed to do business in the State of Arkansas;

g. "EPA" shall mean the United States Environmental Protection Agency and any of its successor departments or agencies;

h. "Effective Date" shall have the definition provided in Section XIV;

i. "Facility" shall mean Defendant's land, structures, other appurtenances, and improvements on the land, used for the treatment, storage, or disposal of hazardous waste located at 817 Vulcan Road in Benton, Arkansas;

j. "Paragraph" shall mean a portion of this Decree identified by an Arabic numeral;

k. "Parties" shall mean the United States and Defendant;

l. "Section" shall mean a portion of this Decree identified by a roman numeral;

m. "State" shall mean the State of Arkansas;

n. "TMW" shall mean the Thermal Metal Wash unit, including the thermal oxidation unit, at the Facility.

p. "United States" shall mean the United States of America, acting on behalf of EPA.

ED_002427A_00000313-00107

IV. CIVIL PENALTY

7. Within thirty (30) Days after the Effective Date of this Consent Decree, Defendant shall pay the sum of $1,350,000 as a civil penalty.

8. Defendant shall pay the civil penalty due by Fed Wire Electronic Funds Transfer ("EFT") to the U.S. Department of Justice in accordance with written instructions to be provided to Defendant, following lodging of the Consent Decree, by the Financial Litigation Unit of the U.S. Attorney's Office for the Eastern District of Arkansas, USA Post Office Box 1229 Little Rock, AR 72203, 501-340-2600. At the time of payment, Defendant shall send a copy of the EFT authorization form and the EFT transaction record, together with a transmittal letter, which shall state that the payment is for the civil penalty owed pursuant to the Consent Decree in United States v. Rineco Chemical Industries, Inc., and shall reference the civil action number and DOJ case number 90-7-1-08902, to the United States in accordance with Section XIII of this Decree (Notices); by email to acctsreceivable.CINWD@epa.gov; and by mail to:

EPA Cincinnati Finance Office
26 Martin Luther King Drive
Cincinnati, Ohio 45268

9. Defendant shall not deduct any penalties paid under this Decree pursuant to this Section or Section VII (Stipulated Penalties) in calculating its federal income tax.

V. COMPLIANCE REQUIREMENTS

10. Application for permit for the TMW. Within sixty (60)Days after the Effective Date of this Consent Decree, Defendant shall submit to the Director of ADEQ an application for a RCRA permit for its TMW as a Subpart X-Miscellaneous Unit in accordance with 40 C.F.R. §§ 264.600-264.603, 40 C.F.R. §§ 270.10-270.14, 270.23, 270.30-270.33, the Risk Burn Guidance for Hazardous Waste Combustion Facilities, OSWER, EPA530-R-01-001, July 2001; and the Human Health Risk Assessment Protocol for Hazardous Waste Combustion Facilities, OSWER, EPA-R-05-006, September 2005. Within sixty (60)Days after the Effective Date of this Consent Decree, Defendant also shall submit to the Director of ADEQ an application for a RCRA permit for storage of hazardous waste related to the TMW. Defendant shall simultaneously provide the Associate Director of the Hazardous Waste Enforcement Branch, EPA Region 6, with a copy of such applications, in accordance with Section XIII (Notices). The TMW must be located, designed, constructed, operated, maintained, and closed in a manner that will ensure protection of human health and the environment. The permit application must include such terms and conditions as necessary to protect human health and the environment, including, but not limited to, as appropriate, design and operating requirements for responses to releases of hazardous waste or hazardous constituents from the TMW. The

ED_002427A_00000313-00109

permit application must include those requirements of subparts I through O, X, and subparts AA through CC of part 264, part 270, part 63 subpart EEE, and part 146 of chapter 40 that are appropriate for the TMW.

11. Defendant must notify the public, hold a public meeting, and offer the public an opportunity to comment regarding Defendant's application for a permit for the TMW in accordance with 40 C.F.R. Part 124, as applicable, and 40 C.F.R. § 270.42(c).

12. Preparation and Submission of Trial Burn Plan. For the purpose of determining feasibility of compliance with the performance standards of 40 C.F.R. § 264.343, and determining adequate operating conditions under 40 C.F.R. §§ 264.345, as part of its RCRA permit application for the TMW, Defendant must prepare and submit to the Director of ADEQ a trial burn plan and perform a trial burn in accordance with 40 C.F.R. § 270.62(b).

13. The trial burn plan must include all of the information required by 40 C.F.R. § 270.62(b)(2).

14. After the Director of ADEQ has evaluated the sufficiency of the information provided, Defendant must provide any supplemental information required by the Director of ADEQ in accordance with 40 C.F.R. § 270.62(b)(3).

15. During the trial burn, Defendant must calculate the trial Principal Organic Hazardous Constituents ("POHCs")

ED_002427A_00000313-00110

specified by the Director of ADEQ based on the waste analysis data in the trial burn plan submitted by Defendant in accordance with 40 C.F.R. § 270.62(b)(4).

16. The trial burn performed by Defendant must comply with 40 C.F.R. § 270.62(b)(5).

17. Defendant shall not commence the trial burn until after the Director of ADEQ has issued a notice to all persons on the Facility mailing list as set forth in 40 C.F.R. § 124.10(c)(1)(ix) and to the appropriate units of State and local government as set forth in 40 C.F.R. §§ 124.10(c)(1)(x) announcing the scheduled commencement and completion date for the trial burn as required by 40 C.F.R. § 270.62(b)(6).

18. During the trial burn (or as soon after the burn as is practicable), Defendant shall make the determinations required by 40 C.F.R. § 270.62(b)(7). During the trial burn, Defendant must demonstrate compliance with the performance standards required by 40 C.F.R. § 264.343.

19. Preparation and Submission of Risk Burn Plan. To collect emissions data for evaluation in a site-specific risk assessment, as part of its RCRA permit application for the TMW, Defendant also must prepare and submit a risk burn plan and perform a risk burn in accordance with the Risk Burn Guidance for Hazardous Waste Combustion Facilities, OSWER, EPA530-R-01-001, July 2001; and the Human Health Risk Assessment Protocol for

Hazardous Waste Combustion Facilities, OSWER, EPA-R-05-006, September 2005. The risk burn should be integrated with the trial burn to produce a consistent set of proposed enforceable permit conditions.

20. The risk burn performed by Defendant shall collect fugitive and stack emissions data and define the operating requirements for the TMW based on control parameters identified in Chapters 4 through 7 of the Risk Burn Guidance for Hazardous Waste Combustion Facilities. During the risk burn, Defendant shall evaluate each of the constituents specified in Chapters 4 though 7 of the Risk Burn Guidance including the dioxins, furans, other organics, metals, particulate matter, hydrogen chloride, and chlorine identified therein.

21. During the risk burn (or as soon after the burn as is practicable), the Defendant shall make the determinations set forth in the Risk Burn Guidance for Hazardous Waste Combustion Facilities, and the Human Health Risk Assessment Protocol for Hazardous Waste Combustion Facilities deemed appropriate by the Director of ADEQ. During the risk burn, Defendant must demonstrate that emissions from the TMW do not present a risk to human health or the environment.

22. Within ninety (90) days after completion of the trial and risk burns, or later if approved by the Director of ADEQ, Defendant must submit to the Director of ADEQ a certification

that the trial and risk burns have been carried out in accordance with the approved trial and risk burn plans, and must submit the results of all the determinations required in 40 C.F.R. § 270.62(b)(7).

23. All data collected during the trial and risk burns must be submitted to the Director of ADEQ following the completion of the trial and risk burns. A copy of the data collected during the trial and risk burns also must be submitted to the Associate Director of the Hazardous Waste Enforcement Branch, EPA Region 6, in accordance with Section XIII of this Consent Decree (Notices).

24. All submissions required by Section V must be certified on behalf of the Defendant by the signature of a person authorized to sign a permit application or a report under 40 C.F.R. § 270.11.

25. Defendant shall request that the final RCRA permit for the TMW include performance standards, operating requirements, monitoring and inspection requirements, and closure requirements in accordance with 40 C.F.R. §§ 264.343, 264.345, 264.347, and 264.351. Defendant also shall request that the final permit for the TMW shall include risk based terms and conditions necessary to protect human health and the environment in accordance with the Risk Burn Guidance for Hazardous Waste Combustion Facilities

ED_002427A_00000313-00113

and the Human Health Risk Assessment Protocol for Hazardous Waste Combustion Facilities.

26. Continued Operation. Upon Defendant's submission of the initial application for a RCRA permit for the TMW, including the trial and risk burn plans, Defendant may continue to operate the TMW during the one year following such submission if Defendant otherwise maintains compliance with the requirements of this Decree. Whenever the Director of ADEQ issues a final permit for the TMW, Defendant immediately must comply with that permit, even if the permit is issued in less than one year after Defendant submits its initial application. Without a final permit, Defendant may not operate the TMW at anytime later than one year after Defendant submits its initial application, except as that time is enlarged under Paragraphs 29, 45, 46, 47, or 76 of this Consent Decree. The requirements of this Paragraph shall not be stayed as a result of any challenge or appeal by Defendant of the final RCRA permit for the TMW, or any of its terms or conditions, issued by the Director of ADEQ.

27. EPA Review and Comment. Nothing in this Consent Decree shall limit the EPA's rights under applicable environmental laws or regulations, including but not limited to, Section 3005(c)(3) of RCRA, 42 U.S.C. § 6925, 40 CFR §§ 270.32 and 40 C.F.R. §§ 271.19, to review, comment, and incorporate applicable requirements of parts 264 and 266 through 268 of

ED_002427A_00000313-00114

chapter 40 directly into the permit or establish other permit conditions that are based on those parts; or to take action under Section 3008(a)(3) of RCRA, 42 U.S.C. § 6928, against Defendant on the ground that the RCRA permit for the TMW does not comply with a condition that the EPA Regional Administrator in commenting on the permit application or draft permit stated was necessary to implement approved State program requirements, whether or not that condition was included in the final permit. If Defendant disputes an action taken by EPA pursuant to 40 CFR §§ 270.32 or 40 C.F.R. §§ 271.19, the Defendant may ask the District Court to resolve such dispute in accordance with Section IX of this Consent Decree (Dispute Resolution). The District Court shall resolve such dispute in accordance with applicable law.

28. To comply with this Consent Decree, Defendant must obtain a RCRA permit for the TMW as a Subpart X-Miscellaneous Unit in accordance with 40 C.F.R. §§ 264.600-264.603, 40 C.F.R. §§ 270.10-270.14, 270.23, 270.30-270.33, the Risk Burn Guidance for Hazardous Waste Combustion Facilities, OSWER, EPA530-R-01-001, July 2001; and the Human Health Risk Assessment Protocol for Hazardous Waste Combustion Facilities, OSWER, EPA-R-05-006, September 2005.

29. TMW Permit. Defendant shall prepare and submit its application for a RCRA permit for the TMW as required in this

Section V. Defendant may seek relief under the provisions of Section VIII of this Consent Decree (Force Majeure) for any delay in the performance of any such obligations resulting from a failure to obtain, or a delay in obtaining, any permit or approval required to fulfill such obligation, if Defendant has submitted a timely and complete application and has taken all other actions necessary to obtain such permit or approval.

30. Fugitive Emissions. Within thirty (30)Days after the Effective Date of this Consent Decree, during the period before Defendant obtains its RCRA permit for the TMW, consistent with 40 C.F.R. §§ 264.345(d) and 264.347(b), Defendant shall control fugitive emissions from the TMW by:

a. Keeping the treatment zone totally sealed against fugitive emissions; or

b. Maintaining a treatment zone pressure lower than atmospheric pressure; or

c. Establishing an alternative means of control demonstrated (with part B of the permit application) to provide fugitive emissions control equivalent to maintenance of treatment zone pressure lower than atmospheric pressure.

Defendant shall conduct a thorough visual inspection of the TMW treatment zone and associated equipment (pumps, values, conveyors, pipes, etc.), at least daily, for leaks, spills, fugitive emissions, and other signs of tampering. The results of

this inspection must be recorded, and such records must be placed in the operating record for the Facility required by 40 C.F.R. § 264.73.

As part of its application for a RCRA permit for the TMW, Defendant shall propose as permit conditions the above fugitive emissions requirements.

31. Within sixty (60) Days after the Effective Date of this Consent Decree, Defendant shall file with the State a notification and description of hazardous waste activity expressly related to the TMW performed at the Facility in accordance with Section 3010 of RCRA, 42 U.S.C. § 6930. A copy of the notification required by this Paragraph also must be submitted to the Associate Director of the Hazardous Waste Enforcement Branch, EPA Region 6, in accordance with Section XIII of this Consent Decree (Notices).

32. Within sixty (60) Days after the Effective Date of this Consent Decree, Defendant shall submit to the Director of ADEQ an application for and establish financial assurance for closure of the TMW and related storage units at the Facility in accordance with Section 3004(a) of RCRA, 42 U.S.C. § 6924(a), and 40 C.F.R. § 264, Subpart H. A copy of the application and documentation of the financial assurances required by this Paragraph also must be submitted to the Associate Director of the

ED_002427A_00000313-00117

Hazardous Waste Enforcement Branch, EPA Region 6, in accordance with Section XIII of this Consent Decree (Notices).

VI. REPORTING REQUIREMENTS

33. Defendant shall submit the following reports:

(a). Within 30 days after the end of each six month period following the Effective Date of this Consent Decree but before the final RCRA permit for the operation of the TMW is issued, and thirty (30) Days after the end of each calendar year thereafter until termination of this Decree pursuant to Section XVII, Defendant shall submit a report for the preceding six month period or calendar year, respectively, that summarizes the status of Defendant's application for a RCRA permit for the TMW and the status of compliance with the requirements of this Consent Decree.

b. The report also shall include a description of any non-compliance with the requirements of Section V of this Consent Decree and an explanation of the violation's likely cause and of the remedial steps taken, or to be taken, to prevent or minimize such violation. If the cause of a violation cannot be fully explained at the time the report is due, Defendant shall so state in the report. Defendant shall investigate the cause of the violation and shall then submit an amendment to the report, including a full explanation of the cause of the violation, within thirty (30) Days after Defendant becomes aware of the

ED_002427A_00000313-00118

cause of the violation. Nothing in this Paragraph or the following Paragraph relieves Defendant of its obligation to provide the notice required by Section VIII of this Consent Decree (Force Majeure).

c. Whenever any violation of this Consent Decree or any other event affecting Defendant's performance under this Decree may pose an immediate threat to the public health or welfare or the environment, Defendant shall notify the Section Chief, Hazardous Waste Enforcement Section, Compliance Assurance and Enforcement Division, EPA, Region 6, 1445 Ross Avenue, Dallas, Texas 75202 by telephone to (214) 665-8006, by electronic or facsimile transmission to (214) 665-7446 as soon as possible, but no later than twenty-four (24) hours after Defendant first knew of the violation or event. This procedure is in addition to the requirements set forth in the preceding Paragraph.

d. All reports shall be submitted to the persons designated in Section XIII of this Consent Decree (Notices).

e. Each report submitted by Defendant under this Section shall be signed by an official of the submitting party and include the following certification:

> I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who

> manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

This certification requirement does not apply to emergency or similar notifications where compliance would be impractical.

f. The reporting requirements of this Consent Decree do not relieve Defendant of any reporting obligations required by RCRA or its implementing regulations, or by any other federal, state, or local law, regulation, permit, or other requirement.

g. Any information provided pursuant to this Consent Decree may be used by the United States in any proceeding to enforce the provisions of this Consent Decree and as otherwise permitted by law.

VII. STIPULATED PENALTIES

34. Defendant shall be liable for stipulated penalties to the United States for violations of this Consent Decree as specified below, unless excused under Section VIII (Force Majeure). A violation includes failing to perform any obligation required by the terms of this Decree, according to all applicable requirements of this Decree and within the specified time schedules established by or approved under this Decree.

ED_002427A_00000313-00120

35. Late Payment of Civil Penalty. If Defendant fails to pay the civil penalty required to be paid under Section IV of this Decree (Civil Penalty) when due, Defendant shall pay a stipulated penalty of $3,000 per Day for each Day that the payment is late.

36. Compliance Milestones. The following stipulated penalties shall accrue per violation per Day for each violation of the requirements identified in the following subparagraphs:

a. Failure to within sixty (60) Days after the Effective Date of this Consent Decree, submit an application to the Director of ADEQ for a RCRA permit for the TMW as required by Paragraph 10 of this Consent Decree:

Penalty Per Violation Per Day	Period of Noncompliance
$1,000	1st through 14th Day
$3,000	15th through 30th Day
$10,000	31st Day and beyond

b. Failure to prepare and submit trial burn and risk burn plans and perform trial and risk burns as required by Paragraphs 12-24 of this Consent Decree:

Penalty Per Violation Per Day	Period of Noncompliance
$1,000	1st through 14th Day
$3,000	15th through 30th Day
$10,000	31st Day and beyond

c. Operation of the TMW without a final permit after the time allowed in Paragraph 26 in this Consent Decree:

Penalty Per Violation Per Day	Period of Noncompliance
$10,000	1st through 14th Day
$25,000	15th Day and beyond

d. Failure to, within sixty (60) Days after the Effective Date of this Consent Decree, file with the State a notification and description of hazardous waste activity expressly related to the TMW operated at the Facility in accordance with Section 3010 of RCRA, 42 U.S.C. § 6930:

Penalty Per Violation Per Day	Period of Noncompliance
$1,000	1st through 14th Day
$1,500	15th through 30th Day
$2,500	31st Day and beyond

e. Failure to, within sixty (60) Days after the Effective Date of this Consent Decree, establish financial assurance for or closure of the TMW and related storage units at the Facility in accordance with Section 3004(a) of RCRA, 42 U.S.C. § 6924(a), and 40 C.F.R. § 264, Subpart H.

Penalty Per Violation Per Day	Period of Noncompliance
$1,000	1st through 14th Day
$3,000	15th through 30th Day
$10,000	31st Day and beyond

ED_002427A_00000313-00122

37. Reporting Requirements. The following stipulated penalties shall accrue per violation per Day for each violation of the reporting requirements of Section VI of this Consent Decree:

Penalty Per Violation Per Day	Period of Noncompliance
$1,000	1st through 14th Day
$1,500	15th through 30th Day
$2,500	31st Day and beyond

38. The stipulated penalties under this Section shall begin to accrue on the Day after performance is due or on the Day a violation occurs, whichever is applicable, and shall continue to accrue until performance is satisfactorily completed or until the violation ceases. Stipulated penalties shall accrue simultaneously for separate violations of this Consent Decree.

39. Defendant shall pay any stipulated penalty within sixty (60) Days of receiving the United States' written demand, unless Defendant invokes the Dispute Resolution procedures under Section IX (Dispute resolution). A demand for the payment of the stipulated penalties will identify the particular violation(s) to which the stipulated penalty relates and the penalty amount that the United States is demanding for each violation (as best as can be estimated).

ED_002427A_00000313-00123

40. The United States may in the unreviewable exercise of its discretion, reduce or waive stipulated penalties otherwise due it under this Consent Decree.

41. Stipulated penalties shall continue to accrue as provided in Paragraph 38, during any Dispute Resolution, but need not be paid until the following:

a. If the dispute is resolved by agreement or by a decision of EPA that is not appealed to the Court, Defendant shall pay accrued penalties determined to be owing, together with interest, to the United States within thirty (30)Days of the effective date of the agreement or the receipt of EPA's decision or order.

b. If the dispute is appealed to the Court and the United States prevails in whole or in part, Defendant shall pay all accrued penalties determined by the Court to be owing, together with interest, within sixty (60) Days of receiving the Court's decision or order, except as provided in subparagraph c, below.

c. If any Party appeals the District Court's decision, Defendant shall pay all accrued penalties determined to be owing, together with interest, within sixty (60) Days of receiving the final appellate court decision.

42. Defendant shall pay stipulated penalties owing to the United States in the manner set forth and with the confirmation

notices required by Paragraph 8, except that the transmittal letter shall state that the payment is for stipulated penalties and shall state for which violation(s) the penalties are being paid.

43. If Defendant fails to pay stipulated penalties according to the terms of this Consent Decree, Defendant shall be liable for interest on such penalties, as provided for in 28 U.S.C. § 1961, accruing as of the date payment became due. Nothing in this Paragraph shall be construed to limit the United States from seeking any remedy otherwise provided by law for Defendant's failure to pay any stipulated penalties.

44. Subject to the provisions of Section XI of this Consent Decree (Effect of Settlement/Reservation of Rights), the stipulated penalties provided for in this Consent Decree shall be in addition to any other rights, remedies, or sanctions available to the United States for Defendant's violation of this Consent Decree or applicable law. Where a violation of this Consent Decree is also a violation of RCRA or its implementing regulations, Defendant shall be allowed a credit, for any stipulated penalties paid, against any statutory penalties imposed for such violation.

VIII. FORCE MAJEURE

45. "Force Majeure" for purposes of this Consent Decree, is defined as any event arising from causes beyond the control of

ED_002427A_00000313-00125

Defendant, of any entity controlled by Defendant, or of Defendant's contractors, that delays or prevents the performance of any obligation under this Consent Decree despite Defendant's best efforts under the circumstances to fulfill the obligation. The requirement that Defendant exercise "best efforts to fulfill the obligation" includes using best efforts to anticipate any potential Force Majeure event and best efforts to address the effects of any such event (a) as it is occurring and (b) after it has occurred to prevent or minimize any resulting delay to the greatest extent possible. "Force Majeure" does not include Defendant's financial inability to perform any obligation under this Consent Decree.

46. Defendant shall provide notice to the Section Chief, Hazardous Waste Enforcement Section, Compliance Assurance and Enforcement Division, EPA, Region 6, 1445 Ross Avenue, Dallas, Texas 75202 by telephone to (214) 665-8006, by electronic or facsimile transmission to (214) 665-7446 within seventy-two (72) hours of when Defendant first knew of a claimed Force Majeure event. Within fourteen (14) Days thereafter, Defendant shall provide in writing to EPA an explanation and description of the reasons for the delay; the anticipated duration of the delay; all actions taken or to be taken to prevent or minimize the delay; a schedule for implementation of any measures to be taken to prevent or mitigate the delay or the effect of the delay; and

ED_002427A_00000313-00126

Defendant's rationale for attributing such delay to a force majeure event if it intends to assert such a claim; and a statement as to whether, in the opinion of Defendant, such event may cause or contribute to an endangerment to public health, welfare or the environment. Defendant shall include with any notice documentation supporting the claim that the delay was attributable to a Force Majeure. Failure to comply with the above requirements shall preclude Defendant from asserting any claim of Force Majeure for that event for the period of time of such failure to comply, and for any additional delay caused by such failure. Defendant shall be deemed to know of any circumstance of which Defendant, any entity controlled by Defendant, or Defendant's contractors had knowledge. For purposes of claiming a Force Majeure event related to Defendant's failure to receive a final RCRA permit for the TMW within one year after Defendant submits its initial application, Defendant must provide written notice and documentation to the Section Chief, Hazardous Waste Enforcement Section, Compliance Assurance and Enforcement Division, and the Chief of the Office of Regional Counsel, RCRA Enforcement Branch, EPA Region 6, not later than fourteen (14) Days after one year after Defendant submits its initial application that Defendant has not received a final RCRA permit for the TMW. Such written notice must provide an explanation and description of Defendant's submission of a timely and complete

application and other actions taken necessary to obtain such permit, but need not provide an explanation or description of the reasons for the delay or other matters referred to above in this Paragraph, if such reasons or other matters are beyond the knowledge of Defendant.

47. If EPA agrees that the delay or anticipated delay is attributable to a Force Majeure event, the time for performance of the obligations under this Consent Decree that are affected by the Force Majeure event will be extended by EPA for such time as is necessary to complete those obligations. An extension of the time for performance of the obligations affected by the Force Majeure event shall not, of itself, extend the time for performance of any other obligation. EPA will notify Defendant in writing of the length of the extension, if any, for performance of the obligations affected by the Force Majeure event.

48. If EPA does not agree that the delay or anticipated delay has been or will be caused by a Force Majeure event, EPA will notify Defendant in writing of its decision.

49. If Defendant elects to invoke the dispute resolution procedures set forth in Section IX (Dispute Resolution), it shall do so no later than thirty (30) Days after receipt of EPA's notice. In any such proceeding, Defendant shall have the burden of demonstrating by a preponderance of the evidence that the

delay or anticipated delay has been or will be caused by a Force Majeure event, that the duration of the delay or the extension sought was or will be warranted under the circumstances, that best efforts were exercised to avoid and mitigate the effects of the delay, and that the Defendant complied with the requirements of Paragraphs 45 and 46, above. If the Defendant carries this burden, the delay at issue shall be deemed not to be a violation by the Defendant of the affected obligation of this Consent Decree identified to EPA and the Court.

IX. DISPUTE RESOLUTION

50. Unless otherwise expressly provided for in this Consent Decree, the dispute resolution procedures of this Section shall be the exclusive mechanism to resolve disputes arising under or with respect to this Consent Decree.

51. Informal Dispute Resolution. Any dispute subject to Dispute Resolution under this Consent Decree shall first be the subject of informal negotiations. The dispute shall be considered to have arisen when Defendant serves the United States with a written Notice of Dispute, in accordance with Section XIII of this Consent Decree (Notices). Such Notice of Dispute shall state clearly the matter in dispute. The period of informal negotiations shall not exceed forty-five (45) Days from the date the dispute arises, unless that period is modified by written agreement of the Parties. If the Parties cannot resolve a

dispute by informal negotiations, then the position advanced by the United States shall be considered binding unless, within forty-five (45) Days after the conclusion of the informal negotiation period, Defendant invokes formal dispute resolution procedures as set forth below.

52. Formal Dispute Resolution. Defendant shall invoke formal dispute resolution procedures, within the time period provided in the preceding Paragraph, by serving on the United States a written Statement of Position regarding the matter in dispute. The Statement of Position shall include, but need not be limited to, any factual data, analysis, or opinion supporting Defendant's position and any supporting documentation relied upon by Defendant.

53. The United States shall serve its Statement of Position within forty-five (45) Days of receipt of Defendant's Statement of Position. The United States' Statement of Position shall include, but need not be limited to, any factual data, analysis, or opinion supporting that position and any supporting documentation relied upon by the United States. If the United States does not accept Defendant's position, the United States' Statement of Position shall be binding on Defendant, unless Defendant files a motion for judicial review of the dispute in accordance with the following Paragraph.

ED_002427A_00000313-00130

54. Defendant may seek judicial review of the dispute by filing with the Court and serving on the United States a motion requesting judicial resolution of the dispute. The motion must be filed within forty-five (45) Days of receipt of the United States' Statement of Position pursuant to the preceding Paragraph. The motion shall contain a written statement of Defendant's position on the matter in dispute, including any supporting factual data, analysis, opinion, or documentation, and shall set forth the relief requested and any schedule within which the dispute must be resolved for orderly implementation of the Consent Decree.

55. The United States shall respond to Defendant's motion within the time period allowed by the Local Rules of this Court. Defendant may file a reply memorandum, to the extent permitted by the Local Rules.

56. The Court shall decide all disputes pursuant to applicable principles of law for resolving such disputes. In their initial filings with the Court under Paragraphs 55 and 56, the Parties shall state their respective positions as to the applicable standard of law for resolving the particular dispute. The Court shall not draw any inference nor establish any presumptions adverse to any Party as a result of invocation of this Section or the Parties' inability to reach agreement.

57. The invocation of dispute resolution procedures under this Section shall not, by itself, extend, postpone, or affect in any way any obligation of Defendant under this Consent Decree, unless and until final resolution of the dispute so provides. Stipulated penalties with respect to the disputed matter shall continue to accrue from the first Day of noncompliance, but payment shall be stayed pending resolution of the dispute as provided in Paragraph 41. If Defendant does not prevail on the disputed issue, stipulated penalties shall be assessed and paid as provided in Section VII (Stipulated Penalties).

X. INFORMATION COLLECTION AND RETENTION

58. The United States and its representatives, including attorneys, contractors, and consultants, shall have the right of entry into the Facility at all reasonable times, upon presentation of credentials, to:

a. monitor the progress of activities required under this Consent Decree;

b. verify any data or information submitted to the United States in accordance with the terms of this Consent Decree;

c. obtain samples and, upon request, splits and results of any samples taken by Defendant or its representatives, contractors, or consultants;

ED_002427A_00000313-00132

d. obtain documentary evidence, including photographs and similar data; and

e. assess Defendant's compliance with this Consent Decree.

59. Upon request, EPA shall provide Defendant splits and results of any samples taken by EPA.

60. Until two years after the termination of this Consent Decree, Defendant shall retain (in paper or electronic form), and shall instruct its contractors and agents to preserve, all non-identical copies of all documents, records, or other information (including documents, records, or other information in electronic form) in its or its contractors' or agents' possession or control, or that come into its or its contractors' or agents' possession or control, and that relate to Defendant's performance of its obligations under this Consent Decree. This information-retention requirement shall apply regardless of any contrary corporate or institutional policies or procedures. At any time during this information-retention period, upon request by the United States, Defendant shall make available to EPA copies of any documents, records, or other information required to be maintained under this Paragraph. Notwithstanding the provisions of this Paragraph, Defendant may request in writing permission from EPA to not preserve, to not maintain, or to destroy certain specified categories of documents. Defendant's obligations will

ED_002427A_00000313-00133

remain unchanged, however, unless and until EPA issues written approval of the request, which may or may not, in EPA's discretion, include a waiver of Defendant's obligations under this Paragraph.

61. At the conclusion of the information-retention period provided in the preceding Paragraph, Defendant shall notify the United States at least ninety (90) Days prior to the destruction of any documents, records, or other information subject to the requirements of the preceding Paragraph and, upon request by the United States, Defendant shall make any such documents, records, or other information available to EPA for inspection, copying or retention. Defendant may assert that certain documents, records, or other information is privileged under the attorney-client privilege or any other privilege recognized by federal law. If Defendant asserts such a privilege, in lieu of providing documents, it shall notify the United States that such a claim is being made, and upon request, shall provide the following: (1) the title of the document, record, or information; (2) the date of the document, record, or information; (3) the name and title of each author of the document, record, or information; (4) the name and title of each addressee and recipient; (5) a description of the subject of the document, record, or information; and (6) the privilege asserted by Defendant. However, no documents, records, or other information created or generated pursuant to

ED_002427A_00000313-00134

the requirements of this Consent Decree shall be withheld on grounds of privilege.

62. Defendant may also assert that information required to be provided under this Section is protected as CBI under 40 C.F.R. Part 2. As to any information that Defendant seeks to protect as CBI, Defendant shall follow the procedures set forth in 40 C.F.R. Part 2.

63. This Consent Decree in no way limits or affects any right of entry and inspection, or any right to obtain information, held by the United States pursuant to applicable federal or State laws, regulations, or permits, nor does it limit or affect any duty or obligation of Defendant to maintain documents, records, or other information imposed by applicable federal or state laws, regulations, or permits.

XI. EFFECT OF SETTLEMENT/RESERVATION OF RIGHTS

64. This Consent Decree resolves the civil claims of the United States for the violations alleged in the Complaint and the Amended Complaint filed in this action through the Effective Date of this Consent Decree.

65. The United States reserves all legal and equitable remedies available to enforce the provisions of this Consent Decree, except as expressly stated in Paragraph 64. This Consent Decree shall not be construed to limit the rights of the United States to obtain penalties or injunctive relief under RCRA or its

implementing regulations, or under other federal or State laws, regulations, or permit conditions, except as expressly specified in Paragraph 64. The United States further reserves all legal and equitable remedies to address any imminent and substantial endangerment to the public health or welfare or the environment arising at, or posed by, Defendant's Facility under Section 7003 of RCRA, 42 U.S.C. §§ 6973.

66. In any subsequent administrative or judicial proceeding initiated by the United States for injunctive relief, civil penalties, other appropriate relief relating to the Facility, the Defendant shall not assert, and may not maintain, any defense or claim based upon the principles of waiver, res judicata, collateral estoppel, issue preclusion, claim preclusion, claim-splitting, or other defenses based upon any contention that the claims raised by the United States in the subsequent proceeding were or should have been brought in the instant case, except with respect to claims that have been specifically resolved pursuant to Paragraph 64 of this Section.

67. This Consent Decree is not a permit, or a modification of any permit, under any federal, State, or local laws or regulations. Defendant is responsible for achieving and maintaining compliance with all applicable federal, State, and local laws, regulations, and permits; and Defendant's compliance with this Consent Decree shall be no defense to any action

ED_002427A_00000313-00136

commenced pursuant to any such laws, regulations, or permits, except as set forth herein. The United States does not, by its consent to the entry of this Consent Decree, warrant or aver in any manner that Defendant's compliance with any aspect of this Consent Decree will result in compliance with RCRA, or with any other provisions of federal, State, or local laws, regulations, or permits.

68. This Consent Decree does not limit or affect the rights of Defendant or of the United States against any third parties, not party to this Consent Decree, nor does it limit the rights of third parties, not party to this Consent Decree, against Defendant, except as otherwise provided by law.

69. This Consent Decree shall not be construed to create rights in, or grant any cause of action to, any third party not party to this Consent Decree, or to release or waive any claim, cause of action, demand, or defense in law or equity that any party to this Consent Decree may have against any person(s) or entity not a party to this Consent Decree.

XII. COSTS

70. The Parties shall bear their own costs of this action, including attorneys' fees, except that the United States shall be entitled to collect the costs (including attorneys' fees) incurred in any action necessary to collect any portion of the

ED_002427A_00000313-00137

civil penalty or any stipulated penalties due but not paid by Defendant.

XIII. NOTICES

71. Unless otherwise specified herein, whenever notifications, submissions, or communications are required by this Consent Decree, they shall be made in writing and addressed as follows:

To the United States:

Chief, Environmental Enforcement Section
Environment and Natural Resources Division
U.S. Department of Justice
Box 7611 Ben Franklin Station
Washington, D.C. 20044-7611
Re: DOJ No. 90-7-1-08902

and

To EPA:

Associate Director
Compliance Assurance and Enforcement Division (RCRA Enforcement Division)
U.S. Environmental Protection Agency
Region 6
1445 Ross Avenue
Dallas, Texas 75202

Multimedia Planning and Permitting Division (RCRA Permits Division)
U.S. Environmental Protection Agency
Region 6
1445 Ross Avenue
Dallas, Texas 75221

To Defendant:

Rineco Chemical Industries, Inc.
P.O. Box 729
Benton, Arkansas 72018

ED_002427A_00000313-00138

72. Any Party may, by written notice to the other Parties, change its designated notice recipient or notice address provided above.

73. Notices submitted pursuant to this Section shall be deemed submitted upon mailing, unless otherwise provided in this Consent Decree or by mutual agreement of the Parties in writing.

XIV. EFFECTIVE DATE

74. The Effective Date of this Consent Decree shall be the date upon which this Consent Decree is entered by the Court or a motion to enter the Consent Decree is granted, whichever occurs first, as recorded on the Court's docket.

XV. RETENTION OF JURISDICTION

75. The Court shall retain jurisdiction over this case until termination of this Consent Decree, for the purpose of resolving disputes arising under this Decree or entering orders modifying this Decree, pursuant to Sections IX and XVI, or effectuating or enforcing compliance with the terms of this Decree.

XVI. MODIFICATION

76. The terms of this Consent Decree may be modified only by a subsequent written agreement signed by all the Parties. Where the modification constitutes a material change to this Decree, it shall be effective only upon approval by the Court.

ED_002427A_00000313-00139

77. Any disputes concerning modification of this Decree shall be resolved pursuant to Section IX of this Decree (Dispute Resolution)provided, however, that, instead of the burden of proof provided by Paragraph 56, the Party seeking the modification bears the burden of demonstrating that it is entitled to the requested modification in accordance with Federal Rule of Civil Procedure 60(b).

XVII. TERMINATION

78. After Defendant has complied with the requirements of Section V of this Consent Decree (Compliance Requirements), has thereafter maintained satisfactory compliance with this Consent Decree and the RCRA permit for the TMW issued by the Director of ADEQ for a period of one year, and has paid the civil penalty and any accrued stipulated penalties as required by this Consent Decree, Defendant may serve upon the United States a Request for Termination, stating that Defendant has satisfied those requirements, together with all necessary supporting documentation.

79. Following receipt by the United States of Defendant's Request for Termination, the Parties shall confer informally concerning the Request and any disagreement that the Parties may have as to whether Defendant has satisfactorily complied with the requirements for termination of this Consent Decree. If the United States agrees that the Decree may be terminated, the

ED_002427A_00000313-00140

Parties shall submit, for the Court's approval, a joint stipulation terminating the Decree.

80. If the United States does not agree that the Decree may be terminated, Defendant may invoke Dispute Resolution under Section IX of this Decree. However, Defendant shall not seek Dispute Resolution of any dispute regarding termination, under Paragraph 52 of Section IX, until thirty (30) Days after service of its Request for Termination.

XVIII. PUBLIC PARTICIPATION

81. This Consent Decree shall be lodged with the Court for a period of not less than thirty (30) Days for public notice and comment in accordance with 28 C.F.R. § 50.7. The United States reserves the right to withdraw or withhold its consent if the comments regarding the Consent Decree disclose facts or considerations indicating that the Consent Decree is inappropriate, improper, or inadequate. Defendant consents to entry of this Consent Decree without further notice and agrees not to withdraw from or oppose entry of this Consent Decree by the Court or to challenge any provision of the Decree, unless the United States has notified Defendant in writing that it no longer supports entry of the Decree.

ED_002427A_00000313-00141

XIX. SIGNATORIES/SERVICE

82. Each undersigned representative of Defendant and the Assistant Attorney General for the Environment and Natural Resources Division of the Department of Justice certifies that he or she is fully authorized to enter into the terms and conditions of this Consent Decree and to execute and legally bind the Party he or she represents to this document.

83. This Consent Decree may be signed in counterparts, and its validity shall not be challenged on that basis. Defendant agrees to accept service of process by mail with respect to all matters arising under or relating to this Consent Decree and to waive the formal service requirements set forth in Rules 4 and 5 of the Federal Rules of Civil Procedure and any applicable Local Rules of this Court including, but not limited to, service of a summons.

XX. INTEGRATION

84. This Consent Decree constitutes the final, complete, and exclusive agreement and understanding among the Parties with respect to the settlement embodied in the Decree and supercedes all prior agreements and understandings, whether oral or written, concerning the settlement embodied herein. No other document, nor any representation, inducement, agreement, understanding, or promise, constitutes any part of this Decree or the settlement it

ED_002427A_00000313-00142

represents, nor shall it be used in construing the terms of this Decree.

XXI. FINAL JUDGMENT

85. Upon approval and entry of this Consent Decree by the Court, this Consent Decree shall constitute a final judgment of the Court as to the United States and the Defendant. The Court finds that there is no just reason for delay and therefore enters this judgment as a final judgment under Fed. R. Civ. P. 54 and 58.

Dated and entered this 16th day of August, 2010.

Susan Webber Wright
UNITED STATES DISTRICT COURT JUDGE

ED_002427A_00000313-00143

FOR THE UNITED STATES:

Dated: 4/27/10

IGNACIA S. MORENO
Assistant Attorney General
Environment and Natural Resources Division
United States Department of Justice

Dated: 5/13/10

RICHARD GLADSTEN
Senior Counsel
Environmental Enforcement Section
Environment and Natural Resources Division
United States Department of Justice
P.O. Box 7611
Washington, D.C. 20044-7611
(202) 514-1711

United States v. Rineco Chemical Industries, Inc.
Civil Action No. 4-07-CV 01189SWW
Consent Decree

FOR THE ENVIRONMENTAL PROTECTION AGENCY:

Date: 5/19/10

for AL ARMENDARIZ
Regional Administrator
U.S. Environmental Protection
Agency, Region VI
1445 Ross Avenue
Dallas, Texas 75202-2733

Date: 5/17/10

TERRY SYKES
RCRA Enforcement Branch
U.S. Environmental Protection
Agency, Region 6
1445 Ross Avenue, Suite 1200
Dallas, Texas 75202-2733

FOR DEFENDANT RINECO CHEMICAL INDUSTRIES, INC.

Date: 12/7/2009

LARRY WILLIAMS
Rineco Chemical Industries, Inc.
819 Vulcan Road
Benton, Arkansas 72015

FILED
U.S. DISTRICT COURT
EASTERN DISTRICT ARKANSAS
JAN 0 3 2012
JAMES W. McCORMACK, CLERK
By: _____ DEP CLERK

IN THE UNITED STATES DISTRICT COURT
FOR THE EASTERN DISTRICT OF ARKANSAS
WESTERN DIVISION

UNITED STATES OF AMERICA,	)	
	)	
Plaintiff,	)	
	)	
	)	**Civil Action No. 4-07-CV 01189SWW**
	)	
RINECO CHEMICAL INDUSTRIES, INC.	)	
	)	
	)	
Defendant.	)	
	)	

ORDER ENTERING MODIFICATION OF CONSENT DECREE

Upon consideration of the United States' Unopposed Motion [doc.#105] for Entry of the Modification of the Consent Decree between the United States and the Rineco Chemical Industries, Inc. in the above-captioned case, there being no opposition thereto, and for good cause shown, the United States' Motion be and hereby is GRANTED and the Modification of the Consent Decree is entered. The Court has signed the Modification of the Consent Decree reflecting its approval of the proposed Modification of the Consent Decree.

SO ORDERED THIS 3rd DAY OF JANUARY 2012.

Susan Webber Wright
UNITED STATES DISTRICT JUDGE

FILED
U.S. DISTRICT COURT
EASTERN DISTRICT ARKANSAS

JAN 0 3 2012

JAMES W. McCORMACK, CLERK
By: _____ DEP CLERK

IN THE UNITED STATES DISTRICT COURT
FOR THE EASTERN DISTRICT OF ARKANSAS
WESTERN DIVISION

UNITED STATES OF AMERICA,	)	
	)	
Plaintiff,	)	
	)	Civil Action No. 4-07-CV
v.	)	01189SWW
	)	
	)	
RINECO CHEMICAL	)	
INDUSTRIES, INC.	)	
	)	
Defendant.	)	
	)	

MODIFICATION OF CONSENT DECREE

On August 16, 2010, this Court entered Consent Decree (Doc. 102) between the United States and the Rineco Chemical Industries, Inc. ("Rineco") in the above-captioned case. In accordance with Paragraph 76 of the Consent Decree, the parties may modify the terms of the Consent Decree by written agreement of the parties. Where the modification constitutes a material change to the Decree, the modification shall be effective only upon approval by the Court.

Based on the agreement of the parties, and for good cause shown, the following Modification to the Consent Decree is approved:

Part 1. Interim Operating Conditions

The following interim operating restrictions and monitoring requirements (Interim Operating Conditions), which are in addition to any other requirements or restrictions in the Consent Decree, shall apply to Rineco's operations authorized under the Consent Decree between October 15, 2011, through the date that: (1) Rineco's authorization under the Consent Decree is terminated or ceases, as provided for under the Consent Decree or herein, or (2) a final RCRA Permit is issued (in which case the permit will provide operating conditions), whichever is earlier.

1. No later than October 31, 2011, Rineco shall submit to ADEQ and EPA proposed interim limits (with supporting data and calculations) on the TMW waste stream for the following parameters: waste feed limit, ash content, total chlorine and all risk assessment metals: antimony, arsenic, barium, beryllium, cadmium, chromium, lead, mercury, silver and thallium. Upon EPA's approval of such limits, and continuing through the date that Rineco conducts the Trial Burn referenced in Milestone 2, below, Rineco shall conduct daily representative sampling of its waste stream to demonstrate compliance with these interim TMW waste stream limits.

2. No later than January 1, 2012, Rineco shall install CO, HC, and Oxygen CEMS in each TOU unit, and no later than January

9, 2012, Rineco shall complete the calibration of each of the CEMS. Upon completion of the CEMS installation and calibration, Rineco shall use the CEMS to continuously measure CO, HC and Oxygen at each TOU stack. Rineco shall use the CEMS measurements to demonstrate compliance with the following emissions limits for each TOU: 100 ppm CO (by volume) and 10 ppm HC (by volume reported as propane), over an hourly rolling average, dry basis, corrected to 7 percent oxygen.

3. Beginning November 1, 2011, and continuing through the date Rineco submits the Notice of Compliance referenced in Milestone 3, below (the "Notice of Compliance"), Rineco shall conduct monthly sampling and analysis of dioxin/furans on all of the following "exit/discharge" points: (i) Venturi scrubbers V1 through V6 effluent stream, (ii) contents of Tank T-401, (iii) recovery metals sent to recycler, (iv) sludge from the wet gas separator, and (v) char or ash from the TMW.

4. Beginning February 1, 2012, and continuing through the date Rineco submits the Notice of Compliance, Rineco shall conduct monthly stack sampling for dioxins/furans at each TOU stack using Method 0023A to demonstrate compliance with the following emissions limit: 0.40 ng TEQ/dscm standard corrected to 7 percent oxygen.

5. Beginning February 1, 2012, and continuing through the date Rineco submits the Notice of Compliance, Rineco shall

conduct monthly sampling for particulate matter (PM) as follows: Measurement for PM at each TOU stack will be conducted using Method 5/202 to demonstrate compliance with the following emissions limit: 0.013 gr/dscf standard corrected to 7 percent oxygen.

6. Beginning on the dates specified in the attached Table F-4 (and any subsequent approved revisions of these dates), and continuing through the date Rineco completes the Trial Burn, Rineco shall comply with the Operating Parameter Limits ("OPL") and Automatic Waste Feed Cutoff ("AWFCO") limits specified in the attached Table F-4 (and any subsequent approved revisions of these requirements). Rineco shall specify total waste feed rate, metal and total chlorine feed limits in a table in its NOD response referenced in Milestone 1, below.

7. Beginning January 9, 2012 and continuing thereafter, Rineco must institute Automatic Waste Feed Cut Offs to immediately cease waste feed in the event the CO, or HC emissions limits referenced in Paragraph 2 above are not met.

8. Beginning January 9, 2012 and continuing thereafter, Rineco shall measure stack gas flow rate on a continuous basis.

9. Once the Trial Burn is conducted, Rineco will comply with the OPLs and AWFCO limits established during the Trial Burn until Rineco submits the Notice of Compliance.

10. Once Rineco submits the Notice of Compliance, through the time that a final RCRA Permit is issued, Rineco shall comply with the OPLs, AWFCO requirements and emission limits proposed in the Notice of Compliance.

11. No later than October 31, 2011, Rineco shall permanently shut down any TOU unit for which it will not perform a Trial Burn within the timeline specified in Milestone 2, below.

12. Rineco shall maintain all electronic operating records, hard copies of field logs, and sampling and analytical results for the operations during the period between October 15, 2011 and the issuance of a final RCRA Permit.

13. Rineco shall submit to both ADEQ and EPA, all monitoring, sampling and analytical results specified in Paragraphs 1, 3, 4, or 5, above, within 45 days of the monitoring or sampling.

14. Rineco shall submit to both EPA and ADEQ, all monitoring and AWFCO exceedences of the requirements of Paragraphs 2, 6, or 7, above, no later than the tenth (10th) day of each month for the preceding month.

15. All analyses required herein shall be performed by a laboratory pre-approved by ADEQ to perform such analyses.

Part 2. Interim Authorization and Milestones

Rineco's authorization under the Consent Decree after October 14, 2011, is expressly conditioned on Rineco completing each of the following milestone deadlines to the satisfaction of ADEQ and EPA.

Milestone 1. Submission, Revision and Approval of Required Plan

Rineco has submitted the following plans, dated September 29, 2011, to ADEQ and EPA:

1. Revised Trial Burn Plan
2. Waste Analysis Plan incorporating requirements specified in 40 CFR § 270.62(b)
3. Quality Assurance Project Plan
4. CEMS (or CMS) Performance Evaluation Plan
5. Start-up, Shut-down and Malfunction Plan

ADEQ/EPA will review these plans and issue only one Notice of Deficiency (NOD) to Rineco. Rineco must provide an approvable response to ADEQ and EPA within 30 days of receipt of the NOD. In the event that Rineco fails to submit a timely and good-faith approvable NOD response, Rineco's authorization to operate the TMW shall terminate on the NOD response deadline (30 days from the date of receipt of the NOD).

Milestone 2. Trial Burn

By no later than January 27, 2012, Rineco must complete the

Trial Burn and collect all necessary data for the purpose of risk assessment.

Rineco must stop feeding hazardous waste to the TMW as soon it knows during or anytime after the trial burn that it has exceeded the MACT EEE emissions limits or operating parameter limits (OPLs), or any emission limits or OPLs specified in the Interim Operating Conditions, above.

In the event that Rineco fails to complete the Trial Burn or to collect the data as described above by January 27, 2012, Rineco's authorization to operate the TMW shall terminate on January 27, 2012.

Milestone 3. Notice of Compliance (NOC)

By no later than April 27, 2012, Rineco must deliver to ADEQ and EPA a Notice of Compliance and the test results including the field data, the analytical data and any other data or calculations supporting the emissions calculation and the OPLs proposed in the Notice of Compliance.

In the event that Rineco fails to deliver a complete and approvable Notice of Compliance and testing results as described above, Rineco's authorization to operate the TMW shall terminate on April 27, 2012.

Milestone 4. Risk Assessment report

By no later than April 27, 2012, Rineco must deliver to ADEQ and EPA a complete and approvable Risk Assessment report

consistent with the Human Health Risk Assessment Protocol for Hazardous Waste Combustion facilities, OSWER, EPA-R-05-006, (September 2005) and Paragraph 28 of the Consent Decree.

In the event that Rineco fails to deliver a timely Risk Assessment report as described above, Rineco's authorization to operate the TMW shall terminate on April 27, 2012.

Milestone 5. Approval of NOC and Issuance of Final RCRA Permit

ADEQ and EPA will review the NOC and issue only one Notice of Deficiency (NOD) to Rineco. Rineco must provide an approvable response to ADEQ and EPA within 30 days of receipt of the NOD. In the event that Rineco fails to submit a timely and a good-faith approvable NOD response, Rineco's authorization to operate the TMW shall terminate on the deadline for such performance (30 days from the date of the NOD).

By no later than October 14, 2012, Rineco must complete all remaining permitting requirements and have a final RCRA permit authorizing it to operate the TMW. In the event that ADEQ does not issue a final RCRA permit to Rineco as described above by October 14, 2012, any remaining authorization under this Consent Decree to operate the TMW shall cease and Rineco shall stop operating the TMW, except as that time is enlarged under Paragraphs 29, 45, 46, 47, or 76 of the Consent Decree.

Part 3. Stipulated Penalties

In addition to any other remedy provided herein or in the Consent Decree, Rineco shall be liable for, and shall pay, stipulated penalties to the United States for the violation of the compliance milestones contained herein. Such stipulated penalties shall be subject to the procedures and requirements provided in Part VII of the Consent Decree.

The following stipulated penalties shall accrue per violation per day for each violation described below:

1. Operation of the TMW after failing to meet any of the Milestones (Milestones 1-5) provided herein:

Penalty Per Violation Per Day	Period of Noncompliance
$10,000	1st through 14th day
$25,000	15th day and beyond

Approved and entered this 3rd day of January, 2012.

UNITED STATES DISTRICT COURT JUDGE

FOR THE UNITED STATES:

Dated: 12/14/11

RICHARD GLADSTEN
Senior Counsel
Environmental Enforcement Section
Environment and Natural Resources Division
United States Department of Justice
P.O. Box 7611
Washington, D.C. 20044-7611
(202) 514-1711

FOR THE ENVIRONMENTAL PROTECTION AGENCY:

Date: 12·2·11

JOHN BLEVINS,
Director
Compliance Assurance and
Enforcement Division
U.S. Environmental Protection
Agency, Region 6
1445 Ross Avenue, Suite 1200
Dallas, Texas 75202-2733

FOR DEFENDANT RINECO CHEMICAL INDUSTRIES, INC.

Date: November 16, 2011

LARRY WILLIAMS
Rineco Chemical Industries, Inc.
819 Vulcan Road
Benton, Arkansas 72015

Appendix D-VII

Table F-4
TMW Trial Burn Operating Regimen

Item	Unit	Parameter	AWFCO limit	Target Value	Completion Schedule
1	Fugitives Control Vent (24" Duct)	Pressure (in. w.c.)	0	- 0.5	10-24-2011
2	Feed Hopper / Conveyor Fugitive	Fugitive VOC Emissions (ppm)	0	0	11-11-2011
3	Cooling Screws #1, #2; Conveyor #1, #2; Shaker & Magnetic Separator	Fugitive VOC Emissions (ppm)	0	0	11-11-2011
4	Electric Heater (Electroscrew)	Exhaust Gas Max. Temperature (deg F) @ Active Venturi (V-3 or V-4)	1,500	1,100	10-15-2011
5	"	Exhaust Gas Min. Temperature (deg F) @ Active Venturi (V-3 or V-4)	400	400	10-15-2011
6	Venturi 1 thru 5 (V1 thru V5)	Min. Pressure Drop (Gas side) (in. w.c.)[1]	-12	0	10-24-2011
7	"	Min. Inlet Pressure (psi)	0	2	10-24-2011
8	"	Min. Blowdown Rate (total valve actuations/day)[2]	4	4	10-24-2011
9	"	Min. Liquid Level (in.)	-2	0	11-11-2011
10	Venturi 6 (V6)	Min. Pressure Drop (Gas side) (in. w.c.)[3]	-12	6	11-11-2011
11	"	Min. Inlet Pressure (psi)	0	2	11-11-2011
12	"	Min. Blowdown Rate (total valve actuations/day)[2]	0	0	10-24-2011
13	"	Min. Liquid Level (in.)	-2	0	11-11-2011
14	"	Max. Exhaust Gas Temperature (deg F)	130	130	10-15-2011
15	Wet Dust Collector	Min. Pressure Drop (in. w.c.)	0.5	0.5	11-11-2011
16	TOU-102	Min. Combustion Temperature (deg F)	1,500	1,500	10-15-2011
17	"	Max. CO Exhaust Gas (ppm)	100	100	01-09-2012
18	"	Max. HC Exhaust Gas (ppm)	10	10	01-09-2012
19	"	Maximum Stack Gas Velocity (fps)	39	33	01-09-2012
20	TOU-103	Min. Combustion Temperature (deg F)	1,500	1,500	10-15-2011
21	"	Max. CO Exhaust Gas (ppm)	100	100	01-09-2012
22	"	Max. HC Exhaust Gas (ppm)	10	10	01-09-2012
23	"	Maximum Stack Gas Velocity (fps)	39	33	01-09-2012

NOTES:

[1] Pressure drop (ΔP) is measured as pressure measured at cooling screws #1 or #2 [i.e., P SCREW_N or P SCREW_S, a or b) minus pressure measured at the inlet of V6 (i.e., P 12N_LINE).

[2] Valve actuations measured at valves XV Vx-PURGE (x = 1, 2, 3, 4, 5 and 6) (Re: Figure 029C).

[3] Pressure drop (ΔP) is measured as pressure at the inlet of V6 (i.e., P 12N_LINE) minus pressure at the inlet to the blowers [i.e., P 3IN_LINE).

UNITED STATES
ENVIRONMENTAL PROTECTION AGENCY
REGION 6
DALLAS, TEXAS

FILED
2012 OCT -4 AM 9:20
REGIONAL HEARING CLERK
EPA REGION VI

IN THE MATTER OF:	)	
US ECOLOGY TEXAS, INC., and TD*X ASSOCIATES LP	)	DOCKET NOS. RCRA-06-2012-0936 and RCRA-06-2012-0937
RESPONDENTS	)	

CONSENT AGREEMENT AND FINAL ORDER

The Director of the Compliance Assurance and Enforcement Division of the United States Environmental Protection Agency (EPA), Region 6 (Complainant) and US Ecology Texas, Inc. and TD*X Associates L.P. (Respondents) in the above-referenced proceeding, hereby agree to resolve this matter through the issuance of this Consent Agreement and Final Order (CAFO).

I. PRELIMINARY STATEMENT

1. This proceeding for the assessment of civil penalties and the issuance of a compliance order is brought by EPA pursuant to Section 3008 of the Resource Conservation and Recovery Act (RCRA), 42 U.S.C. § 6928, as amended by the Hazardous and Solid Waste Amendments of 1984 (HSWA), and is simultaneously commenced and concluded through the issuance of this Consent Agreement and Final Order (CAFO) pursuant to 40 C.F.R. §§ 22.13(b), 22.18(b)(2) and (3), and 22.37.

2. Notice of this action was given to the State of Texas prior to the issuance of this CAFO, as required by Section 3008(a)(2) of RCRA, 42 U.S.C. § 6928(a)(2).

3. For the purposes of this proceeding, the Respondents admit the jurisdictional allegations contained herein; however, the Respondents neither admit nor deny the specific factual allegations contained in this CAFO.

4. The Respondents explicitly waive any right to contest the allegations and their right to appeal the proposed Final Order set forth therein, and waive all defenses which have been raised or could have been raised to the claims set forth in the CAFO.

5. Compliance with all the terms and conditions of this CAFO shall resolve only those violations which are set forth herein.

6. The Respondents consent to the issuance of the CAFO hereinafter recited and consent to the issuance of the Compliance Order contained therein.

II. FINDINGS OF FACT AND CONCLUSIONS OF LAW

A. PRELIMINARY ALLEGATIONS

7. US Ecology Texas, Inc. (USET) is a corporation incorporated under the laws of the State of Delaware and authorized to do business in the State of Texas.

8. TD*X Associates LP (TD*X) is a limited partnership authorized to do business in the State of Texas.

9. "Person" is defined in 30 T.A.C. § 3.2(25) [40 C.F.R. §§ 260.10 and 270.2], and Section 1004(5) of RCRA, 42 U.S.C. § 6903(15) as "an individual, corporation, organization, government or government subdivision or agency, business trust, partnership, association, or any other legal entity."

10. The Respondent USET is a "person" as defined by 30 T.A.C. § 3.2 (25) [40 C.F.R. § 260.10], and Section 1004 (15) of RCRA, 42 U.S.C. § 6903(15).

11. The Respondent TD*X is a "person" as defined by 30 T.A.C. § 3.2 (25) [40 C.F.R. § 260.10], and Section 1004 (15) of RCRA, 42 U.S.C. § 6903 (15).

12. "Owner" is defined in 30 T.A.C. § 335.1(108) [40 C.F.R. § 260.10] as "the person who owns a facility or part of a facility."

13. "Operator" is defined in 30 T.A.C. § 335.1(107) [40 C.F.R. § 260.10] as "the person responsible for the overall operation of a facility".

14. "Owner or operator" is defined in 40 C.F.R. § 270.2 as "the owner or operator of any facility or activity subject to regulation under RCRA."

15. "Facility" is defined in 30 T.A.C. § 335.1(59) [40 C.F.R. § 260.10] as meaning "all contiguous land, and structures, other appurtenances, and improvements on the land, used for storing, processing, or disposing of municipal hazardous waste or industrial solid waste. A facility may consist of several treatment, storage, or disposal operational units (e.g., one or more landfills, surface impoundments, or combinations of them)."

16. The Respondent USET owns and operates a hazardous waste treatment, storage, and disposal (TSD) facility located at 3327 County Road 69, Robstown, TX 78380, EPA I.D. No. TXD069452340, Permit No. HW-50052-001.

17. The TSD identified in Paragraph 16 is a "facility" as that term is defined in 30 T.A.C. § 335.1(59) [40 C.F.R. § 260.10].

18. The Respondent USET is the "owner" and/or "operator" of the facility identified in Paragraph 16, as those terms are defined in 30 TAC § 335.1(107) & (108) [40 C.F.R. § 260.10] and 40 C.F.R. § 270.2.

19. An oil reclamation unit is located at the facility identified in Paragraph 16.

20. The Respondent TD*X owns and operates a thermal desorption unit (TDU), as well as the feed preparation system that includes a shaker tank (T-30), three mix tanks (T-31, T-32, and T-33), a centrifuge, and a surge tank (T-34) at the oil reclamation unit.

21. The Respondent TD*X began operating the TDU and related equipment on or about June 15, 2008.

22. On or about June 8 – 11, 2010, June 14 – 17, 2010, and August 9 – 11, 2010, the Respondent USET's TSD facility and the oil reclamation unit were inspected by representatives of EPA pursuant to Section 3007 of RCRA, 42 U.S.C. § 6927.

B. VIOLATIONS

Count One – Processing Hazardous Waste Without a Permit or Interim Status

23. Pursuant to Sections 3005(a) and (e) of RCRA, 42 U.S.C. §§ 6925(a) and (e), and 30 T.A.C. § 335.43(a) [40 C.F.R. § 270.1(b)], a RCRA permit or interim status is required for the processing (treatment),[1] storage, or disposal of hazardous waste.

24. "Hazardous waste" is defined in 30 T.A.C. § 335.1(69) [40 C.F.R. § 261.3] as "any solid waste identified or listed as a hazardous waste by the administrator of the United States Environmental Protection Agency in accordance with the federal Solid Waste Disposal Act, as amended by the Resource Conservation and Recovery Act, 42 United States Code, §§ 6901 *et seq.*"

25. "Recyclable materials" is defined in 30 T.A.C. §335.24(a) [40 C.F.R. § 261.6(a)(1)] as "hazardous wastes that are recycled".

---

[1] The Texas Administrative Code uses the term "processing" instead of "treatment". The term "processing" as used by Texas is essentially equivalent to the term "treatment" as used in the federal statute and regulations.

26. The Respondent USET receives "hazardous waste" from off-site generators, as that term is defined by 30 T.A.C. § 335.1(69) [40 C.F.R. § 261.3].

27. The Respondent USET receives "recyclable materials" from off-site generators, as that term is defined by 30 T.A.C. § 335.24(a) [40 C.F.R. § 261.6(a)(1)].

28. Recyclable materials destined for oil reclamation are transferred to the Respondent TD*X by the Respondent USET.

29. Processing (treatment) is defined in 30 T.A.C. § 335.1(122) [40 C.F.R. § 260.10] as follows:

> The extraction of materials, transfer, volume reduction, conversion to energy, or other separation and preparation of solid waste for reuse or disposal, including the treatment or neutralization of solid waste or hazardous waste, designed to change the physical, chemical, or biological character or composition of any solid waste or hazardous waste so as to neutralize such waste, or so as to recover energy or material from the waste or so as to render such waste nonhazardous, or less hazardous; safer to transport, store or dispose of; or amenable for recovery, amenable for storage, or reduced in volume. The transfer of solid waste for reuse or disposal as used in this definition does not include the actions of a transporter in conveying or transporting solid waste by truck, ship, pipeline, or other means. Unless the executive director determines that regulation of such activity is necessary to protect human health or the environment, the definition of processing does not include activities relating to those materials exempted by the administrator of the United States Environmental Protection Agency in accordance with the federal Solid Waste Disposal Act, as amended by the Resource Conservation and Recovery Act, 42 United States Code, §§6901 *et seq.*, as amended.

30. On various dates after June 15, 2008, certain recyclable materials were processed in the tanks identified in Paragraph 20.

31. The recyclable materials identified in Paragraph 30 did not meet the exemption in 30 T.A.C. § 335.24(c)(4)(C) [40 C.F.R. § 261.6(a)(3)(iv)(C) because the hazardous wastes were not "oil-bearing hazardous wastes from petroleum refining, production, and transportation practices."

32. The Respondent TD*X processed (treated) hazardous waste as that term is defined in 30 T.A.C. § 335.1(122) [40 C.F.R. § 260.10] in the tanks identified in Paragraph 20.

33. To date, neither the Respondent USED nor Respondent TD*X has applied for nor received a RCRA permit or interim status to allow the processing (treatment) of hazardous waste in the tanks identified in Paragraph 20.

34. Therefore, the Respondent USET and the Respondent TD*X have violated Sections 3005(a) and (e) of RCRA, 42 U.S.C. §§ 6925(a) and (e), and 30 T.A.C. § 335.43(a) [40 C.F.R. § 270.1(b)] by processing (treating) hazardous waste without a RCRA permit or interim status.

Count Two – Processing Hazardous Waste Without a Permit or Interim Status

35. Pursuant to Sections 3005(a) and (e) of RCRA, 42 U.S.C. §§ 6925(a) and (e), and 30 T.A.C. § 335.43(a) [40 C.F.R. § 270.1(b)], a RCRA permit or interim status is required for the processing (treatment), storage, or disposal of hazardous waste.

36. "Hazardous waste" is defined in 30 T.A.C. § 335.1(69) [40 C.F.R. § 261.3] as "any solid waste identified or listed as a hazardous waste by the administrator of the United States Environmental Protection Agency in accordance with the federal Solid Waste Disposal Act, as amended by the Resource Conservation and Recovery Act, 42 United States Code, §§ 6901 *et seq.*"

37. "Recyclable materials" is defined in 30 T.A.C. §335.24(a) [40 C.F.R. § 261.6(a)(1)] as "hazardous wastes that are recycled".

38. The Respondent USET receives "hazardous waste" from off-site generators, as that term is defined by 30 T.A.C. § 335.1(69) [40 C.F.R. § 261.3].

39. The Respondent USET receives "recyclable materials" from off-site generators, as that term is defined by 30 T.A.C. § 335.24(a) [40 C.F.R. § 261.6(a)(1)].

40. Recyclable materials destined for oil reclamation are transferred to the Respondent TD*X by the Respondent USET.

41. On various dates after June 15, 2008, certain recyclable materials were fed into the TDU that did not meet the exemption in 30 T.A.C. § 335.24(c)(4)(C) [40 C.F.R. § 261.6(a)(3)(iv)(C) because the hazardous wastes were not "oil-bearing hazardous wastes from petroleum refining, production, and transportation practices."

42. Processing (treatment) is defined in 30 T.A.C. § 335.1(122) [40 C.F.R. § 260.10] as follows:

> The extraction of materials, transfer, volume reduction, conversion to energy, or other separation and preparation of solid waste for reuse or disposal, including the treatment or neutralization of solid waste or hazardous waste, designed to change the physical, chemical, or biological character or composition of any solid waste or hazardous waste so as to neutralize such waste, or so as to recover energy or material from the waste or so as to render such waste nonhazardous, or less hazardous; safer to transport, store or dispose of; or amenable for recovery, amenable for storage, or reduced in volume. The transfer of solid waste for reuse or disposal as used in this definition does not include the actions of a transporter in conveying or transporting solid waste by truck, ship, pipeline, or other means. Unless the executive director determines that regulation of such activity is necessary to protect human health or the environment, the definition of processing does not include activities relating to those materials exempted by the administrator of the United States Environmental Protection Agency in accordance with the federal Solid Waste Disposal Act, as amended by the Resource Conservation and Recovery Act, 42 United States Code, §§6901 *et seq.*, as amended.

43. Thermal processing (thermal treatment) is defined in 30 T.A.C. § 335.1(149) [40 C.F.R. § 260.10] as follows:

> the processing of solid waste or hazardous waste in a device which uses elevated temperatures as the primary means to change the chemical, physical, or biological character or composition of the solid waste or hazardous waste. Examples of thermal processing are incineration, molten salt, pyrolysis, calcination, wet air

oxidation, and microwave discharge. (See also "incinerator" and "open burning.").

44. The TDU uses heat from an indirect heated rotary dryer to separate the organic constituents from the hazardous waste feed material. A nitrogen carrier gas is used to transfer the vapor phase organic constituents to a gas treatment system. The oil is recovered by condensing vapor phase organic constituents in the gas treatment system. A portion of the TDU's recirculating nitrogen carrier gas, along with non-condensable gases, is vented, filtered, and then injected into the combustion chamber of the TDU, where it is burned.

45. The separation of the organic constituents from the hazardous waste in the TDU's indirectly heated rotary dryer constitutes thermal processing (thermal treatment) as that term is defined in 30 T.A.C. § 335.1(149) [40 C.F.R. § 260.10].

46. To date, neither the Respondent USET nor Respondent TD*X has applied for nor received a RCRA permit or interim status to allow the thermal processing (thermal treatment) of hazardous waste in the TDU.

47. Therefore, the Respondent USET and the Respondent TD*X have violated Sections 3005(a) and (e) of RCRA, 42 U.S.C. §§ 6925(a) and (e), and 30 T.A.C. § 335.43(a) [40 C.F.R. § 270.1(b)] by thermally processing (thermally treating) hazardous waste without a RCRA permit or interim status.

Count Three - Processing Hazardous Waste Without a Permit or Interim Status

48. Pursuant to Sections 3005(a) and (e) of RCRA, 42 U.S.C. §§ 6925(a) and (e), and 30 T.A.C. § 335.43(a) [40 C.F.R. § 270.1(b)], a RCRA permit or interim status is required for the processing (treatment), storage, or disposal of hazardous waste.

49. "Hazardous waste" is defined in 30 T.A.C. § 335.1(69) [40 C.F.R. § 261.3] as "any solid waste identified or listed as a hazardous waste by the administrator of the United States

Environmental Protection Agency in accordance with the federal Solid Waste Disposal Act, as amended by the Resource Conservation and Recovery Act, 42 United States Code, §§ 6901 *et seq.*"

50. The Respondent USET receives "hazardous waste" from off-site generators, as that term is defined by 30 T.A.C. § 335.1(69) [40 C.F.R. § 261.3].

51. Hazardous wastes destined for oil reclamation are transferred to the Respondent TD*X by the Respondent USET.

52. On various dates after June 15, 2008, hazardous wastes were fed into the TDU.

53. The TDU uses heat from an indirect heated rotary dryer to separate the organic constituents from the hazardous waste feed material. A nitrogen carrier gas is used to transfer the vapor phase organic constituents to a gas treatment system. The oil is recovered by condensing vapor phase organic constituents in the gas treatment system. A portion of the TDU's recirculating nitrogen carrier gas, along with non-condensable gases, is vented, filtered, and then injected into the combustion chamber of the TDU, where it is burned.

54. Processing (treatment) is defined in 30 T.A.C. § 335.1(122) [40 C.F.R. § 260.10] as follows:

> The extraction of materials, transfer, volume reduction, conversion to energy, or other separation and preparation of solid waste for reuse or disposal, including the treatment or neutralization of solid waste or hazardous waste, designed to change the physical, chemical, or biological character or composition of any solid waste or hazardous waste so as to neutralize such waste, or so as to recover energy or material from the waste or so as to render such waste nonhazardous, or less hazardous; safer to transport, store or dispose of; or amenable for recovery, amenable for storage, or reduced in volume. The transfer of solid waste for reuse or disposal as used in this definition does not include the actions of a transporter in conveying or transporting solid waste by truck, ship, pipeline, or other means. Unless the executive director determines that regulation of such activity is necessary to protect human health or the environment, the definition of processing does not include activities relating to those materials exempted by the administrator of the United States Environmental Protection Agency in

> accordance with the federal Solid Waste Disposal Act, as amended by the Resource Conservation and Recovery Act, 42 United States Code, §§6901 *et seq.*, as amended.

55. Thermal processing (thermal treatment) is defined in 30 T.A.C. § 335.1(149) [40 C.F.R. § 260.10] as follows:

> the processing of solid waste or hazardous waste in a device which uses elevated temperatures as the primary means to change the chemical, physical, or biological character or composition of the solid waste or hazardous waste. Examples of thermal processing are incineration, molten salt, pyrolysis, calcination, wet air oxidation, and microwave discharge. (See also "incinerator" and "open burning.")

56. The burning of gases in the TDU's combustion chamber constitutes thermal processing (thermal treatment) as that term is defined in 30 T.A.C. § 335.1(149) [40 C.F.R. § 260.10].

57. The combustion chamber of the TDU is an enclosed device that uses controlled flame combustion.

58. The combustion chamber of the TDU does not meet the criteria for classification as a boiler, sludge dryer, or carbon regeneration unit, nor is listed as an industrial furnace; nor meets the definition of infrared incinerator or plasma arc incinerator."

59. To date, neither the Respondent USET nor Respondent TD*X has applied for nor received a RCRA permit or interim status to allow the thermal processing (thermal treatment) of hazardous waste in the combustion chamber of the TDU.

60. Therefore, the Respondent USET and the Respondent TD*X have violated and continue to violate Sections 3005(a) and (e) of RCRA, 42 U.S.C. §§ 6925(a) and (e) and 30 T.A.C. § 335.43(a) [40 C.F.R. § 270.1(b)] by thermally processing (thermally treating) hazardous waste without a RCRA permit or interim status.

Count Four – Storing Hazardous Waste Without a Permit Or Interim Status

61. Pursuant to Sections 3005(a) and (e) of RCRA, 42 U.S.C. §§ 6925(a) and (e), and 30 T.A.C. § 335.43(a) [40 C.F.R. § 270.1(b)], a RCRA permit or interim status is required for the processing (treatment), storage, or disposal of hazardous waste.

62. "Storage" is defined in 30 T.A.C. § 335.1(143) [40 C.F.R. § 260.10] as "the holding of solid waste for a temporary period, at the end of which the waste is processed, disposed of, recycled, or stored elsewhere."

63. Between on or about March 9, 2010, and June 11, 2010, the Respondent USET stored roll-off boxes in the area called the "Y" at the facility.

64. The roll-off boxes identified in Paragraph 63 contained material which had entered the oil reclamation process and was being temporarily staged before undergoing subsequent stages of the reclamation process. The Respondent USET discontinued the use of the area called the "Y" for this purpose.

65. "Hazardous waste" is defined in 30 T.A.C. § 335.1(69) [40 C.F.R. § 261.3] as "any solid waste identified or listed as a hazardous waste by the administrator of the United States Environmental Protection Agency in accordance with the federal Solid Waste Disposal Act, as amended by the Resource Conservation and Recovery Act, 42 United States Code, §§ 6901 *et seq.*"

66. The roll-off boxes identified in Paragraph 63 contained "hazardous waste" as that term is defined in T.A.C. § 335.1(69) [40 C.F.R. § 261.3].

67. The Respondent USET had not applied for nor received a RCRA permit or interim status to allow the storage of hazardous waste at the area called the "Y".

68. Therefore, the Respondent USET has violated Sections 3005(a) and (e) of RCRA, 42 U.S.C. §§ 6925(a) and (e), and 30 T.A.C. § 335.43(a) [40 C.F.R. § 270.1(b)] by storing hazardous waste without a RCRA permit or interim status.

III. COMPLIANCE ORDER

69. Pursuant to Section 3008(a) of RCRA, 42 U.S.C. § 6928(a), the Respondents are hereby **ORDERED** to take the following actions and provide evidence of compliance within the time period specified below:

A. Interim Operating Requirements

1. As of the effective date of this CAFO, feedstock for the oil reclamation unit shall consist only of non-hazardous waste, and oil-bearing hazardous waste from petroleum refining, production, and transportation practices. Oil-bearing hazardous waste from petroleum refining, production, or transportation practices includes the following listed hazardous waste from specific Petroleum Refining Sources (K049, K050, K051, K052, K169, and K170). Also acceptable is oil-bearing hazardous waste from processes which meet the definition of the following Standard Industrial Classification (SIC) codes and corresponding North American Industry Classification System (NAICS) codes (i.e., petroleum refining, production, and transportation practices) as follows:

SIC Code	SIC Description	NAICS Code	NAICS Title
1311	Crude Petroleum & Natural Gas	211111	Crude Petroleum and Natural Gas Extraction
1321	Natural Gas Liquids	211112	Natural Gas Liquid Extraction
1381	Drilling Oil & Gas Wells	213111	Drilling Oil and Gas Wells
1382	Oil & Gas Field Exploration Services (except geophysical mapping & surveying)	213112	Support Activities for Oil & Gas Operations
1389	Oil and Gas Field Services, NEC (except construction of field gathering lines, site	213112	Support Activities for Oil and Gas Operations

	preparation and related construction activities performed on a contract or fee basis)		
2911	Petroleum Refining	324110	Petroleum Refineries
4612	Crude Petroleum Pipelines	486110	Pipeline Transportation of Crude Oil
4613	Refined Petroleum Pipelines	486910	Pipeline Transportation of Refined Petroleum Products
4789	Transportation Services, NEC (pipeline terminals and stockyards for transportation)	488999	All Other Support Activities for Transportation
4922	Natural Gas Transmission	486210	Pipeline Transportation of Natural Gas
4923	Natural Gas Transmission and Distribution (distribution)	221210	Natural Gas Distribution
4923	Natural Gas Transmission and Distribution (transmission)	486210	Pipeline Transportation of Natural Gas
5171	Petroleum Bulk Stations and Terminals (except petroleum sold via retail method)	488999	All Other Support Activities for Transportation
5172	Petroleum and Petroleum Products Wholesalers, Except Bulk Stations and Terminals (merchant wholesalers)	424720	Petroleum and Petroleum Products Merchant Wholesalers (except Bulk Stations and Terminals)

2. Using feedstock from processes meeting the definition of the aforementioned SIC/NAICS Codes does not constitute compliance with 40 C.F.R. § 261.6(a)(3)(iv)(C) or this CAFO. The Respondents are required to make a separate determination whether the hazardous waste in question is "oil-bearing," and that the hazardous waste was originally generated from petroleum refining, production, or transportation practices.

3. As of the effective date of this CAFO, when the dryer feed is on, the Respondents shall operate the TDU in accordance with the interim operating parameters set forth in Appendix 1, Table A, which is attached and incorporated by reference into this CAFO. The Blending Protocols referenced in Appendix 1 is attached as Appendix 2, and incorporated by reference into this CAFO.

4. As of the effective date of this CAFO, Respondents shall comply with the Start-Up, Shutdown, and Malfunction Plan (SSM Plan) (CDT Plan, Appendix E). The Compliance Demonstration Test (CDT) Plan is attached as Appendix 3 and incorporated by reference into the CAFO.

5. Within sixty (60) days of the effective date of this CAFO, the Respondents shall conduct a tune-up of the external combustion chamber of the TDU in accordance with the following requirements:

a. As applicable, inspect the burner and clean or replace any components of the burner as necessary. The burner inspection may be delayed until the next scheduled or unscheduled unit shutdown.

b. Inspect the flame pattern, as applicable, and adjust the burner as necessary to optimize the flame pattern. The adjustment should be consistent with the manufacturer's specification.

c. Inspect the system controlling the air-to-fuel ratio, as applicable, and ensure that it is correctly calibrated and functioning properly.

d. Optimize total emissions of carbon monoxide (CO). This optimization should be consistent with the manufacturer's specifications, if available.

e. Measure the concentrations in the effluent stream of CO in parts per million, by volume, and oxygen in volume percent, before and after the adjustments are made. Measurements may be either on a dry or wet basis, as long as it is the same basis before and after the adjustments are made.

f. Perform sampling and analysis of both dryer furnace stacks using Method TO-15, "Determination of Volatile Organic Compounds (VOCs) In Air Collected In Specially-Prepared Canisters And Analyzed By Gas Chromatography/Mass Spectrometry (GC/MS)". If the total

organic matter result is greater than 10 ppmV for either stack, the analysis shall include speciation of the gas. This information shall be included in the report required in Paragraph 69.A.5.g below.

g. Maintain on-site a report documenting the concentrations of CO in the effluent stream in parts per million by volume, and oxygen in volume present, measured before and after the adjustments of the external combustion chamber of the TDU, and a description of any corrective actions taken as part of the combustion adjustment.

h. Subsequent tune-ups shall be conducted annually until the TDU is reconfigured.

6. Within sixty (60) days of the effective date of this CAFO, the Respondents shall conduct a fuel specification analysis of the purge vent gas for mercury and document that it does not exceed the maximum concentration of 40 micrograms/cubic meter of mercury using test methods ASTM D5954, ASTM D6350, ISO 6978-1:2003(E), or ISO 6978-2:2003(E), or an alternate test method approved by EPA. If the concentration of mercury exceeds 40 micrograms/cubic meter, the Respondents shall immediately notify EPA.

7. Within ninety (90) days of the effective date of this CAFO, the Respondents shall install, monitor, and operate an automatic hazardous waste feed cutoff (AWFCO) at the TDU in accordance with 40 C.F.R. § 63.1206(c)(3)(ii) and (iv) that immediately and automatically cuts off the hazardous waste feed when any component of the AWFCO system fails, or when one or more of the interim operating parameters set forth in Appendix 1, Table A that are designated as AWFCO parameters are not met. The Respondents shall also comply with the investigation, recordkeeping, testing, and reporting requirements of 40 C.F.R. § 63.1206(c)(3)(v), (vi) and (vii).

8. Within one year of the effective date of this CAFO, the Respondents shall reconfigure the TDU so that the non-condensable vent gases are routed to a thermal oxidizing unit (TOU)

instead of the combustion chamber of the TDU (Reconfigured TDU). After reconfiguration, fuel for the TDU is limited to natural gas and propane.

9. The Respondents shall operate the Reconfigured TDU during the shakedown period in accordance with the operating parameters limits set forth in Appendix 1, Table B when the dryer feed is on. The Respondent shall not operate the Reconfigured TDU more than 720 hours (including the shakedown period and the Compliance Demonstration Test). The Respondents shall keep records of the hours of operation during the shakedown period. The Respondents shall operate a continuous emissions monitor system (CEMS) for carbon monoxide (CO) for the TOU during the shakedown period. The Respondents shall operate the Reconfigured TOU in a manner that the hourly rolling averages for CO are not exceeded. The rolling averages shall be calculated in accordance with 40 C.F.R. §§ 63.1209(a)(6) and 63.1209(b)(5).

10. During the shakedown period, the Respondents shall monitor and operate an automatic hazardous waste feed cutoff (AWFCO) at the Reconfigured TDU in accordance with 40 C.F.R. § 63.1206(c)(ii) and (iv) that immediately and automatically cuts off the hazardous waste feed when any component of the AWFCO system fails, or when one or more of the operating parameter limits set forth in Appendix 1, Table B that are designated as AWFCO parameters are not met. The Respondents shall also comply with the investigation, recordkeeping, testing, and reporting requirements of 40 C.F.R. § 63.1206(c)(3) (v), (vi) and (vii).

11. The Respondents shall conduct a test measuring the concentration of CO in the exhaust gases from the TOU. This test shall include three one-hour runs during which the TDU is operated on oil-bearing hazardous waste. The emissions from the TOU stack shall be monitored for carbon monoxide and oxygen using EPA Method 10. The emissions shall be

demonstrated to be less than 100 ppmV CO corrected to 7% O_2 in each run. The test frequency shall be once during each six-month period, January 1 – June 30 and July 1 - December 31, said time period to commence after conducting the CDT and continuing until the TCEQ issues a RCRA Subpart X permit for the Reconfigured TDU. Within forty-five (45) days after conducting the test, the Respondents shall submit a test report to EPA summarizing the test results. The time periods for conducting the test may be changed to once during each twelve (12) month calendar period, January 1 - December 31, if the Respondents submit to EPA, with a copy to TCEQ, a detailed feed stream analysis plan that characterizes the waste received by the facility, and EPA approves the plan. The detailed feedstream analysis plan shall be prepared in accordance with 40 C.F.R. § 264.13 and the EPA Guidance Document "Waste Analysis At Facilities That Generate, Treat, Store, And Dispose of Hazardous Waste", OSWER 9938.4-03 (April 1994). The Respondents will implement the detailed feedstream analysis plan, as approved or modified by EPA, immediately upon receipt of EPA's approval.

12. The Respondents shall prepare a report for the time period beginning on the effective date of this CAFO and ending June 30, 2013, and every six (6) months thereafter. The report shall be submitted to EPA, with a copy to TCEQ, within thirty (30) days of the end of the reporting period. The report shall include the following:

a. For each waste stream accepted by the oil reclamation unit, identify the customer, original generator, waste stream description, RCRA waste codes, the SIC or NAICS code of the process generating the waste, a summary of any analyses conducted by the Respondents to verify the waste stream profiles, and the total volume of waste accepted during the reporting period. If requested by EPA, the Respondents shall provide copies of relevant waste approval documents and manifests for the specific waste streams.

b. All time periods in which there were exceedances of the operating parameters and the AWFCO requirements set forth in Appendix 1, Tables A and B, and exceedances of the hourly rolling averages for CO (Paragraph 69.A.9).

c. All exceedances of the Reconfigured TDU Compliance Standards and the AWFCO requirements established in accordance with Paragraph 69.C.9.

d. The initial Report shall include documentation showing that the tune-up and fuel specification analysis required by Paragraphs 69.A.5 and 69.A.6 have been conducted, and provide documentation showing the date of installation and subsequent operation of the AWFCO system required by Paragraphs 69.A.7.

e. Documentation showing the installation of the TOU required by Paragraph 69.A.8, and the additional AWFCO requirements required by Appendix 1, Table B (Paragraph 69.A.10).

The Report may be submitted in an electronic format (i.e., compact disk). The Respondents may claim the report as confidential business information (CBI), in accordance with the requirements of 40 C.F.R. Part 2. However, information that is emissions data or a standard or limitation cannot be claimed as CBI. 40 C.F.R. § 2.301(e). If the Report contains any information that is claimed CBI, the Respondents shall provide a redacted version with all CBI deleted.

B. RCRA Permit Modification

1. Within one year of the effective date of this CAFO, the Respondents shall submit to TCEQ, with a copy to EPA, an application for a Class 3 RCRA Permit Modification to permit the Reconfigured TDU as a miscellaneous unit under 40 C.F.R. Part 264, Subpart X in accordance with 30 T.A.C. § 335.152(a)(16) [40 C.F.R. Part 264, Subpart X], 30 T.A.C. Chapter 305 [40 C.F.R. §§ 270.10 – 270.14, 270.19, 270.23, and 270.30 – 270.33].

2. The permit application shall also include relevant requirements of 40 C.F.R. Part 264, Subparts I through O and AA through CC, 40 C.F.R. Part 270, and 40 C.F.R. Part 63, Subpart EEE that are appropriate for the operation of the Reconfigured TDU, including an engineering report, waste analysis, monitoring and inspection requirements, and closure requirements set forth in 30 T.A.C. § 335.152(a)(13) [40 C.F.R. §§ 264.341, 264.347, and 264.351].

3. The Respondents shall also request that the issued RCRA permit modification include the following:

a. The feedstock limitations applicable to the operation of the oil reclamation unit under 40 C.F.R. § 261.6(a)(3)(iv)(C) set forth in Paragraph 69.D;

b. The investigation, recordkeeping, testing, and reporting requirements of 40 C.F.R. § 63.1206(c)(3) (v), (vi) and (vii);

c. Appropriate recordkeeping and reporting requirements; and

d. Any applicable risk-based terms and conditions necessary to protect human health and the environment.

4. The failure to timely submit a Class 3 Permit Modification to TCEQ and EPA within the deadline set forth in Paragraph 69.B.1 shall result in the termination of the Respondents' authorization to operate the Reconfigured TDU on that date unless that deadline has been extended pursuant to Section IV.F (Force Majeure).

5. By no later than three and one-half years (42 months) from the effective date of this CAFO, the Respondents must complete all permitting requirements and obtain issuance from the TCEQ of a final RCRA Subpart X permit for the TDU as a Subpart X – Miscellaneous Unit in accordance with 30 T.A.C. § 335.152(a)(16) [40 C.F.R. Part 264, Subpart X], 30 T.A.C. Chapter 305 [40 C.F.R. §§ 270.10 – 270.14, 270.19, 270.23, and 270.30 – 270.33], and which

incorporates the appropriate requirements of 40 C.F.R. Part 264, Subparts I through O and AA through CC, 40 C.F.R. Part 270, and 40 C.F.R Part 63, Subpart EEE. In the event that TCEQ does not issue a RCRA Subpart X permit for the Reconfigured TDU as described above by the above deadline, the Respondents' authorization to operate the Reconfigured TDU terminates on that date, unless that deadline has been extended pursuant to Section IV.F (Force Majeure).

C. Compliance Demonstration Test

1. The Respondents shall perform a compliance demonstration test (CDT) in accordance with the approved CDT Plan, which is attached as Appendix C and incorporated by reference into the CAFO. The CDT requires the Respondents to demonstrate compliance with the emissions limits of 40 C.F.R. § 63.1219(b) set forth in Paragraph C.5, the destruction and removal efficiency standard of 40 C.F.R. § 63.1219(c)(1) set forth in Paragraph C.4, and establish limits for the operating parameters set forth in Paragraph 69.C.6 (Appendix 1, Table C).

2. Within sixty (60) days of the effective date of this CAFO, the Respondents shall submit to EPA for approval, with a copy to TCEQ, a Quality Assurance Project Plan (QAPP) for the CDT. The QAPP shall be prepared in accordance with the EPA Region 6 Guidance "Quick Reference Guide, Test Burn Program Planning for Hazardous Waste Combustion (HWC) Units" dated August 6, 2012. The Respondents shall implement the QAPP as approved or modified by EPA.

3. The Respondents shall implement the CDT in accordance with Appendix 3 within ninety (90) days after reconfiguration of the TDU pursuant to Paragraph 69.A.8 of this CAFO.

4. During the CDT, the Respondents must achieve a destruction and removal efficiency (DRE) of 99.99% for toluene, the designated principle organic hazardous constituent (POHC). The DRE shall be calculated in accordance with 40 C.F.R. § 63.1219(c)(1).

5. The emission limits that must be met during the CDT are set forth in 40 C.F.R. § 63.1219(b).

6. The operating parameters limits that will be established during the CDT are set forth in Appendix 1, Table C.

7. The Respondents must not exceed the emission limits set forth in 40 C.F.R. § 63.1219(b), and must achieve a DRE of 99.99% for toluene [as set forth in 40 C.F.R. § 63.1219(c)] for all three runs in order to have a successful CDT. If the Respondents determine, based on the results of analyses of stack samples, that they have exceeded any emission standard or failed to meet the DRE requirement during any of the three runs, they must immediately cease processing hazardous waste in the Reconfigured TDU. The Respondents must make this determination within forty-five (45) days following completion of the CDT. The Respondents may not resume operation of the Reconfigured TDU until the Respondents have submitted and received EPA approval of a revised CDT plan, at which time operations can resume to demonstrate compliance with the emission limits and DRE requirements during all of the three runs.

8. All analyses required by the CDT plan shall be performed by a NELAC accredited laboratory or by a laboratory pre-approved by TCEQ.

9. Within ninety (90) days from completion of the CDT, the Respondents shall submit a CDT Report to EPA and TCEQ prepared in accordance with requirements in the CDT Plan, documenting compliance with the DRE standard and emission limits set forth in Paragraphs 69.C.4 and 69.C.5, and identifying operating parameter limits and AWFCO settings for the parameters set forth in Appendix 1, Table C. The DRE standard, emission limits, operating parameter limits, and the AWFCO settings shall also be set forth in a separate Appendix entitled

"Reconfigured TDU Compliance Standards". All data collected during the CDT (including, but not limited to, field logs, chain-of-custody documentation, monitoring data, sampling and analytical results, and any other data or calculations supporting the emissions calculations or operating parameter limits) must be submitted to EPA and TCEQ as part of the CDT Report. However, information in the CDT Report that is emissions data or a standard or limitation cannot be claimed as CBI. 40 C.F.R. § 2.301(e). If the Report contains any information that is claimed CBI, the Respondents shall provide a redacted version with all CBI deleted.

10. As of the date of the submission of the CDT Report, the Respondent shall comply with all operating requirements set forth in the "Reconfigured TDU Compliance Standards", unless otherwise notified by EPA.

11. EPA will review the CDT Report. EPA will make a finding concerning compliance with the emissions standards, DRE requirements, and other requirements of the CDT. If EPA determines that the Respondents have met all the requirements, it shall issue a Finding of Compliance to the Respondents. If EPA determines that the Respondents did not meet all of the requirements, it shall issue a Finding of Non-Compliance. Subject to Paragraph 69.C.7 of this CAFO, the issuance of a Finding of Non-Compliance by EPA shall result in the termination of the Respondents' authorization to operate the Reconfigured TDU on that date.

12. The failure to timely submit a CDT Report to EPA and TCEQ within ninety (90) days from completion of the CDT shall result in the termination of the Respondents' authorization to operate the Reconfigured TDU on that date, unless that deadline has been extended pursuant to Section IV.F (Force Majeure).

D. Compliance with 40 C.F.R. § 261.6(a)(3)(iv)(C)

1. Unless the TDU and the tanks identified in Paragraph 20 are authorized by the RCRA Permit Modification required by Section III.B of this CAFO (or any subsequent permit amendment) to receive wastes that do not meet the requirements set forth in 40 C.F.R. § 261.6(a)(3)(iv)(C), feedstock for the oil reclamation unit shall consist only of non-hazardous waste, and oil-bearing hazardous waste from petroleum refining, production, and transportation practices. Oil-bearing hazardous waste from petroleum refining, production, or transportation practices includes the following listed hazardous waste from specific Petroleum Refining Sources (K049, K050, K051, K052, K169, and K170). Also acceptable is oil-bearing hazardous waste from processes which meet the definition of the following Standard Industrial Classification (SIC) codes and corresponding North American Industry Classification System (NAICS) codes (i.e., petroleum refining, production, and transportation practices) as follows:

SIC Code	SIC Description	NAICS Code	NAICS Title
1311	Crude Petroleum & Natural Gas	211111	Crude Petroleum and Natural Gas Extraction
1321	Natural Gas Liquids	211112	Natural Gas Liquid Extraction
1381	Drilling Oil & Gas Wells	213111	Drilling Oil and Gas Wells
1382	Oil & Gas Field Exploration Services (except geophysical mapping & surveying)	213112	Support Activities for Oil & Gas Operations
1389	Oil and Gas Field Services, NEC (except construction of field gathering lines, site preparation and related construction activities performed on a contract or fee basis)	213112	Support Activities for Oil and Gas Operations
2911	Petroleum Refining	324110	Petroleum Refineries
4612	Crude Petroleum Pipelines	486110	Pipeline Transportation of Crude Oil
4613	Refined Petroleum Pipelines	486910	Pipeline Transportation of Refined Petroleum Products

4789	Transportation Services, NEC (pipeline terminals and stockyards for transportation)	488999	All Other Support Activities for Transportation
4922	Natural Gas Transmission	486210	Pipeline Transportation of Natural Gas
4923	Natural Gas Transmission and Distribution (distribution)	221210	Natural Gas Distribution
4923	Natural Gas Transmission and Distribution (transmission)	486210	Pipeline Transportation of Natural Gas
5171	Petroleum Bulk Stations and Terminals (except petroleum sold via retail method)	488999	All Other Support Activities for Transportation
5172	Petroleum and Petroleum Products Wholesalers, Except Bulk Stations and Terminals (merchant wholesalers)	424720	Petroleum and Petroleum Products Merchant Wholesalers (except Bulk Stations and Terminals)

Nothing in this Section III.D shall be construed to preclude Respondents from seeking authorization from the TCEQ to process oil-bearing materials outside the scope of 40 C.F.R. § 261.6(a)(3)(iv)(C). However, the definition of oil-bearing hazardous waste from petroleum refining, production, or transportation practices set forth in this Paragraph shall remain the same.

2. Using feedstock from processes meeting the definition of the aforementioned SIC/NAICS Codes does not constitute compliance with 40 C.F.R. § 261.6(a)(3)(iv)(C) or this CAFO. The Respondents are required to make a separate determination whether the hazardous waste in question is "oil-bearing," and that the hazardous waste was originally generated from petroleum refining, production, or transportation practices. The Respondents shall request that this provision be placed in the issued RCRA permit as applicable to the oil reclamation unit operation under 40 C.F.R. § 261.6(a)(3)(iv)(C).

E. TCEQ Submission, Revision, and Approval Process

1. For the Class 3 RCRA Permit Modification required be submitted to TCEQ for approval under this CAFO, TCEQ will review the application in accordance with 30 T.A.C.

§§ 281.3(c), 281.18 and 281.19(a) and (b). The Respondents must respond to any Notice of Deficiency (NOD), with a copy to EPA, within the time period specified by the TCEQ. In the event that the Respondents fail to submit a timely and complete NOD response, the Respondents' authorization to operate the TDU shall terminate on the NOD response deadline unless that deadline has been extended pursuant to Section IV.F (Force Majeure).

F. Additional Conditions

1. To comply with this CAFO, the Respondents must obtain a RCRA permit for the TDU as a Subpart X – Miscellaneous Unit in accordance with 30 T.A.C. § 335.152(a)(16) [40 C.F.R. Part 264, Subpart X], 30 T.A.C. Chapter 305 [40 C.F.R. §§ 270.10 – 270.14, 270.19, 270.23, and 270.30 – 270.33], and which incorporates the appropriate requirements of 40 C.F.R. Part 264, Subparts I through O and AA through CC, and 40 C.F.R. Part 270, and 40 C.F.R Part 63, Subpart EEE.

2. The Respondents may seek relief under the provisions of Section IV.F of this CAFO (Force Majeure) for any delay in the performance of any such obligations resulting from a failure to obtain, or a delay in obtaining, any permit or approval required to fulfill such obligation, if the Respondent has submitted a timely and complete application and has taken all other actions necessary to obtain such permit or approval.

G. EPA Review and Comment on RCRA Permit

1. Nothing in this CAFO shall limit EPA's rights under applicable environmental laws or regulations, including, but not limited to, Section 3005(c)(3) of RCRA, 42 U.S.C. § 6925(c)(3), 40 C.F.R. § 270.32 and 40 C.F.R. § 271.19, to review, comment, and incorporate appropriate requirements of 40 C.F.R. Parts 264, Subparts I through O and Subparts AA through CC, and

40 C.F.R. Part 63, Subpart EEE directly into the permit or establish other permit conditions that are based on those parts; or take action under Section 3008(a)(3) of RCRA, 42 U.S.C. § 6928(a)(3), against the Respondents on the ground that the RCRA permit for the Reconfigured TDU does not comply with a condition that the EPA Region 6 Regional Administrator in commenting on the permit application or draft permit stated was necessary to implement approved State program requirements, whether or not that condition was included in the issued permit. If the Respondent disputes an action taken by EPA pursuant to 40 C.F.R. § 270.32 or 40 C.F.R. § 271.19, the Defendant may invoke Dispute Resolution in accordance with Section IV.E of this CAFO.

H. Submissions

In all instances in which this Compliance Order requires written submissions to EPA and TCEQ, each submission must be accompanied by the following certification:

> "I certify under penalty of law to the best of my knowledge and belief, that the information contained in or accompanying this submission is true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

All submissions must be certified on behalf of the Respondent(s) by the signature of a person authorized to sign a permit application or a report under 40 C.F.R. § 270.11.

I. Monitoring, Recordkeeping, and Record Retention Requirements

1. Upon the effective date of this CAFO, all interim operating parameters (Appendix 1, Table A), shakedown operating parameters (Appendix 1, Table B), and final operating parameters limits (Appendix 1, Table C and Paragraph 69.C.6) subject to AWFCO limits shall be monitored by the facility's Continuous Process Monitoring System (CPMS), which records data once per minute in an electronic data log (DLG). In addition, the Respondents shall keep copies

of all documents relating to compliance with the operating parameters limits not monitored by the CPMS, and all other documents relating to compliance with Section III of this CAFO. All records, including electronic records, shall be kept for a period of one year after termination of the CAFO. These monitoring and recordkeeping requirements are in addition to any other monitoring and/or recordkeeping requirements required by federal, state, or local laws, regulations, or permits. This information shall be made available to EPA and TCEQ upon request.

2. In addition, the Respondents shall preserve, for a period of one year after termination of the CAFO, all records and documents in its possession or in the possession of its divisions, employees, agents, contractors, or successors which in any way relate to this CAFO regardless of any document retention policy to the contrary. This information shall be made available to EPA and TCEQ upon request.

J. EPA Approval of Submissions

EPA will review the plans set forth in Paragraphs 69.A.11 (if applicable) and 69.C.2, and notify the Respondents in writing of EPA's approval or disapproval of the plan or any part thereof. Within the time specified, the Respondents shall address the deficiencies and submit a revised plan. EPA will approve, disapprove, or modify the revised submittal. EPA approved plans shall be incorporated by reference into this CAFO.

IV. TERMS OF SETTLEMENT

A. CIVIL PENALTY

70. Pursuant to the authority granted in Section 3008 of RCRA, 42 U.S.C. § 6928, and upon consideration of the entire record herein, including the Findings of Fact and Conclusions of Law, which are hereby adopted and made a part hereof, and upon consideration of the

seriousness of the alleged violations, the Respondents' good faith efforts to comply with the applicable regulations, and the June 2003 RCRA Civil Penalty Policy, it is hereby **ORDERED** that the Respondent U.S. Ecology Texas, Inc. be assessed a civil penalty of **ONE HUNDRED SIXTY-FIVE THOUSAND, SIX HUNDRED FIFTY-SEVEN DOLLARS ($165,657)**, and the Respondent TD*X Associates L.P. be assessed a civil penalty of **SIX HUNDRED TWENTY-TWO THOUSAND, FOUR HUNDRED SIXTY-THREE DOLLARS ($622,463).** The Respondent USET shall pay the assessed civil penalty within thirty (30) days of the effective date of this CAFO. The Respondent TD*X Associates L.P. shall pay the assessed civil penalty in four (4) payments as follows:

Payment No. 1: $157,978.35 within thirty (30) days of the effective date of this CAFO.

Payment No. 2: $157,978.35 ($153,268.99 civil penalty plus interest of $4,709.36) within one year of the effective date of this CAFO.

Payment No. 3: $157,978.35 ($154,822.97 civil penalty plus interest of $3,155.38) within two years of the effective date of this CAFO.

Payment No. 4: $157,978.34 ($156,392.69 civil penalty plus interest of $1,585.65) within three years of the effective date of this CAFO.

71. The Respondents shall pay the assessed civil penalty by certified check, cashier's check, or wire transfer, made payable to "Treasurer, United States of America, EPA - Region 6". Payment shall be remitted in one of three (3) ways: regular U.S. Postal mail (including certified mail), overnight mail, or wire transfer. For regular U.S. Postal mail, U.S. Postal Service certified mail, or U.S. Postal Service express mail, the check(s) should be remitted to:

ED_002427A_00000313-00188

U.S. Environmental Protection Agency
Fines and Penalties
Cincinnati Finance Center
P.O. Box 979077
St. Louis, MO 63197-9000

For overnight mail (non-U.S. Postal Service, e.g. Fed Ex), the check(s) should be remitted to:

U.S. Bank
Government Lockbox 979077
US EPA Fines & Penalties
1005 Convention Plaza
SL-MO-C2-GL
St. Louis, MO 63101
Phone No. (314) 418-1028

For wire transfer, the payment should be remitted to:

Federal Reserve Bank of New York
ABA: 021030004
Account No. 68010727
SWIFT address = FRNYUS33
33 Liberty Street
New York, NY 10045
Field Tag 4200 of the Fedwire message should read
"D 68010727 Environmental Protection Agency"

PLEASE NOTE: Docket numbers RCRA-06-2012-0936 (Respondent USET) and RCRA-06-2012-0937 (Respondent TD*X) shall be clearly typed on the respective checks to ensure proper credit. If payment is made by check, the check shall also be accompanied by a transmittal letter and shall reference the Respondent's name and address, the case name, and docket number of the CAFO. If payment is made by wire transfer, the wire transfer instructions shall reference the Respondent's name and address, the case name, and docket number of the CAFO. The Respondents shall also send a simultaneous notice of such payment, including a copy of the check and transmittal letter, or wire transfer instructions to the following:

Chief, Compliance Enforcement Section (6EN-HE)
Hazardous Waste Enforcement Branch
U.S. EPA, Region 6
1445 Ross Avenue, Suite 1200
Dallas, TX 75202-2733

Lorena Vaughn
Regional Hearing Clerk (6RC-D)
U.S. EPA, Region 6
1445 Ross Avenue, Suite 1200
Dallas, TX 75202-2733

The Respondents' adherence to this request will ensure proper credit is given when penalties are received in the Region.

72. The Respondents agree not to claim or attempt to claim a federal income tax deduction or credit covering all or any part of the civil penalty paid to the United States Treasurer.

73. Pursuant to 31 U.S.C. § 3717 and 40 C.F.R. § 13.11, unless otherwise prohibited by law, EPA will assess interest and late payment penalties on outstanding debts owed to the United States and a charge to cover the costs of processing and handling a delinquent claim. Interest on the civil penalty assessed in this CAFO will begin to accrue thirty (30) days after the effective date of the CAFO and will be recovered by EPA on any amount of the civil penalty that is not paid by the respective due date. Interest will be assessed at the rate of the United States Treasury tax and loan rate in accordance with 40 C.F.R. § 13.11(a). Moreover, the costs of the Agency's administrative handling of overdue debts will be charged and assessed monthly throughout the period the debt is overdue. *See* 40 C.F.R. § 13.11(b).

74. EPA will also assess a $15.00 administrative handling charge for administrative costs on unpaid penalties for the first thirty (30) day period after the payment is due and an additional $15.00 for each subsequent thirty (30) day period that the penalty remains unpaid. In addition, a

penalty charge of up to six percent per year will be assessed monthly on any portion of the debt which remains delinquent more than ninety (90) days. *See* 40 C.F.R. § 13.11(c). Should a penalty charge on the debt be required, it shall accrue from the first day payment is delinquent. *See* 31 C.F.R. § 901.9(d). Other penalties for failure to make a payment may also apply.

B. PARTIES BOUND

75. The provisions of this CAFO shall apply to and be binding upon the parties to this action, their officers, directors, agents, employees, successors, and assigns. The undersigned representative of each party to this CAFO certifies that he or she is fully authorized by the party whom he or she represents to enter into the terms and conditions of this CAFO and to execute and to legally bind that party to it.

C. ADDITIONAL REQUIREMENTS

76. The Respondents shall undertake the following additional requirements:

A. The Respondents agree that the oil reclamation unit and the TDU are subject to the requirements of 40 C.F.R. Part 61, Subpart FF.

B. Within thirty (30) days of the effective date of the CAFO, the Respondents shall submit to EPA a certification that the following equipment in the oil reclamation unit and the TDU is not in "volatile hazardous air pollutant" (VHAP) service, as that term is defined by 40 C.F.R. § 61.241:

1. pumps;
2. compressors;
3. pressure relief devices;
4. sampling connection systems;
5. open-ended valves or lines;

6. valves;

7. connectors;

8. surge control vessels;

9. bottoms receivers; and

10. control devices and systems.

This certification shall be submitted in accordance with Paragraphs 76.H and 76.I.

C. Pursuant to 40 C.F.R. § 61.354(c), as of the effective date of this CAFO, the Respondents shall install, calibrate, maintain, and operate according to manufacturer's specifications, devices to continuously monitor the control devices operations required by 40 C.F.R. § 61.349.

D. Pursuant to 40 C.F.R. § 61.345(a), within 180 days of the effective date of the CAFO, the Respondents shall install, operate, and maintain covers on Bins 1, 2, 3, 4, and the Centrifuge solid bins that meet the requirements of 40 C.F.R. § 61.345(a)(1). The cover and openings shall be in a closed, sealed position at all times that waste is in the container except when it is necessary to use the opening for waste loading, removal, inspection or sampling, as required by 40 C.F.R. § 61.345(a)(1)(ii). The Respondents shall monitor the cover and all openings for no detectable emissions initially and thereafter at least once per year by the methods specified in 40 C.F.R. § 61.355(h).

E. The Respondents shall use a submerged fill pipe when transferring waste into the containers by pumping, as required by 40 C.F.R. § 61.345(a)(2).

F. Within ninety (90) days after the reconfiguration of the TDU pursuant to Paragraph 69.A.8 of this CAFO, the Respondents shall conduct performance tests for the TOU and the carbon adsorption system to demonstrate compliance with the requirements of 40 C.F.R.

§ 61.349. The performance tests shall be conducted in accordance with the requirements of 40 C.F.R. § 61.355. A copy of the performance test results shall be submitted to EPA within ninety (90) days of completion of the performance tests. The performance tests results shall be submitted in accordance with Paragraphs 76.H and 76.I.

G. Within 210 days of the effective date of the CAFO, the Respondents shall submit a written report to EPA showing compliance with Paragraphs 76.C, 76.D, and 76.E.

H. The certification and report identified in this Section must be accompanied by the following certification:

> "I certify under penalty of law to the best of my knowledge and belief, that the information contained in or accompanying this submission is true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

All submissions must be certified on behalf of the Respondent(s) by the signature of a person authorized to sign a permit application or a report under 40 C.F.R. § 270.11.

I. The certification and report required under this Section shall be sent to the following:

Craig Lutz
Toxics Enforcement Section (6EN-AT)
Compliance Assurance and Enforcement Division
U.S. EPA, Region 6
1445 Ross Avenue, Suite 1200
Dallas, TX 75202-2733

D. STIPULATED PENALTIES

77. In addition to any other remedies or sanctions available to EPA, the Respondent(s) shall pay stipulated penalties in the following amounts for each day during which each failure or refusal to comply continues:

a. Failure to Timely Submit Reports or Plans - Paragraphs 69.A.11, 69.A.12, and 69.C.2

Period of Noncompliance	Penalty Per Violation Per Day
1st through 15th day	$ 1,000
16th through 30th day	$ 1,500
31st day and beyond	$ 2,500

b. Failure to Comply with Certain Interim Operating Requirements – Paragraphs 69.A.5, 69.A.6, 69.A.7 (installation of AWFCO only), 69A.8, and 69.A.11

Period of Noncompliance	Penalty Per Violation Per Day
1st through 15th day	$ 1,500
16th through 30th day	$ 2,500
31st day and beyond	$ 5,000

c. Failure to Comply with any Other Provision of Section III of this CAFO

Period of Noncompliance	Penalty Per Violation Per Day
1st through 15th day	$ 500
16th through 30th day	$ 1,000
31st day and beyond	$ 1,500

d. Failure to Comply with Additional Requirements – Section IV.C

Period of Noncompliance	Penalty Per Violation Per Day
1st through 15th day	$ 1,500
16th through 30th day	$ 2,500
31st day and beyond	$ 5,000

Penalties shall accrue from the date of the noncompliance until the date the violation is corrected, as determined by EPA.

78. The Respondent(s) shall pay stipulated penalties not more than fifteen (15) days after receipt of written demand by EPA for such penalties. Method of payment shall be in accordance with the provisions of Paragraph 71 herein. Interest and late charges shall be paid as stated in Paragraphs 73 - 74 herein.

79. Nothing in this agreement shall be construed as prohibiting, altering, or in any way limiting the ability of EPA to seek any other remedies or sanctions available by virtue of the Respondent(s) violation of this CAFO or of the statutes and regulations upon which this agreement is based, or for the Respondent's violation of any applicable provision of law.

E. DISPUTE RESOLUTION

80. If the Respondents object to any decision or directive of EPA in regard to Section III or IV.C, the Respondents shall notify each other and the following persons in writing of its objections, and the basis for those objections, within thirty (30) calendar days of receipt of EPA's decision or directive:

Associate Director
Hazardous Waste Enforcement Branch (6EN-H)
Compliance Assurance and Enforcement Division
U.S. EPA - Region 6
1445 Ross Avenue
Dallas, TX 75202-2733

Chief, RCRA Enforcement Branch (6RC-ER)
Office of Regional Counsel
U.S. EPA - Region 6
1445 Ross Avenue
Dallas, TX 75202-2733

81. The Associate Director of the Hazardous Waste Enforcement Branch or his/her designee (Associate Director), and the Respondents shall then have an additional thirty (30) calendar days from EPA's receipt of the Respondents' written objections to attempt to resolve the dispute. If an agreement is reached between the Associate Director and the Respondents, the agreement shall be reduced to writing and signed by the Associate Director and the Respondents and incorporated by reference into this CAFO.

82. If no agreement is reached between the Associate Director and the Respondents within that time period, the dispute shall be submitted to the Director of the Compliance

Assurance and Enforcement Division or his/her designee (Division Director). The Division Director and the Respondents shall then have a second 30-day period to resolve the dispute. If an agreement is reached between the Division Director and the Respondents, the resolution shall be reduced to writing and signed by the Division Director and the Respondents and incorporated by reference into this CAFO. If the Division Director and the Respondents are unable to reach agreement within this second 30-day period, the Division Director shall provide a written statement of EPA's decision to the Respondents, which shall be binding upon the Respondents and incorporated by reference into the CAFO.

83. If the Dispute Resolution process results in a modification of this CAFO, the modified CAFO must be approved by the Regional Judicial Officer and filed pursuant to Section IV.H (Modifications).

84. The invocation of dispute resolution procedures under this Section shall not extend, postpone, or affect in any way, any obligations of the Respondents under this CAFO, unless and until final resolution of the dispute so provides. Stipulated penalties with respect to the disputed matter shall continue to accrue from the first day of noncompliance, but payment shall be stayed pending resolution of the dispute. If the Respondents do not prevail on the disputed issue, stipulated penalties shall be assessed and paid as provided in Section IV.D.

F. FORCE MAJEURE

85. A "force majeure event" is any event beyond the control of the Respondents, their contractors, or any entity controlled by the Respondents that delays the performance of any obligation under this CAFO despite the Respondents' best efforts to fulfill the obligation. "Best efforts" includes anticipating any potential force majeure event and addressing the effects of any such event (a) as it is occurring and (b) after it has occurred, to prevent or minimize any resulting

delay to the greatest extent possible. "Force Majeure" does not include the Respondents' financial inability to perform any obligation under this CAFO, but does include any delays attributable to the TCEQ's permitting process and the conduct of the contested case hearing.

86. The Respondents shall provide notice orally or by electronic or facsimile transmission as soon as possible, but not later than 72 hours after the time the Respondents first knew of, or by the exercise of due diligence, reasonably should have known of, a claimed force majeure event. The Respondents shall also provide written notice, as provided in Section IV.G of this CAFO, within seven days of the time the Respondents first knew of, or by the exercise of due diligence, reasonably should have known of, the event. The notice shall state the anticipated duration of any delay; its cause(s); the Respondents' past and proposed actions to prevent or minimize any delay; a schedule for carrying out those actions; and the Respondents' rationale for attributing any delay to a force majeure event. Failure to give such notice shall preclude the Respondents from asserting any claim of force majeure.

87. The Respondent also shall provide notice orally or by electronic or facsimile transmission to the other Respondent not later than 24 hours after the time Respondent first knew of, or by the exercise of due diligence, reasonably should have known of, a claimed force majeure event, provided that the failure to give such notice shall not limit either Respondent's responsibilities under this CAFO.

88. If the Complainant agrees that a force majeure event has occurred, the Complainant may agree to extend the time for the Respondents to perform the affected requirements for the time necessary to complete those obligations. An extension of time to perform the obligations affected by a force majeure event shall not, by itself, extend the time to perform any other

obligation. Where the Complainant agrees to an extension of time, the appropriate modification shall be made pursuant to Section IV.H of this CAFO.

89. If the Complainant does not agree that a force majeure event has occurred, or does not agree to the extension of time sought by the Respondents, the Complainant's position shall be binding, unless the Respondents invokes Dispute Resolution under Section IV.D of this CAFO. In any such dispute, the Respondents bear the burden of proving, by a preponderance of the evidence, that each claimed force majeure event is a force majeure event; that the Respondents gave the notice required by the paragraph above, that the force majeure event caused any delay the Respondents' claimed was attributable to that event; and that the Respondents exercised their reasonable best efforts to prevent or minimize any delay caused by the event. If the Respondents carry this burden, the delay at issue shall be deemed not to be a violation of the affected obligation of this CAFO.

G. NOTIFICATION

90. Unless otherwise specified elsewhere in this CAFO, whenever notice is required to be given, whenever a report or other document is required to be forwarded by one party to another, or whenever a submission or demonstration is required to be made, it shall be directed to the individuals specified below at the addresses given (in addition to any action specified by law or regulation), unless these individuals or their successors give notice in writing to the other parties that another individual has been designated to receive the communication:

Complainant:

Chief, Compliance Enforcement Section (6EN-HE)
Hazardous Waste Enforcement Branch
U.S. EPA, Region 6
1445 Ross Avenue, Suite 1200
Dallas, TX 75202-2733

Respondent U.S. Ecology Texas, Inc.:

Mary Reagan
McGinnis, Lochridge & Kilgore, L.L.P.
600 Congress Avenue
Suite 2100
Austin, Texas 78701

Respondent TD*X Associates, L.P.:

J.D. Head
Fritz, Bryne, Head & Harrison, PLLC
98 San Jacinto Boulevard
Suite 2000
Austin, TX 78701

Texas Commission on Environmental Quality

Section Manager
Industrial and Hazardous Permits Section
Waste Permits Division
Texas Commission on Environmental Quality
P.O. Box 13087 MC 130
Austin, TX 78711

H. MODIFICATION

91. The terms, conditions, and compliance requirements of this CAFO may not be modified or amended except as otherwise specified in this CAFO, or upon the written agreement of the Complainant and Respondent(s), and approved by the Regional Judicial Officer, and such modification or amendment being filed with the Regional Hearing Clerk.

I. RETENTION OF ENFORCEMENT RIGHTS

92. EPA does not waive any rights or remedies available to EPA for any other violations by the Respondents of Federal or State laws, regulations, or permitting conditions.

93. Except as herein provided, nothing in this CAFO shall limit the power and authority of EPA or the United States to take, direct, or order all actions to protect public health, welfare, or the environment, or prevent, abate or minimize an actual or threatened release of hazardous

substances, pollutants, contaminants, hazardous substances on, at or from the Respondent USET's facility or Respondent TD*X's oil reclamation unit and related equipment. Furthermore, nothing in this CAFO shall be construed or to prevent or limit EPA's civil and criminal authorities, or that of other Federal, State, or local agencies or departments to obtain penalties or injunctive relief under other Federal, State, or local laws or regulations.

94. The Complainant reserves all legal and equitable remedies available to enforce the provisions of this CAFO. This CAFO shall not be construed to limit the rights of the EPA or United States to obtain penalties or injunctive relief under RCRA or under other federal or state laws, regulations, or permit conditions.

95. In any subsequent administrative or judicial proceeding initiated by the Complainant or the United States for injunctive relief, civil penalties, or other appropriate relief relating to this Facility or the oil reclamation unit, the Respondents shall not assert, and may not maintain, any defense or claim based upon the principles of waiver, res judicata, collateral estoppel, issue preclusion, claim preclusion, claim-splitting, or other defenses based upon any contention that the claims raised by the Complainant or the United States in the subsequent proceeding were or should have been brought in the instant case, except with respect to claims that have been specifically resolved pursuant to this CAFO.

96. This CAFO is not a permit, or a modification of any permit, under any federal, State, or local laws or regulations. The Respondents are responsible for achieving and maintaining complete compliance with all applicable federal, State, and local laws, regulations, and permits. The Respondents' compliance with this CAFO shall be no defense to any action commenced pursuant to any such laws, regulations, or permits, except as set forth herein. The Complainant does not warrant or aver in any manner that the Respondents' compliance with any aspect of this

CAFO will result in compliance with provisions of the RCRA or with any other provisions of federal, State, or local laws, regulations, or permits.

J. INDEMNIFICATION OF EPA

97. Neither EPA nor the United States Government shall be liable for any injuries or damages to person or property resulting from the acts or omissions of the Respondents, their officers, directors, employees, agents, receivers, trustees, successors, assigns, or contractors in carrying out the activities required by this CAFO, nor shall EPA or the United States Government be held out as a party to any contract entered into by the Respondents in carrying out the activities required by this CAFO.

K. COSTS

98. Each party shall bear its own costs and attorney's fees. Furthermore, each Respondent specifically waives its right to seek reimbursement of its costs and attorney's fees under 5 U.S.C. § 504 and 40 C.F.R. Part 17.

L. TERMINATION

99. At such time as the Respondents believe they have completed all of the requirements of this CAFO, they may request that EPA concur whether all of the requirements of this CAFO have been satisfied. Such request shall be in writing and shall provide the necessary documentation to establish whether there has been full compliance with the terms and conditions of this CAFO. EPA will respond to said request in writing within ninety (90) days of receipt of the request. This CAFO shall terminate when all actions required to be taken by this CAFO have been completed, and the Respondents have been notified by the EPA in writing that this CAFO has been satisfied and terminated.

M. EFFECTIVE DATE

100. This CAFO, and any subsequent modifications, become effective upon filing with the Regional Hearing Clerk.

THE UNDERSIGNED PARTIES CONSENT TO THE ENTRY OF THIS CONSENT AGREEMENT AND FINAL ORDER:

FOR THE RESPONDENT:

Date: 9/27/12

US Ecology Texas, Inc.

FOR THE RESPONDENT:

Date: September 26, 2012

Carl R Palmer
TD*X Associates L.P.

FOR THE COMPLAINANT:

Date: 10·03·12

John Blevins
Director
Compliance Assurance and
Enforcement Division

FINAL ORDER

Pursuant to the Section 3008 of RCRA, 42 U.S.C. § 6928, and the Consolidated Rules of Practice Governing the Administrative Assessment of Civil Penalties, 40 C.F.R. Part 22, the foregoing Consent Agreement is hereby ratified. This Final Order shall not in any case affect the right or EPA or the United States to pursue appropriate injunctive relief or other equitable relief for criminal sanctions for any violations of law. This Final Order shall resolve only those causes of action alleged herein. Nothing in this Final Order shall be construed to waive, extinguish or otherwise affect the Respondents' (or their officers, agents, servants, employees, successors, or assigns) obligation to comply with all applicable federal, state, and local statutes and regulations, including the regulations that were the subject of this action. The Respondents are ordered to comply with the Compliance Order and terms of settlement as set forth in the Consent Agreement. Pursuant to 40 C.F.R. § 22.31(b), this Final Order shall become effective upon filing with the Regional Hearing Clerk.

Date: 10/4/12

Patrick Rankin
Regional Judicial Officer

APPENDIX 1 – OPERATING PARAMETERS

TABLE A

TDU OIL RECLAMATION SYSTEM INTERIM REQUIREMENTS PRIOR TO TOU INSTALLATION

Tag No.	Equipment Operating Parameter	Operating Parameter Limit	Compliance Basis
TT-18/19	TDU Dryer, Minimum Combustion Chamber Temperature	Maintain Temperature > 1,400°F	AWFCO: CPMS[1], 60-sec time delay
PT-1	TDU Dryer, Maximum Internal Pressure	Maintain Pressure < 0.00" W.C.	AWFCO: CPMS, 6-min Rolling Average (RA)[2]
OE-1	Purge Vent Gas Stream Maximum O_2 Concentration	O_2 < 7%	AWFCO: CPMS, 60-sec time delay
FE-101	Maximum Purge Vent Rate	Purge Vent Rate < 180 scfm	AWFCO: CPMS, Hourly Rolling Average (HRA)[3]
M-100	Minimum Percent Excess Air, Operation of Purge Vent Injector Air Supply	Purge Vent Air Supply > 20% Excess Air	AWFCO: CPMS, Tuning of Combustion Airflow
TE-28	Maximum Condenser System Exhaust Temperature	Temperature < 120°F	AWFCO: CPMS, HRA
	HEPA Filter Installed and Pressure Change Monitored to Ensure Integrity of Filter	Installed and Δ Pressure Monitoring	Installation Check; Δ Pressure Monitored Once Per Shift
	Maximum TDU Feed Mercury Concentration	[Hg] < 50 ppm/Bin	Blending Protocols & Documentation[4]
	Maximum TDU Feed Organic Halide Concentration	[Total Organic Halides] < 1,500 ppm/Bin	Blending Protocols & Documentation

[1] Continuous Process Monitoring System – See Paragraph 69.I of CAFO.

[2] Previous six 1-minute readings are summed and divided by six.

[3] 40 C.F.R. §§ 63.1209(b)(5).

[4] See Paragraph 69.A.3 of the CAFO.

TABLE B

TDU OIL RECLAMATION SYSTEM REQUIREMENTS AFTER TOU INSTALLATION PRE-COMPLIANCE DEMONSTRATION TEST OPERATIONS

Tag No.	Equipment Operating Parameter	Shakedown (Pre-Test) OPL	Compliance Basis
PT-1	TDU Dryer, Maximum Internal Pressure	Maintain Pressure < 0.00" W.C.	AWFCO: CPMS[5], 6-min RA[6]
M-05	TDU Dryer, Cylinder Rotation On	Motor Operating	AWFCO: CPMS, Instantaneous
M-18	Product Discharge System	Motor Operating	AWFCO: CPMS, Instantaneous
M-21	Recirculation Blower Operating	Motor Operating	AWFCO: CPMS, Instantaneous
TT-121	TOU, Minimum Combustion Chamber Temperature	Maintain Temperature > 1,400°F	AWFCO: CPMS, HRA[7]
KY-110	TOU, Minimum Residence Time (Calculated from Purge Vent Flow Rate, Exhaust T, and Air Ratio)	Residence Time > 0.5 seconds	AWFCO: CPMS, HRA
AE-5/ OE-5	TOU Exhaust Gas, Maximum CO Concentration	[CO] < 100 ppmV @ 7% O_2	AWFCO: CEMS for CO, HRA
OE-1	Purge Vent Gas Stream, Maximum O_2 Concentration	[O_2] < 7%	AWFCO: CPMS, Instantaneous
FE-101	Maximum Purge Vent Rate	Vent Flow < 250 scfm	AWFCO: CPMS, HRA
FCV-102	Valve Position to Ensure Purge Vent is not Directed Away from TOU	Valve Closed	AWFCO: CPMS, 60-sec delay
M-121	Minimum Percent Excess Air , Operation of Purge Vent Injector Air Supply	Purge Vent Air Supply > 20% Excess Air	AWFCO: CPMS, Tuning of Combustion Airflow
TE-28	Maximum Condenser System Exhaust Temperature	Maintain Temperature < 120°F	AWFCO: CPMS, HRA

[5] Continuous Process Monitoring System – See Paragraph 69.I of the CAFO.

[6] Previous six 1-minute readings are summed and divided by six.

[7] 40 C.F.R. §§ 63.1209(a)(6) and 63.1209(b)(5).

	HEPA Filter Installed and Pressure Change Monitored to Ensure Integrity of Filter	Installed and Δ Pressure Monitoring	Installation Check; Δ Pressure Monitored Once Per Shift
	Maximum TDU Feed Mercury Concentration	[Hg] < 50 ppm/Bin	Blending Protocols & Documentation[8], Feed Stream Analysis Plan (if applicable)[9]
	Maximum TDU Feed Organic Halide Concentration	[Total Organic Halides] < 1,500 ppm/Bin	Blending Protocols & Documentation, Feed Stream Analysis Plan (if applicable)
	Maximum TDU Feed Semi-Volatile Metals Concentration[10]	N/A	Blending Protocols & Documentation, Feed Stream Analysis Plan (if applicable)
	Maximum TDU Feed Low-Volatile Metals Concentration[11]	N/A	Blending Protocols & Documentation, Feed Stream Analysis Plan (if applicable)

[8] See Paragraph 69.A.3 of the CAFO.

[9] See Paragraph 69.A.11 of the CAFO.

[10] Semi-volatile metals means a combination of cadmium and lead.

[11] Low-volatile metals means a combination of Arsenic, Beryllium, and Chromium.

TABLE C

TDU OIL RECLAMATION REQUIREMENTS AFTER TOU INSTALLATION POST-COMPLIANCE DEMONSTRATION TEST OPERATIONS

Tag No.	Equipment Operating Parameter	Interim/Final (Post-Test) OPL	Compliance Basis
PT-1	TDU Dryer, Maximum Internal Pressure	Maintain Pressure < 0.00" W.C.	AWFCO: CPMS[12], 6-min RA[13]
M-05	TDU Dryer, Cylinder Rotation On	Motor Operating	AWFCO: CPMS, Instantaneous
M-18	Product Discharge System	Motor Operating	AWFCO: CPMS, Instantaneous
M-21	Recirculation Blower Operating	Motor Operating	AWFCO: CPMS, Instantaneous
TT-121	TOU, Minimum Combustion Chamber Temperature	OPL Established @ > 3-Run Average from CDT	AWFCO: CPMS, HRA[14]
KY-110	TOU, Minimum Residence Time (Calculated from Purge Vent Flow Rate, Exhaust T, and Air Ratio)	Residence Time > 0.5 seconds	AWFCO: CPMS, HRA
AE-5/ OE-5	TOU Exhaust Gas, Maximum CO Concentration	Semi-Annual Testing until Waste Analysis Plan Approved, then Annual Testing	Performance Testing in lieu of CEMS; Waste Analysis Plan based with other OPLs
OE-1	Purge Vent Gas Stream, Maximum O_2 Concentration	$[O_2] < 7\%$	AWFCO: CPMS, Instantaneous
FE-101	Maximum Purge Vent Rate	Vent Flow < 250 scfm	AWFCO: CPMS, HRA
FCV-102	Valve Position to Ensure Purge Vent is not Directed Away from TOU	Valve Closed	AWFCO: CPMS, 60-sec time delay
M-121	Minimum Percent Excess Air, Operation of Purge Vent Injector Air Supply	Purge Vent Air Supply > 20% Excess Air	AWFCO: CPMS, Tuning of Combustion Airflow

[12] Continuous Process Monitoring System – See Paragraph 69.I of CAFO.

[13] Previous six 1-minute readings are summed and divided by six.

[14] 40 C.F.R. §§ 63.1209(a)(6) and 63.1209(b)(5).

TE-28	Maximum Condenser System Exhaust Temperature	OPL Established @ < 3-run Average Based on CDT	AWFCO: CPMS, HRA
	HEPA Filter Installed and Pressure Change Monitored to Ensure Integrity of Filter	Installed and Δ Pressure Monitoring	Installation Check; Δ Pressure Monitored Once Per Shift
	Maximum TDU Feed Mercury Concentration	[Hg] < 50 ppm/Bin	Blending Protocols & Documentation[15], Feed Stream Analysis Plan (if applicable)[16]
	Maximum TDU Feed Organic Halide Concentration	OPL Established as Measured Ratio[17]	Blending Protocols & Documentation, Feed Stream Analysis Plan (if applicable)
	Maximum TDU Feed Semi-Volatile Metals Concentration[18]	OPL Established as Measured Ratio[19]	Blending Protocols & Documentation, Feed Stream Analysis Plan (if applicable)
	Maximum TDU Feed Low-Volatile Metals Concentration[20]	OPL Established as Measured Ratio[21]	Blending Protocols & Documentation, Feed Stream Analysis Plan (if applicable)

[15] See Paragraph 69.A.3 of the CAFO.

[16] See Paragraph 69.A.11 of the CAFO.

[17] Maximum TDU Feed Concentration established as a measured ratio (not to exceed 4000 ppm/bin) from emissions data collected during CDT. See plan example calculations.

[18] Semi-volatile metals means a combination of cadmium and lead.

[19] Maximum TDU Feed Concentration established as measured ration from emissions data collected during CDT. See plan example calculations.

[20] Low-volatile metals means a combination of Arsenic, Beryllium, and Chromium.

[21] Maximum TDU Feed Concentration established as measured ratio from emissions data collected during CDT. See plan example calculations.

APPENDIX 2 – BLENDING PROTOCOLS

CONTAINS CONFIDENTIAL BUSINESS INFORMATION

DOCUMENT STORED IN FILE ROOM

APPENDIX 3

COMPLIANCE DEMONSTRATION TEST PLAN

CONTAINS CONFIDENTIAL BUSINESS INFORMATION

DOCUMENT STORED IN FILE ROOM

CERTIFICATE OF SERVICE

I hereby certify that on the 4th day of October, 2012, the original and one copy of the foregoing Consent Agreement and Final Order (CAFO) was hand delivered to the Regional Hearing Clerk, U.S. EPA - Region 6, 1445 Ross Avenue, Dallas, Texas 75202-2733, and that true and correct copies of the CAFO were sent to the following by the method indicated below:

For US Ecology Texas, Inc.

Certified Mail – Return Receipt Requested – 7007 0710 0002 1385 1491

Mary Reagan
McGinnis, Lochridge & Kilgore, L.L.P.
600 Congress Avenue, Suite 2100
Austin, Texas 78701

For TD*X Associates LP

Certified Mail – Return Receipt Requested – 7007 0710 0002 1385 1507

J.D. Head
Fritz, Bryne, Head & Harrison, PLLC
98 San Jacinto Boulevard
Suite 2000
Austin, TX 78701

Evan L Pearson

ATTACHMENT 3

A - Letter dated October 3, 2015 from JD Head to USEPA Region 6

B - Letter dated May 2, 2016 from USEPA Region 6 to JD Head

C - Letter dated June 24, 2016 from USEPA Region 6 to Estuardo Silva LDEQ

FBH
&F
FRITZ, BYRNE, HEAD & FITZPATRICK, PLLC
Attorneys at Law

October 30, 2015

Mr. John Blevins
Compliance Assurance & Enforcement Division
Division Director 6EN
U.S. EPA, Region 6
1445 Ross Avenue, Suite 1200
Dallas, TX 75202-2733

SUBJECT: Hazardous Waste Regulatory Standards for Thermal Desorption Units at TSDFs

Dear Mr. Blevins:

Thermal desorption units (TDUs) are broadly used to treat hazardous waste and hazardous secondary materials. The application of thermal desorption technology within a recycling or reclamation process has been reviewed by Region 6 in multiple enforcement cases. The resulting allegations and consent agreements have established EPA's regulatory position. This letter presents my understanding of EPA's position on certain regulatory and technical requirements for TDUs that are installed at a RCRA treatment storage and disposal facility (TSDF).

A TDU is a thermal treatment device that heats solid material to vaporize, remove, and separate organic constituent materials from the solids. The solids are discharged with little or no residual organic contaminants. In the embodiment that is the subject of this letter, the separated organic constituents are condensed and recovered as a liquid. The TDU process characteristically generates a vent gas after the condensing system. When high organic content material is processed in the TDU it is quite common for the unit to combust the vent gas as an effective means of air pollution control. It is the regulatory applicability related to the combustion of all or a portion of the vent gas that I am seeking clarification.

TDUs at RCRA TSDFs.

One application of thermal desorption technology is to commercially reclaim oil from various generators of oil bearing hazardous waste. These hazardous wastes are generated by petroleum refining, production and transportation practices, and are typically listed as either K048, K049,

K050, K051, K052, K169, K170, K171, K172, F037 or F038, or may be hazardous by characteristic (i.e. "D" coded). If the hazardous waste recycled in the TDU comes exclusively from the above sources, the oil reclaimed from the TDU may be burned as a non-hazardous fuel if it meets the Used Oil Specification (UOS) at § 279.11, as per 40 CFR § 261.6(a)(3)(iv)(C). If the oil does not meet the UOS, it would remain a listed waste and require disposal at an appropriately permitted and operated facility, such as a Part 266 "BIF" or a Part 264 Subpart O incinerator. The generator will manifest and ship oil bearing hazardous waste to the commercial facility for treatment and/or reclamation. Based on two focused enforcement actions in EPA Region 6 since 2008, it appears EPA has concluded the following findings and regulatory requirements apply to commercial TDUs receiving offsite RCRA hazardous waste for treatment or reclamation.

1. For a TDU that combusts all or a portion of the vent gas, combustion of the TDU vent gas from RCRA hazardous waste or recyclable RCRA regulated materials is considered thermal treatment that is regulated by RCRA.
2. Thermal treatment of the vent gas requires a RCRA permit, 40 CFR Part 264 Subpart X or Subpart O, and a RCRA permit under one of these Subparts is required even if the facility is operating as a RCRA exempt recycling activity.
3. For TDUs with vent gas combustion processes that are permitted under RCRA Subpart X, the RCRA permitting authority should include in the permit application and final permit appropriate conditions from RCRA Subparts I through O, AA, BB and CC, and also include appropriate conditions from Part 63 Subpart EEE (i.e. the MACT "EEE").
4. The TDU must have an automatic waste feed cutoff system and establish appropriate operating parameter limits (OPLs) prior to initial operation to assure continued compliance with all emissions limits.
5. Minimum appropriate conditions from the MACT "EEE" include compliance with emission limits for particulate matter, hydrochloric acid, volatile metals (Hg), semivolatile metals, low volatile metals, destruction and removal efficiency, carbon monoxide, total hydrocarbons, and dioxins.
6. A compliance demonstration test (Trial Burn) is required to establish that the emissions from the combustion of the vent gas meet the emissions limits that were determined appropriate for the unit, including MACT "EEE."
7. Final OPLs shall be derived from demonstrated test conditions and established as permit requirements for the continued operation of the TDU.
8. Failure to demonstrate compliance with emissions limits requires shutdown of the TDU on RCRA regulated waste materials until corrective measures and re-demonstration can be implemented.

Please confirm that each of these enumerated statements accurately reflect EPA's regulatory conclusions for the management of commercial TDUs that combust vent gases generated from receiving offsite hazardous waste for treatment or reclamation at a TSDF.

Your support in clarifying these matters is most appreciated. My client intends to construct and install one or more TDUs in Region 6 that may be located at a TSDF and desires regulatory certainty on the issues discussed herein.

Sincerely,

J.D. Head
Fritz, Byrne, Head & Fitzpatrick, PLLC
221 W. 6th Street, Suite 960
Austin, Texas 78701
(512) 476-2020 telephone
jdhead@fbhf.com

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 6
1445 Ross Avenue
Dallas, Texas 75202-2733

2 MAY 2016

Mr. J.D. Head
Fritz, Byrne, Head & Fitzpatrick, PLLC
221 West 6th Street
Suite 960
Austin, Texas 78701

Dear Mr. Head:

Thank you for your October 30, 2015 letter requesting clarification of the hazardous waste regulatory standards for thermal desorption units (TDUs) installed at RCRA treatment, storage, and disposal facilities (TSDFs). I apologize for the delay in responding to your request. In your scenario, the TDU reclaims oil from oil bearing hazardous wastes generated by petroleum refining, production, or transportation practices. You describe a TDU as a device that heats solid material to vaporize, remove, and separate organic constituent materials from solids. In the scenario you describe at a TSDF, the separated organic constituents are typically condensed and recovered as a liquid oil. The TDU process also generates a vent gas after the condensing stream.

Your inquiry also references 40 C.F.R. § 261.6(a)(3)(iv)(C)[1], which provides that:

> Oil reclaimed from oil-bearing hazardous waste from petroleum refining, production, or transportation practices, which reclaimed oil is burned as a fuel without reintroduction to a refining process, so long as the used oil specification under 40 C.F.R. § 279.11 is not subject to regulation under 40 C.F.R. Parts 262 – 268, 270, or 40 C.F.R. Part 124, and is not subject to the notification requirements of Section 3010 of RCRA.

If the above conditions are met, then the reclaimed oil can be burned as a non-hazardous fuel. If the oil-bearing hazardous waste is not from petroleum refining, production, or transportation practices, then the reclaimed oil is subject to RCRA regulation.

If a TDU combusts all or a portion of the vent gas, combustion of the TDU vent gas from RCRA hazardous waste or recyclable materials [40 C.F.R. § 261.6(a)(1)] is considered thermal treatment that is regulated by RCRA. The material being treated (oil-bearing hazardous waste) is already a hazardous waste. Heating hazardous wastes to a gaseous state is subject to regulation under RCRA as treatment of hazardous waste, and thermal treatment after a material becomes a hazardous waste is fully regulated under RCRA. 54 Fed. Reg. 50968, 50973 (December 11, 1989). Thus, thermal treatment of the vent gas requires a RCRA permit.

---

[1] Since you did not reference a specific State in which your client may operate a TDU, this letter cites to the applicable federal regulations. If the State has an authorized RCRA program, the corresponding state regulation would be applicable.

If the vent gas is combusted in the combustion chamber of the TDU, then a permit under 40 C.F.R. Part 264, Subpart O is required, because the TDU would meet the definition of incinerator in 40 C.F.R. § 260.10 (an enclosed device that uses controlled flame combustion). If, on the other hand, the vent gas is vented to and combusted in a thermal oxidizing unit (TOU), the permitting authority may be able to permit the entire unit (TDU and TOU) as a miscellaneous unit under 40 C.F.R. Part 264, Subpart X. A RCRA permit would be required even if the facility is operating as a RCRA exempt recycling activity under 40 C.F.R. § 261.6(a)(3)(iv)(C). If the permitting authority decides to issue a 40 C.F.R. Part 264, Subpart X permit, the permitting authority is required to include in the permit requirements from 40 C.F.R. Part 264, Subparts I through O, AA, BB, and CC, 40 C.F.R. Part 270, 40 C.F.R. Part 63, Subpart EEE, and 40 C.F.R. Part 146 that are appropriate for the miscellaneous unit being permitted as required in 40 C.F.R. § 264.601. The decisions as to what appropriate requirements would be included in the permit would be left to the permitting authority. However, EPA would expect that the permit conditions would be similar to those set forth in the enclosed Consent Agreement and Final Order, In Re: US Ecology Texas, Inc. and TD*X Associates, LP, EPA Docket Nos. RCRA-06-2012-0936 and RCRA-06-2012-0937, filed October 4, 2012.

If you have any questions, please feel free to contact Guy Tidmore of my staff at (214) 665-3142 or via e-mail at tidmore.guy@epa.gov.

Sincerely,

John Blevins
Director
Compliance Assurance and
Enforcement Division

Enclosure

Cc: Penny Wilson, ADEQ
Lourdes Iturralde, LDEQ
John Kieling, NMED
Mike Stickney, ODEQ
James Gradney, TCEQ

ED_002427A_00000313-00221

UNITED STATES
ENVIRONMENTAL PROTECTION AGENCY
REGION 6
DALLAS, TEXAS

FILED
2012 OCT -4 AM 9:20
REGIONAL HEARING CLERK
EPA REGION VI

IN THE MATTER OF:	)	
US ECOLOGY TEXAS, INC., and TD*X ASSOCIATES LP	)	DOCKET NOS. RCRA-06-2012-0936 and RCRA-06-2012-0937
RESPONDENTS	)	

CONSENT AGREEMENT AND FINAL ORDER

The Director of the Compliance Assurance and Enforcement Division of the United States Environmental Protection Agency (EPA), Region 6 (Complainant) and US Ecology Texas, Inc. and TD*X Associates L.P. (Respondents) in the above-referenced proceeding, hereby agree to resolve this matter through the issuance of this Consent Agreement and Final Order (CAFO).

I. PRELIMINARY STATEMENT

1. This proceeding for the assessment of civil penalties and the issuance of a compliance order is brought by EPA pursuant to Section 3008 of the Resource Conservation and Recovery Act (RCRA), 42 U.S.C. § 6928, as amended by the Hazardous and Solid Waste Amendments of 1984 (HSWA), and is simultaneously commenced and concluded through the issuance of this Consent Agreement and Final Order (CAFO) pursuant to 40 C.F.R. §§ 22.13(b), 22.18(b)(2) and (3), and 22.37.

2. Notice of this action was given to the State of Texas prior to the issuance of this CAFO, as required by Section 3008(a)(2) of RCRA, 42 U.S.C. § 6928(a)(2).

Refer to Attachment 2C for remainder of the US Ecology / TD*X CAFO document

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 6
1445 Ross Avenue
Dallas, Texas 75202-2733

JUN 2 4 2016

Mr. Estuardo Silva
Louisiana Department of Environmental Quality
Office of Environmental Services
Waste Permits Division
Post Office Box 4313
Baton Rouge, Louisiana 70821-4313

RE: Draft Hazardous Waste Modified Operating and Post Closure Permit
Chemical Waste Management, Inc.
7170 John Brannon Road
Carlyss, LA 70665
Permit# LAD00077201-OP-RN-MO-1
AI# 742/PER20140007

Dear Mr. Silva:

EPA has the following comments on the draft Hazardous Waste Operating and Post Closure Permit for the Chemical Waste Management, Inc. facility located at 7170 John Brannon Road, Carlyss, LA 70665 (Draft Permit). Chemical Waste Management, Inc. (Chem Waste) seeks to add two oil recovery units (ORUs), two thermal desorber units (TDUs), and 19 associated tanks to its operations at its Carlyss, Louisiana facility. The ORUs will be utilized to separate recoverable oils from drilling fluids, refinery tank bottoms, commercially exempt waste, and other non-hazardous and hazardous waste. The TDUs will treat contaminated tank bottoms, sludge, catalyst slurry oil, and other non-hazardous and hazardous waste. The TDUs will be designed to separate organic constituents from a waste stream by condensing the organic components, which would allow for the recovery or disposal of the contaminants. The non-condensable gases will be routed to a thermal oxidizer unit (TOU). The TDU is proposed to be permitted as a miscellaneous unit.

Condition II.E.25.e of the Draft Permit provides that "[o]ne hundred and eighty (180) days before planned construction, the Permittee must submit finalized engineering specifications and operating parameters for the proposed Thermal Desorber Units to the Administrative Authority for approval. The information submitted must comply with the requirements of this permit and L.A.C. 33:V. Chapter 32, and all applicable regulations." Chapter 32 is entitled "Miscellaneous Units", and is the State equivalent of 40 C.F.R. Part 264, Subpart X. Due to the absence of any proposed engineering specifications, performance test, operating conditions, operating parameters, monitoring and recordkeeping requirements, we have identified permit requirements for the TDU and TOU below that we believe are required by the regulations for operation of the TDU and TOU.

How the TDU and TOU are permitted determine the appropriate permit requirements for the units. The material being treated in the TDU and the TOU is already a hazardous waste. Thermal treatment after a material becomes a hazardous waste is fully regulated under RCRA, 54 Fed. Reg. 50968, 50973 (December 11, 1989). The combustion of the non-condensable gases in the TOU meets the

definition of "thermal treatment" in L.A.C. 33:V.109 [40 C.F.R. § 260.10] and thus requires a RCRA permit. The TOU would meet the definition of incinerator in L.A.C. 33:V.109 [40 C.F.R. § 260.10] (an enclosed device that uses controlled flame combustion). However, rather than permitting the TOU as an incinerator, LDEQ could permit the TDU and TOU together as a miscellaneous unit under L.A.C. 33:V. Chapter 32 [40 C.F.R. Part 264, Subpart X]. If this occurs, then LDEQ is required to include in the permit requirements from L.A.C. 33:V. Chapters 3, 5, 7, 17, 19, 21, 23, 25, 27, 29, 31, 4301.F, H, 4302, 4303 and 4305, all other applicable requirements of L.A.C. 33:V. Subpart 1, and of 40 C.F.R. Part 63, Subpart EEE and 40 C.F.R. Part 146, that are appropriate for the miscellaneous unit being permitted.[1]

The decisions as to what appropriate requirements would be included in the permit would be left to LDEQ. However, we believe that the permit conditions would be similar to those set forth in the enclosed Consent Agreement and Final Order, In Re: US Ecology Texas, Inc. and TD*X Associates, LP, EPA Docket Nos. RCRA-06-2012-0936 and RCRA-06-2012-0937, filed October 4, 2012. These permit conditions would include, but not be limited to: 1) a startup, shutdown, and malfunction plan; (2) a performance test, which includes meeting a 99.99% destruction removal efficiency for each principle organic hazardous constituent and meeting certain emission limits; (3) automatic waste feed cutoff system; (4) operating parameters; and (5) investigation, recordkeeping, testing, and reporting requirements. This position was also previously communicated to LDEQ in a letter from EPA to Mr. J. D. Head dated May 2, 2016, in which a copy was sent to LDEQ. A copy of this letter is also enclosed.

If you have any questions, please feel free to call me at (214) 665-8022.

Sincerely,

Susan Spalding
Associate Director
Hazardous Waste Branch (6MM-R)
Multimedia Division

Enclosure

[1] The equivalent Federal provisions are 40 C.F.R. Part 264, Subparts I through O, AA, BB, and CC, 40 C.F.R. Part 270, 40 C.F.R. Part 63, Subpart EEE, and 40 C.F.R. Part 146.
40 C.F.R. § 264.601.

FBH
&F
Fritz, Byrne, Head & Fitzpatrick, PLLC
Attorneys at Law

October 30, 2015

Mr. John Blevins
Compliance Assurance & Enforcement Division
Division Director 6EN
U.S. EPA, Region 6
1445 Ross Avenue, Suite 1200
Dallas, TX 75202-2733

SUBJECT: Hazardous Waste Regulatory Standards for Thermal Desorption Units at TSDFs

Dear Mr. Blevins:

Thermal desorption units (TDUs) are broadly used to treat hazardous waste and hazardous secondary materials. The application of thermal desorption technology within a recycling or reclamation process has been reviewed by Region 6 in multiple enforcement cases. The resulting allegations and consent agreements have established EPA's regulatory position. This letter presents my understanding of EPA's position on certain regulatory and technical requirements for TDUs that are installed at a RCRA treatment storage and disposal facility (TSDF).

A TDU is a thermal treatment device that heats solid material to vaporize, remove, and separate organic constituent materials from the solids. The solids are discharged with little or no residual organic contaminants. In the embodiment that is the subject of this letter, the separated organic constituents are condensed and recovered as a liquid. The TDU process characteristically generates a vent gas after the condensing system. When high organic content material is processed in the TDU it is quite common for the unit to combust the vent gas as an effective means of air pollution control. It is the regulatory applicability related to the combustion of all or a portion of the vent gas that I am seeking clarification.

TDUs at RCRA TSDFs.

One application of thermal desorption technology is to commercially reclaim oil from various generators of oil bearing hazardous waste. These hazardous wastes are generated by petroleum refining, production and transportation practices, and are typically listed as either K048, K049,

Jobs Driven Client Focused
221 West Sixth Street Suite 960 Austin TX 78701 (512) 476-2020 Fax: (512) 477-5267 www.fbhf.com

K050, K051, K052, K169, K170, K171, K172, F037 or F038, or may be hazardous by characteristic (i.e. "D" coded). If the hazardous waste recycled in the TDU comes exclusively from the above sources, the oil reclaimed from the TDU may be burned as a non-hazardous fuel if it meets the Used Oil Specification (UOS) at § 279.11, as per 40 CFR § 261.6(a)(3)(iv)(C). If the oil does not meet the UOS, it would remain a listed waste and require disposal at an appropriately permitted and operated facility, such as a Part 266 "BIF" or a Part 264 Subpart O incinerator. The generator will manifest and ship oil bearing hazardous waste to the commercial facility for treatment and/or reclamation. Based on two focused enforcement actions in EPA Region 6 since 2008, it appears EPA has concluded the following findings and regulatory requirements apply to commercial TDUs receiving offsite RCRA hazardous waste for treatment or reclamation.

1. For a TDU that combusts all or a portion of the vent gas, combustion of the TDU vent gas from RCRA hazardous waste or recyclable RCRA regulated materials is considered thermal treatment that is regulated by RCRA.
2. Thermal treatment of the vent gas requires a RCRA permit, 40 CFR Part 264 Subpart X or Subpart O, and a RCRA permit under one of these Subparts is required even if the facility is operating as a RCRA exempt recycling activity.
3. For TDUs with vent gas combustion processes that are permitted under RCRA Subpart X, the RCRA permitting authority should include in the permit application and final permit appropriate conditions from RCRA Subparts I through O, AA, BB and CC, and also include appropriate conditions from Part 63 Subpart EEE (i.e. the MACT "EEE").
4. The TDU must have an automatic waste feed cutoff system and establish appropriate operating parameter limits (OPLs) prior to initial operation to assure continued compliance with all emissions limits.
5. Minimum appropriate conditions from the MACT "EEE" include compliance with emission limits for particulate matter, hydrochloric acid, volatile metals (Hg), semivolatile metals, low volatile metals, destruction and removal efficiency, carbon monoxide, total hydrocarbons, and dioxins.
6. A compliance demonstration test (Trial Burn) is required to establish that the emissions from the combustion of the vent gas meet the emissions limits that were determined appropriate for the unit, including MACT "EEE."
7. Final OPLs shall be derived from demonstrated test conditions and established as permit requirements for the continued operation of the TDU.
8. Failure to demonstrate compliance with emissions limits requires shutdown of the TDU on RCRA regulated waste materials until corrective measures and re-demonstration can be implemented.

Please confirm that each of these enumerated statements accurately reflect EPA's regulatory conclusions for the management of commercial TDUs that combust vent gases generated from receiving offsite hazardous waste for treatment or reclamation at a TSDF.

Your support in clarifying these matters is most appreciated. My client intends to construct and install one or more TDUs in Region 6 that may be located at a TSDF and desires regulatory certainty on the issues discussed herein.

Sincerely,

J.D. Head
Fritz, Byrne, Head & Fitzpatrick, PLLC
221 W. 6th Street, Suite 960
Austin, Texas 78701
(512) 476-2020 telephone
jdhead@fbhf.com

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 6
1445 Ross Avenue
Dallas, Texas 75202-2733

2 MAY 2016

Mr. J.D. Head
Fritz, Byrne, Head & Fitzpatrick, PLLC
221 West 6th Street
Suite 960
Austin, Texas 78701

Dear Mr. Head:

Thank you for your October 30, 2015 letter requesting clarification of the hazardous waste regulatory standards for thermal desorption units (TDUs) installed at RCRA treatment, storage, and disposal facilities (TSDFs). I apologize for the delay in responding to your request. In your scenario, the TDU reclaims oil from oil bearing hazardous wastes generated by petroleum refining, production, or transportation practices. You describe a TDU as a device that heats solid material to vaporize, remove, and separate organic constituent materials from solids. In the scenario you describe at a TSDF, the separated organic constituents are typically condensed and recovered as a liquid oil. The TDU process also generates a vent gas after the condensing stream.

Your inquiry also references 40 C.F.R. § 261.6(a)(3)(iv)(C)[1], which provides that:

> Oil reclaimed from oil-bearing hazardous waste from petroleum refining, production, or transportation practices, which reclaimed oil is burned as a fuel without reintroduction to a refining process, so long as the used oil specification under 40 C.F.R. § 279.11 is not subject to regulation under 40 C.F.R. Parts 262 – 268, 270, or 40 C.F.R. Part 124, and is not subject to the notification requirements of Section 3010 of RCRA.

If the above conditions are met, then the reclaimed oil can be burned as a non-hazardous fuel. If the oil-bearing hazardous waste is not from petroleum refining, production, or transportation practices, then the reclaimed oil is subject to RCRA regulation.

If a TDU combusts all or a portion of the vent gas, combustion of the TDU vent gas from RCRA hazardous waste or recyclable materials [40 C.F.R. § 261.6(a)(1)] is considered thermal treatment that is regulated by RCRA. The material being treated (oil-bearing hazardous waste) is already a hazardous waste. Heating hazardous wastes to a gaseous state is subject to regulation under RCRA as treatment of hazardous waste, and thermal treatment after a material becomes a hazardous waste is fully regulated under RCRA. 54 Fed. Reg. 50968, 50973 (December 11, 1989). Thus, thermal treatment of the vent gas requires a RCRA permit.

---

[1] Since you did not reference a specific State in which your client may operate a TDU, this letter cites to the applicable federal regulations. If the State has an authorized RCRA program, the corresponding state regulation would be applicable.

ATTACHMENT 4

A – Thermaldyne PFD, Material and Energy Balance and Emission Estimates

B – El Dorado Engineering Thermaldyne Process Flow Diagram, Heat & Material Balance & Emission Estimate Review

C – Review of the Thermaldyne Air Permit Estimated Emissions

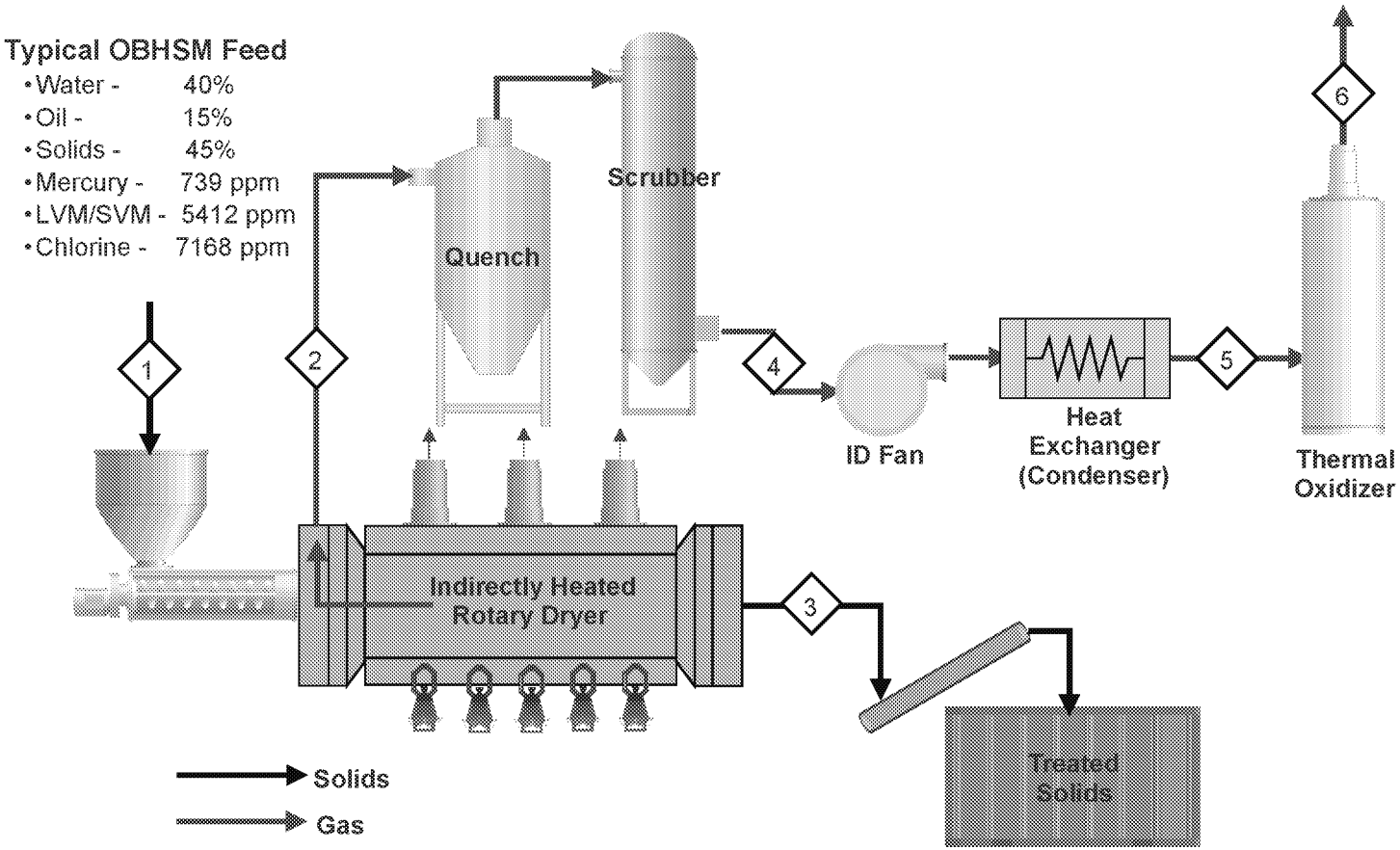
D – TDX Reclaimed Oil Load Report (Basis for recycled oil quantity)

E – Mercury Profiles Report (Basis for mercury pollutant HRA in Thermaldyne feedstream)

F – LVM/SVM Profiles Report (Basis for SVM/LVM pollutant HRA in Thermaldyne feedstream)

G – Chlorine Profiles Report (Basis for HCl pollutant HRA in Thermaldyne feedstream)

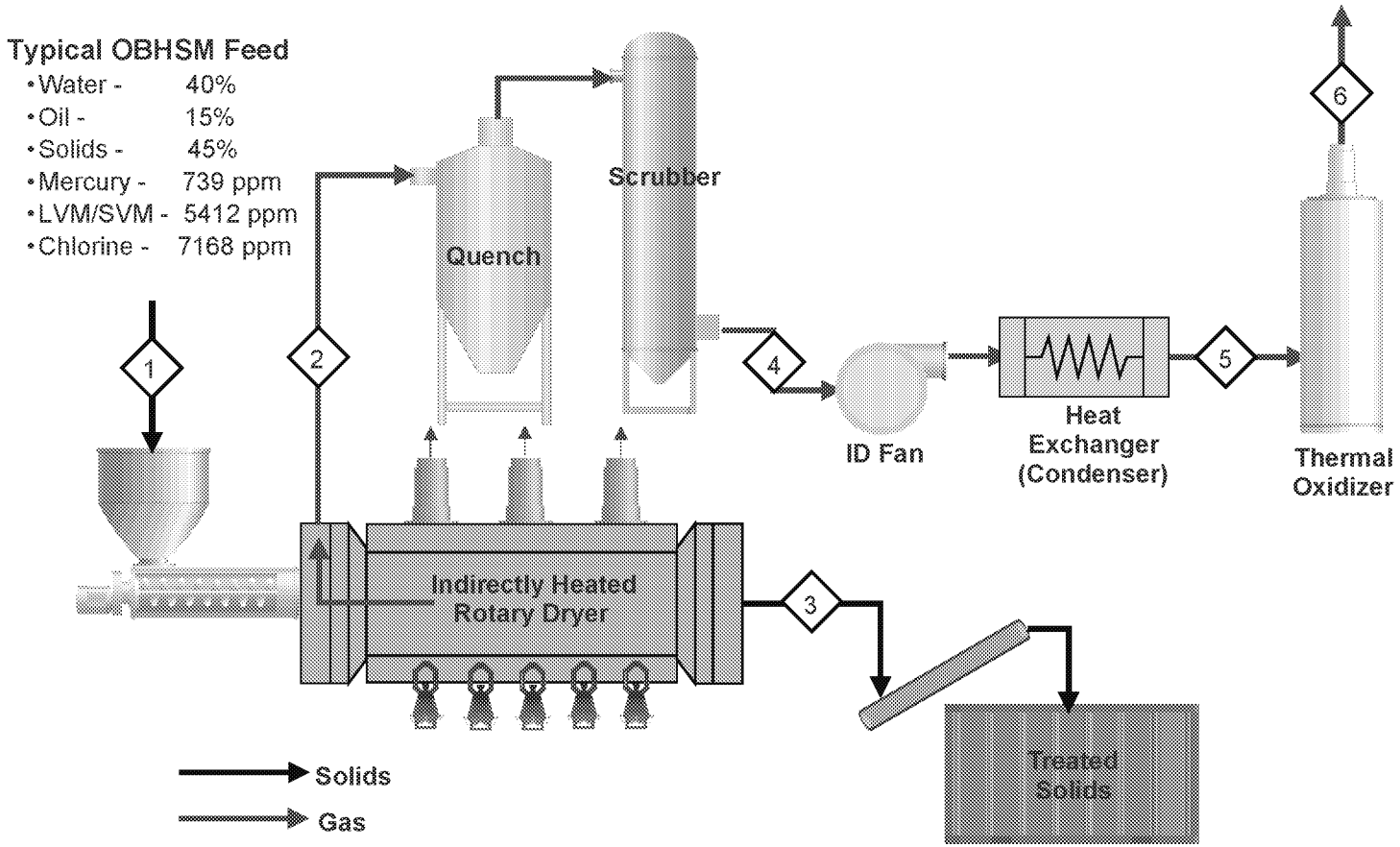
Thermaldyne Process
Case 1 - 130°F Condenser



STREAM NO. / COMPONENT		1	2	3	4	5	6
		SLUDGE FEED TO DRYER	DRYER VENT GAS	DRYER SOLIDS	SCRUBBER EXHAUST GAS	HEAT EXCHANGER EXHAUST GAS	THERMAL OXIDIZER EXHAUST GAS
CO2	LB/HR						2,041
O2	LB/HR		521		521	521	2,530
N2	LB/HR		1,729		1,729	1,729	15,472
H2O	LB/HR	8,000	8,017		9,303	369	1,236
SOLIDS / PARTICULATE	LB/HR	9,000	450	8,550	2.3	2.3	2.3
OIL / HYDROCARBONS	LB/HR	3,000	3,000		800	600	6
TOTAL MASS FLOW	LB/HR	20,000	13,717	8,550	12,355	3,221	21,286
VOLUMETRIC FLOW	ACFM		7,452		5,495	971	18,715
TEMPERATURE	°F	70	400	850	198	130	1600
PRESSURE	IN. W.C.	0.0	-1.0	0.0	-25.0	2.0	0.0
ENTHALPY	MM BTU/HR	0.1	10.8	1.7	10.6	0.5	10.3

Stack Emissions ⟨6⟩	Units	MACT EEE	Thermaldyne	LDEQ Air Permit
Particulate Matter	gr/dscf	0.0016	0.09	No Limit
Dioxins and Furans	ng/dscm	0.2	2.2	No Limit
Mercury	ug/dscm	8.1	59,345	No Limit
LVM / SVM	ug/dscm	23	2,265	No Limit
HCl	ppmV	21	1,794	No Limit
Particulate Matter	lb/hr	0.040	2.3	No Limit
Dioxins and Furans	lb/hr	2.18E-09	2.40E-08	No Limit
Mercury	lb/hr	0.00009	0.65	No Limit
LVM / SVM	lb/hr	0.00025	0.025	No Limit
HCl	lb/hr	0.35	29.5	No Limit

Thermaldyne Process
Case 2 - 200°F Condenser



STREAM NO. / COMPONENT		1	2	3	4	5	6
		SLUDGE FEED TO DRYER	DRYER VENT GAS	DRYER SOLIDS	SCRUBBER EXHAUST GAS	HEAT EXCHANGER EXHAUST GAS	THERMAL OXIDIZER EXHAUST GAS
CO2	LB/HR						3,288
O2	LB/HR		521		521	521	1,251
N2	LB/HR		1,729		1,729	1,729	16,288
H2O	LB/HR	8,000	8,017		9,223	9,223	10,792
SOLIDS / PARTICULATE	LB/HR	9,000	450	8,550	2.3	2.3	2.3
OIL / HYDROCARBONS	LB/HR	3,000	3,000		800	800	8
TOTAL MASS FLOW	LB/HR	20,000	13,717	8,550	12,275	12,275	31,629
VOLUMETRIC FLOW	ACFM		7,452		5,457	5,098	32,450
TEMPERATURE	°F	70	400	850	198	198	1600
PRESSURE	IN. W.C.	0.0	-1.0	0.0	-25.0	2.0	0.0
ENTHALPY	MM BTU/HR	0.1	10.8	1.7	10.5	10.5	28.2

Stack Emissions (6)	Units	MACT EEE	Thermaldyne	LDEQ Air Permit
Particulate Matter	gr/dscf	0.0016	0.05	No Limit
Dioxins and Furans	ng/dscm	0.2	2.2	No Limit
Mercury	ug/dscm	8.1	799,981	No Limit
LVM / SVM	ug/dscm	23	1,349	No Limit
HCl	ppmV	21	2,644	No Limit
Particulate Matter	lb/hr	0.068	2.3	No Limit
Dioxins and Furans	lb/hr	3.70E-09	4.06E-08	No Limit
Mercury	lb/hr	0.00015	14.8	No Limit
LVM / SVM	lb/hr	0.00042	0.025	No Limit
HCl	lb/hr	0.59	73.8	No Limit

WASTE_STREAM_NUMBER	WS_NAME	MERCURY_PPM
090087855	KINDER MORGAN PIPELINE SLUDGE AND SOLIDS	999
090087193	PIGGING WASTE (SLUDGE)	999
090099524	K050	763
090106031	RRDS - FAILS TS F037, <10PPM BZ, >1000PPM TPH, HG 628 PPM	628
090093937	RRDS - D018, >10PPM BZ, >1000PPM TPH, HG 550-600 PPM	572
090097246	OILY MATERIAL LEAD CHROME ARSENIC	571
090096509	OILY MATERIAL	571
090087036	DRIP LINE SOLIDS	496
090100216	ORBITAL SHAKER SLUDGE & REJECT FEED	434
090092675	ORBITAL SHAKER SLUDGE & REJECT FEED	434
Sample Size, n	N	10
Sample Mean	x (avg)	647
Sample variance	s^2	43,593
Std Dev	s	209
Standard error	sx=(s)/n^0.5	66
Standard error percent of avg	sx%	10%
"t" value at 90% conf. interval	t.20 See Table	1.39
90% Confidence Interval Limit	CI=(x-avg) + (t.20)(sx)	739

WASTE_STREAM_NUMBER	WS_NAME	LVM_SVM_PPM
090103576	CFU SPENT CATALYSTS - REACTORS 801A & 801B	10,490
090106661	SWMU 46 F037 WASTE	7,403
090101921	CHROMIUM CATALYST	7,000
090102582	HAZARDOUS TANK BOTTOMS (NON-REACTIVE)	2,848
090104169	FILTER PRESS CAKE; HAZARDOUS (NON-REACTIVE); TANK T-8A	2,848
090103346	SPENT HYDROPROCESSING CATALYST (INCLUDING SWEEPINGS & FINES), TK341 & TK351 CATALYST	2,510
090103466	SPENT HYDROPROCESSING CATALYST (INCLUDING SWEEPINGS & FINES), TK341 & TK351 CATALYST - DRUMS	2,510
090101053	CHD1 SPENT CATALYST	1,898
090105022	DECOKE RESIDUE	1,604
090102214	DHT D-601 SPENT HYDROTREATING CATALYST	1,300
Sample Size, n	N	10
Sample Mean	x (avg)	4,041
Sample variance	s^2	9,692,264
Std Dev	s	3,113
Standard error	sx=(s)/n^0.5	984
Standard error percent of avg	sx%	24%
"t" value at 90% conf. interval	t.20 See Table	1.39
90% Confidence Interval Limit	CI=(x-avg) + (t.20)(sx)	5,412

WASTE_STREAM_NUMBER	WS_NAME	CHLORINE_PPM
090099681	SCRUBBER FILTER WASTE/SLUDGE WITH PCE	20,000
090070123	HDU2 CATALYST	10,000
090064853	PIPELINE FLUSH	2,999
090064854	PIPELINE FLUSH	2,999
090064851	PIPELINE FLUSH	2,999
090081411	CHLORIDE ABSORBER CATALYST	1,499
090092326	PPE CONTAMINATED W/K170 CLARIFIED SLURRY OIL	1,400
090076026	PROCESS WASTE LIQUIDS (WITH CHLORIDES) FOR THERMAL RECYCLING	1,000
090100182	TANK SLUDGE	1,000
090073834	WASH PAD SLUDGE	999
Sample Size, n	N	10
Sample Mean	x (avg)	4,490
Sample variance	s^2	36,958,989
Std Dev	s	6,079
Standard error	sx=(s)/n^0.5	1,922
Standard error percent of avg	sx%	43%
"t" value at 90% conf. interval	t.20 See Table	1.39
90% Confidence Interval Limit	CI=(x-avg) + (t.20)(sx)	7,168

Historical TD*X Waste Oil Content

Year	Total TD*X Waste (Tons)	Oil Reclaimed (Gallons)	Oil Reclaimed (Tons)	Oil Burned in T.O. (Tons)	Oil in Feed (Tons)	Oil in Feed (% wt.)	Waste Reclaimed (% wt.)	Waste Disposed (% wt.)
2012	38,449	1,396,667	5,584	714	6,299	16%	15%	85%
2013	33,182	1,301,357	5,203	665	5,868	18%	16%	84%
2014	31,390	1,147,087	4,587	656	5,242	17%	15%	85%
2015	44,676	1,572,505	6,288	1,043	7,330	16%	14%	86%
2016	46,236	1,518,994	6,074	988	7,061	15%	13%	87%
2017	49,869	1,082,830	4,330	895	5,225	10%	9%	91%
2018	26,416	475,814	1,902	526	2,429	9%	7%	93%
Total	270,218	8,495,254	33,967	5,487	39,454	**15%**	**13%**	**87%**

Note 1. Column 2 total tons data from TCEQ STEERS US Ecology facility receipts data.
Note 2. Column 3 oil volume data as per Attachment 4D TDX Oil Load Report

Subject: Thermaldyne Dioxin Emissions Estimate
From: George Hay <GHay@fmtinc.com>
Date: 7/18/2018 10:35 AM
To: "Galbraith.Michael@epamail.epa.gov" <Galbraith.Michael@epamail.epa.gov>
CC: Carl Palmer <cpalmer@tdxassociates.com>

Mike,

The basis for the dioxin concentration in the Thermaldyne TO off gas is as follows:

Dioxin/furan emissions and thermal oxidizer destruction and removal efficiency (DRE) were measured during the compliance demonstration test (CDT) of the TD*X Associates Model 6042 Indirect Thermal Desorption Unit (TDU). The testing was performed to meet the requirements for conducting a CDT as part of USEPA Region 6 Consent Agreement and Final Order (CAFO) effective October 4, 2012. This CDT was performed at the US Ecology Texas TSDF in Robstown, Texas. The testing period was September 24 and 25, 2013. Test results showed average dioxin/furan emissions of 0.0004 ng-TEQ/dscm at a corresponding DRE of 99.99991%. Emission estimates for the Thermaldyne unit were extrapolated using TD*X stack test results of 0.0004 ng/dscm, divided by two, and ratio of TD*X 99.99991% DRE to Thermaldyne 99% DRE = 2.2 ng/dscm. I believe that the Thermaldyne emissions may actually exceed this estimate for the following reasons.

The Thermaldyne primary desorption chamber in the TDU provides substantial gas residence time at temperatures that are optimal for dioxin formation. The unit does not have an OPL for organic chlorine in the feedstream. Our review of similar material provided for reclamation at our Robstown unit indicates that our OPL restricted chlorine containing OBHSM can contain 500 ppm organic chlorine, on average. Those constituents are vaporized in the TDU primary, along with the oil from the feedstream. The feedstream contains significant concentration of carcinogenic polynuclear aromatic hydrocarbons (cPAH). In our experience, those will average about 1000 ppm or more in the OBHSM feedstream. That represents 20 lb-cPAH/hr being present in the gaseous state in the primary, along with 10 lb-chlorine/hr from the organic chlorine that is also desorbed.

Thermaldyne does not provide an active nitrogen inerting system, but rather allows oxygen from air in-leakage into the primary to be consumed by partial combustion in the primary. This gas mixture in the primary is intimately contacted by 9000 lb/hr of dry solids from the refinery, containing a substantial inventory of catalyst sites. The gas temperature range in the countercurrent flow primary is approximately 500-1000°F. The gas residence time in the primary at this condition is 15 to 30 seconds. These conditions are ideal for dioxin formation in the Thermaldyne TDU primary. For reasons that I will not disclose herein, the proposed thermal oxidizer as designed will be unable to mitigate dioxins in the primary desorber vent gas steam to the MACT EEE standards.

But the point is how will Thermaldyne control the emissions of dioxins, and other restricted pollutants? They need to be required to fully characterize their feedstream, disclose the design of their unit as it is intended to manage the control of emission of restricted pollutants, adopt interim OPLs to meet emission limits, conduct a CPT to demonstrate compliance with emission limits, and adopt final OPLs to assure continued compliance. The OPLs should include key process parameters such as residence time, temperature and excess air in the TO. Probably should also include a CEMS to assure proper conditions in the TO. They should also include feedstream limits based on verified operation in compliance with emission limits. The proposed variance, including the air permit with its complete lack of conditions, does nothing to ensure that a hazardous waste combustor will not exceed emission limits.

Further comments on the Thermaldyne unit are considered confidential engineering analysis by TD*X. We are reluctant to provide Thermaldyne with written engineering comments on their unit, however, we are happy to discuss them with you in a technical call. Please let me what day and time works best for you.

Respectfully,

George Hay

EL DORADO ENGINEERING INC.
9089 S 1300 W, Suite 150 • West Jordan, UT 84088 • Tel: (801) 966-8288 • Fax: (801) 966-8499
www.eldoradoengineering.com

Date: July 29, 2018

Subject: Review of Thermaldyne Air Permit Estimated Emissions

El Dorado Engineering, Inc. (EDE) has been contracted by TD*X Associates to provide independent third party review of the emission estimates presented in the Thermaldyne Air Permit. The scope of this review is limited to emissions generated in the Thermal Desorption Unit (TDU).

As part of this task, EDE has reviewed the Thermaldyne, LLC permit modification application dated June 2018, Thermaldyne Air Permit 3120-00115-00 dated May 4, 2015, and Thermaldyne's Verified Reclamation Facility Operation Description dated June 2018. EDE has also reviewed the emission estimates performed by TD*X Associates.

As the oil-bearing hazardous secondary materials (OBHSM) characterization was not presented in the permit applications, EDE has used the material profile reports from US Ecology for similar materials in this analysis. The US Ecology profiles characterize the concentrations of Mercury, Low-Volatile and Semi-Volatile Metals and Chlorine in the OBHSM. In absence of actual OBHSM characterization from materials received by Thermaldyne, the profile reports from US Ecology are considered to accurately describe the OBHSM.

EDE has reviewed the statistical analysis performed by TD*X on the OBHSM composition and concurs with this approach. The mercury, SVM/LVM, and chlorine concentrations of 739 ppm, 10,800 ppm, and 7,168 ppm, respectively, are accepted as a valid basis for this analysis.

The permit application states a stack flow of 8,000 acfm at 1,500°F on the outlet of the 5MMBtu/hr Thermal Oxidizer with a VOC feed rate of 250 lbs/hr. However, meeting all of these process conditions concurrently would generate extremely high levels of carbon monoxide. Therefore, in EDE's analysis, the stack flow rate of 8,000 acfm and the 250 lb/hr VOC feed rate are maintained, but the thermal oxidizer rate is reduced to maintain target outlet temperature.

After review of the waste composition and TDU process, EDE has identified the following pollutant emissions that would far exceed that which is usually required for this type of process. These pollutants include particulate matter, mercury, hydrogen chloride, low-volatile and semi-volatile metals, and dioxin and furans.

Particulate Matter

It can be reasonably assumed that particulate matter will be entrained in the thermal desorption process. The amount entrained will be dependent on the waste characteristics (particulate size distribution), geometry and process conditions of the TDU. Similar processes have measured an entrainment rate of approximately 2.25% of feed.

Particulate control in the TDU is supplied by a variable throat venturi scrubber. EPA design guides use 70-95% efficiency for this type of control. However, removal efficiencies as high as 99.5% can been obtained for certain particle sizes with proper implementation and controls.

EL DORADO ENGINEERING INC.
9089 S 1300 W, Suite 150 • West Jordan, UT 84088 • Tel: (801) 966-8288 • Fax: (801) 966-8499
www.eldoradoengineering.com

Based on the above assumptions, a PM emission rate of 2.3 lbs/hr is expected from this process. This emission rate is considered the best case with the permitted control device. It should also be noted that if a scrubber efficiency of only 95% is obtained, this rate would increase to 22.5 lbs/hr.

At the stated stack flow conditions, the PM concentration would be approximately 7.7 gr/dscf.

Mercury
Using an average of 739ppm Hg in the OBHSM, an emission rate of 0.26-14.8 lb/hr Hg is expected. The wide range of emissions is due to the profound effect of the operating temperatures of wet scrubber and condenser, which are not stated in the air permit.

The lowest average Hg concentration would be approximately 34,500 μg/dscm, with an annual emission rate of 2,300 lbs.

SVM/LVM
Using the lowest estimated particulate emission rate of 2.3 lb/hr and 10,800 ppm SVM/LVM concentration, an emission rate of 0.024 lb/hr is predicted. At stack flow conditions, the average SVM/LVM concentration would be approximately 3,200 μg/dscm.

The annual emission rate of semi-volatile and low-volatile metals would be 213 lbs at these conditions.

Chlorine
With an average of 7,168 ppm organic chlorine in the OBHSM and a removal efficiency of 80% in the scrubber and condenser, approximately 25.3 lbs/hr of HCl will be generated in the thermal oxidizer and released to the environment.

At stack flow conditions, a concentration of 2,050 ppm HCl is predicted. At these conditions, over 220,000 lbs per year of HCl will be emitted by this process.

Dioxin/Furan
Whenever chlorine is present in a combustion process, there is a high potential to produce dioxin and furans (D/F). It is expected that D/F will be produced in the thermal oxidizer and emitted without any downstream control. While it is reasonable to expect that these emissions will exceed typical emission limits, dioxin and furan emissions are not predicted by EDE under this analysis.

Morgan Frampton

EL DORADO ENGINEERING INC.
9089 S 1300 W, Suite 150 • West Jordan, UT 84088 • Tel: (801) 966-8288 • Fax: (801) 966-8499
www.eldoradoengineering.com

CAPABILITIES AND EXPERIENCE

INTRODUCTION

El Dorado Engineering, Inc. (EDE) is a high technology design and consulting engineering firm with extensive capabilities in mechanical, chemical, electrical, and controls engineering. We are an employee-owned small business with the flexibility to meet the client needs.

Company personnel provide professional expertise in the areas of design, development, and provision of many types of facilities, processes, machines, and associated controls. EDE personnel have designed, built, and tested hundreds of pieces of equipment as well as designing and providing numerous turnkey system installations throughout the U.S. and internationally. EDE performs turnkey or design/build projects that include fabrication and construction as well as providing engineering and consulting services.

SPECIALIZED ENGINEERING SERVICES

In addition to traditional engineering expertise, EDE offers several areas of specialization, including:

- Combustion, incineration, and thermal treatment Systems
- Explosive and ordnance equipment design
- Demilitarization equipment for chemical and conventional munitions
- Hazardous waste treatment
- Robotics and automation in hazardous environments
- Safety and hazards analysis
- Environmental permitting
- Air emissions modeling
- Pollution Control Systems
- New technology development

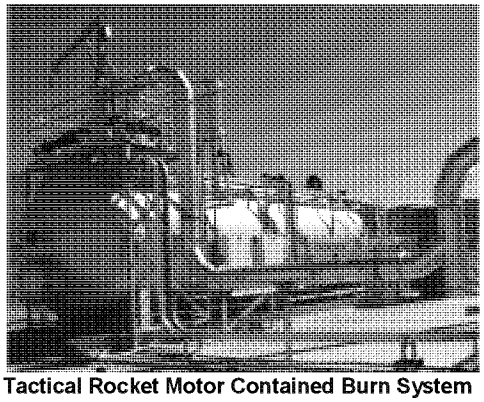
EDE has extensive experience and expertise in providing equipment and facilities, and developing technology for the handling, containment, detection, disposal, and treatment of: explosives, ordnance, propellants, explosive contaminated soil, and related waste materials. EDE provides engineers, explosive specialists, and support staff for explosive and propellant related engineering operations. EDE is intimately familiar with both environmental and safety requirements regarding ordnance and explosive wastes. One of EDE's primary specialties is the development of equipment and systems for demilitarization of conventional and chemical munitions. EDE often uses our own extensive experience to develop "first of a kind" equipment and technology for

demilitarization, ranging from simple jigs and fixtures up through complete explosive waste incineration facilities and sophisticated automated equipment. EDE is a recognized leader in Explosive Waste Incineration technology and thermal treatment systems development including Contained Burning and Flashing Furnace technology. EDE has also developed extensive procedures for sampling, cleanup and closure of explosive contaminated facilities.

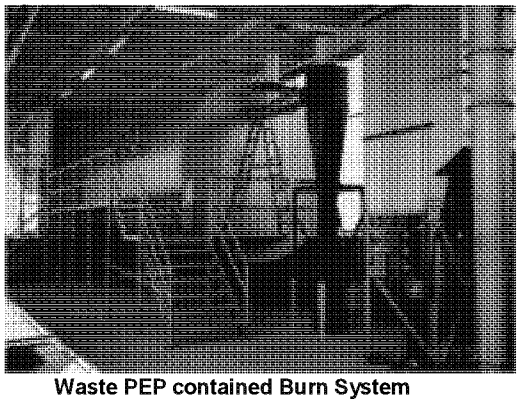
Combustion, Furnaces, Incineration, and Thermal Treatment

EDE personnel have extensive experience regarding the design and provision of combustion equipment and systems, including the development of low-NOx burners, novel flare systems, and a wide variety of fired heating systems, furnaces, incinerators, and thermal treatment systems. EDE has designed, installed and permitted many hazardous waste incinerators located worldwide (See Figure 1). These incinerators are designed to meet all current regulations. EDE has designed liquid and solid feed devices, pollution control equipment, storage and ancillary support equipment. EDE has also designed, developed, and installed non-incineration thermal treatment processes that are not encumbered by incinerator regulations (See Figure 2). EDE has designed and provided transportable thermal treatment systems used at many U.S. military sites (See Figure 3).

Figure 1: EDE Explosive Waste Incinerator Facility, Belgium



Tactical Rocket Motor Contained Burn System



Waste PEP contained Burn System

Figure 2: Contained Burn Systems

Figure 3: Transportable Flashing Furnace

Explosives and Ordnance Equipment and Technologies

EDE has designed all types of equipment for machines and processes regarding explosives, propellants and ammunition. EDE specializes in the handling, containment, detection, disposal, and treatment of: explosives, ordnance, propellants, explosive contaminated soil, related waste, and hazardous waste materials. EDE provides engineers, explosives specialists, and support staff for explosive and propellant related engineering operations. EDE personnel have an intimate knowledge of past operations regarding explosives and chemicals at military installations throughout the U.S. EDE has been a prime contractor on major multi-million, multi-year task order chemical weapons destruction contracts with Huntsville Corps of Engineers and Tooele Army Depot.

EDE has designed all types of equipment and provided broad engineering support including environmental studies for chemical weapons demilitarization. EDE engineers

have played key roles in programs for disposal, clean up, decontamination, testing, surveillance, and maintenance of chemical and biological warfare items.

EDE is very experienced with various methods of disassembly and size reduction associated with the demilitarization (demil) or recycling of large rocket motors and munitions. EDE personnel have developed and tested shears, saws, punches, crushers, and other mechanical processes in order to access or remove explosives from munitions. EDE has also participated in a wide variety of non-mechanical extraction projects that include steamout, washout, drillout, hogout, cavijet, microwave meltout, and cryowashout.

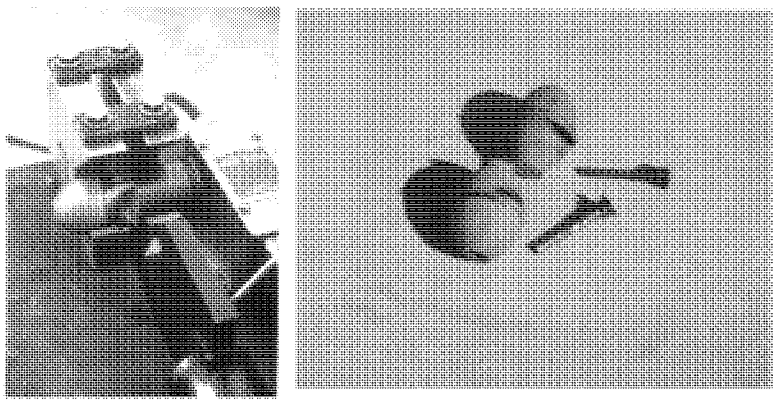


Figure 4: Punch Shear Operations

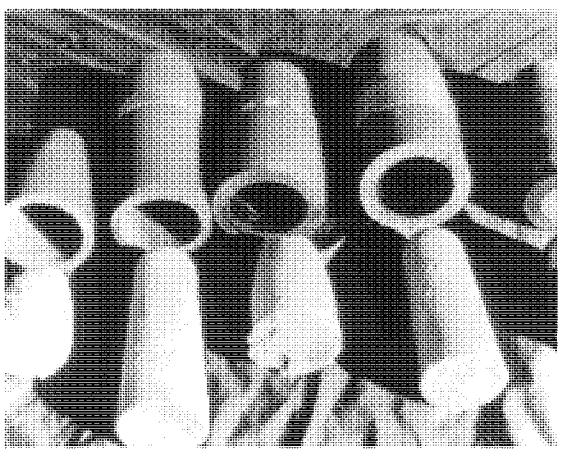


Figure 5: Slug Out

Robotics and Automation

EDE has developed robotic systems and automation to enhance production and worker safety on a wide variety of processes. EDE is not a representative of any particular brand of robot. We employ competent robotic experts who are adept at robot applications and at customizing standard robotic systems and peripheral equipment interfaces into a total robotic package.

Safety
EDE has provided clients with hazards analysis and risk assessment services for processes, procedures, and equipment. EDE engineers are accustomed to working with all DOD safety manuals including AMCR 385-100 (Army Safety) OP-5 (Navy Safety) and AFM 127-100 (Air Force Safety). The EDE staff are contributing authors to MIL-STD-398, the Health and Safety Manual for munitions facilities.

Environmental Permitting
EDE has provided RCRA Part A & Part B permit applications for clients throughout the U.S. These have been for storage, treatment and incineration facilities including Subpart X open burning. EDE has also prepared air permit and PSD permit applications, RCRA closure plans, and subpart J, tank assessments.

EDE has direct experience in virtually all aspects of RCRA and CERCLA/SARA implementation, including facility assessments, remedial investigations, feasibility studies, remedial design, construction, operation and maintenance programs, and related NEPA documentation, including EA's and EIS's

EDE has broad base experience with applicable federal and state regulations, having performed services regarding hazardous waste in virtually every section of the U.S. EDE has worked with the major explosive and propellant industries including Aerojet, Thiokol, United Technologies, Hercules, Honeywell, DuPont, Rockwell, Martin Marietta, Atlantic Research Corp., Tracor, Dyno Nobel, NASA, U.S. Army, U.S. Navy, and the U.S. Air Force in the assistance of permit preparation and environmental assessments regarding explosives and propellants.

Hazardous Waste Treatment
EDE hazardous material experience includes: PCB's, PCP's, dioxins, furans, nerve agents, phosgenes, solvents, halogens, heavy metals, flammables, explosives, white phosphorus, Napalm, smokes, dyes, pyrotechnics, carcinogens, organotin paints, low level radioactive wastes, acids and corrosives, toxics, solids, liquids, and gases. Our experience includes the preparation of closure plans for military installations, requiring Department of Defense Explosive Safety Board (DDESB) approval. EDE personnel also served on a joint services panel that surveyed Department of Defense military installations regarding explosive and chemical agent disposal operations and the impact of environmental regulations on these operations.

Air Emissions Modeling
EDE has developed and validated a proprietary computer air model for open burning of explosives and static firing of rocket motors that is widely accepted in permitting these activities (See Figure 6).

Figure 6: EDE emissions and air **modeling validation test, static firing Pershing rocket motor**

Pollution Control Systems

EDE personnel have extensive experience with the design and development of both wet and dry air pollution control systems, including the design of secondary combustion chambers (afterburners), cyclone particulate collectors, catalytic and non-catalytic NOx reduction systems, baghouses, venturi scrubbers, packed bed scrubbers, HEPA filter systems, carbon filters, mercury removal systems, acid gas scrubbers, dioxin and furan removal, caustic injection systems, ammonia vaporizers and injection grids, low NOx burners and combustion techniques, heat exchangers, fans, and all associated controls.

Our recent turnkey hazardous waste incinerator installed in Belgium easily met all of the most stringent EU requirements and was declared to be the cleanest incinerator of this type in all of Europe. The large scale contained burn system provided at Camp Minden, Louisiana, safely achieved throughput rates much higher than any previous energetics disposal facility (>15.6 million lbs in less than one year), while achieving emission rates at or below ambient levels, with EPA approved stack testing demonstrating less than 0.01 ppm of criteria pollutants (CO, NOx, THC) and non-detect of all hazardous constituents. This installation represents the lowest emissions achieved in the world for a facility of this type, which is particularly challenging given the high nitrogen content of the explosive materials in the workload.

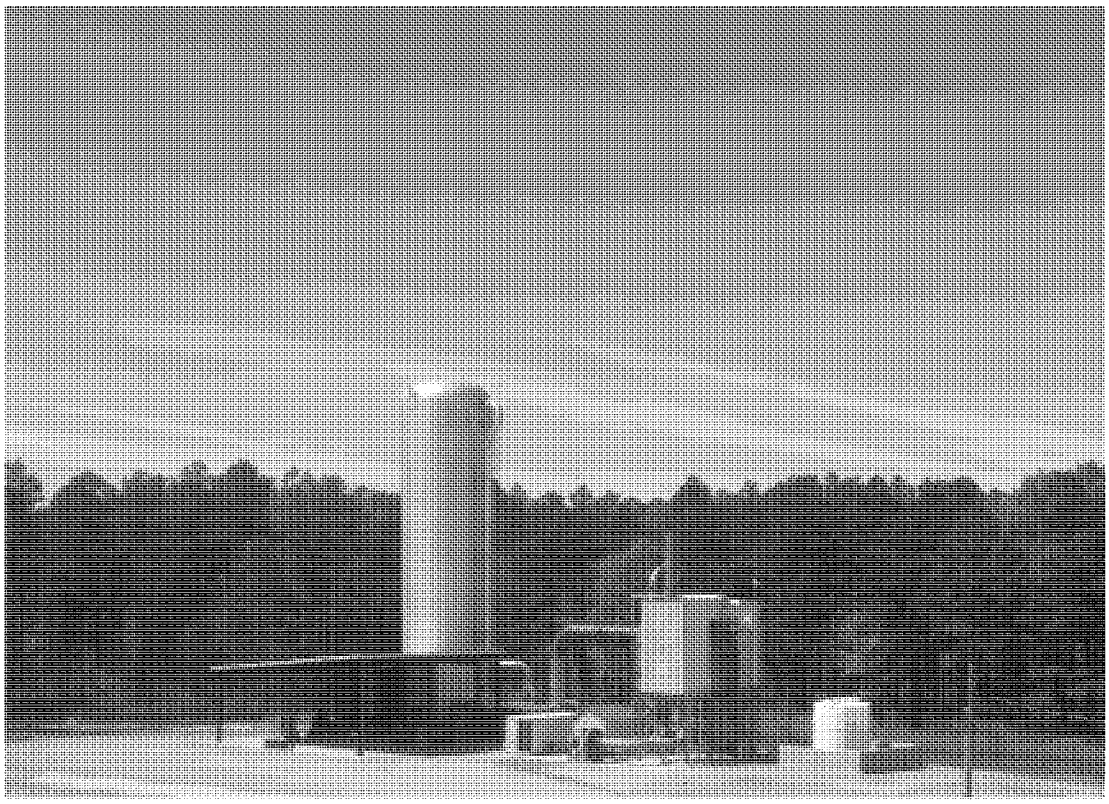


Figure 7: Camp Minden Contained Burn Facility

New Technology Development

EDE has worked on developing and demonstrating several novel technologies, such as: microwave meltout of explosives from bombs for explosives recycling, induction heating meltout of explosives for recycling, and wash out and recovery of magnesium from illuminating flares for reuse.

EDE has pioneered and fielded new technologies for treating explosive wastes including Transportable Flashing Furnace technology (Figure 3) and Contained Burn technology (Figures 2 & 7). The Camp Minden facility was an especially challenging project as this first of a kind facility was designed, fabricated, installed, and commissioned in less than 9 months due to an aggressive project schedule to provide this system as an emergency response for safe disposal of unstable explosive materials.

EDE personnel have extensive experience with most of the new technologies that have been researched and developed for application in the demil sector over the last 40 years. Thus, EDE has a unique perspective in understanding what works and, probably more importantly, what does not work from a technical and economic perspective. EDE has firsthand experience in recognizing technologies that can be successfully applied as well as recognizing foreseeable challenges associated with many new technologies.

TRADITIONAL ENGINEERING SERVICES

Machine Design. EDE has designed all types of machines and systems ranging from simple tool modifications to complex highly automated processes.

Hydraulics, Pneumatics, Fluidics, Electronics. EDE personnel have experience in designing machines that operate on hydraulic, pneumatic, or electric power.

Chemical Process Equipment. EDE has a wide range of process plant experience including design of hazardous waste incinerators, pollution control equipment, and a wide variety of chemical plant processes including liquid nitrogen manufacturing and distribution.

Automation and Controls. EDE possesses experience with microprocessors, digital sequencers, and standard analog controls coupled with instrumentation for the recording/controlling of precision automated equipment. Experience with video systems, infrared and ultraviolet sensor systems, and special audio systems are available. EDE designs and fabricates a wide range of control panels in-house, from simple push button controls to large motor control centers (MCCs). EDE also possesses in-house capabilities for PLC programming and advanced HMI systems.

Material Handling. Designs for standard and specialized materials handling and conveying equipment have been developed, fabricated and installed utilizing all types of indexing and transfer mechanisms.

Lighting and Power. EDE personnel have had experience in the layout of lighting and industrial power distribution systems, both single and three phase.

HVAC. EDE has performed design development and installation of HVAC systems for all size buildings, dams, power plants, computer centers, and environmental test chambers.

Strength of Materials and Selection. EDE can select required materials based on desired properties, strength, and corrosion resistance and fatigue analyses. EDE personnel have completed designs for high temperature and severely corrosive environments.

Utility Development. EDE has performed all types of utility designs including waste fired boilers, as well as steam, heat, and electrical distribution. EDE provided the electrical design for the development of the Utilidor system for Barrow Point, Alaska.

Water Treatment. EDE has provided several engineering designs for water treatment projects ranging in size from a water cooling tower filtration facility required to handle 400,000 gpm for a DOE gaseous diffusion plant in Kentucky, to a 25 gpm recycling, filtration and deionization facility in California, and a small batch treatment system for metal finishing operations in Utah.

Economic, Energy and Feasibility Studies. EDE has performed several studies for energy conservation, economic analyses, and waste to fuel studies, feasibility and optimization studies.

EL DORADO ENGINEERING INC.

9089 S 1300 W, Suite 150 • West Jordan, UT 84088 • Tel: (801) 966-8288 • Fax: (801) 966-8499
www.eldoradoengineering.com

COMPANY: El Dorado Engineering, Inc.

NAME: Morgan Frampton

EDUCATION: Utah State University, Mech Engr., B.S. 2007

Summary of Experience:

Mr. Frampton serves as a design engineer, lead field engineer and project engineer for complex first-of-a-kind equipment and systems used for demilitarization and other processes for energetic materials. As a design engineer he has been responsible for the design, procurement and fabrication of material handling, combustion, pollution abatement and water treatment systems. As a field engineer he has led the installation, commissioning, testing and maintenance of a wide variety of equipment and systems. As a project engineer he has been responsible for the management of schedules, budgets and personnel resources while also leading the design, procurement, installation and commissioning of the project.

As a design engineer, he has supported proof of concept test planning and execution. He has developed mathematical models based on empirical data and first principles that are currently used in the design of specialized combustion systems. Mr. Frampton has completed specialized training in high pressure (60,000 psi) water jet cutting technology. He is trained and experienced in 3D computer design tools.

EL DORADO ENGINEERING, INC. 2007-PRESENT

- Project Engineer for first of a kind Contained Burn System, Camp Minden, Louisiana. Led the design, procurement, installation and commissioning of the highest throughput system of its kind in the world. The $10M+ project was completed in 9 months and under budget.

- Lead Field and Design Engineer of a turnkey Explosive Waste Incinerator in Belgium. Responsible for the design, procurement and fabrication of pollution control equipment. Responsible for the installation, commissioning and testing of the entire system. Currently assists with the bi-annual maintenance and inspections of the system.

- Project Engineer for a Stationary Flashing Furnace for energetic materials for a commercial client in Mexico.

- Design Engineer for first-of-a-kind ammonium perchlorate rocket motor disposal facility, Letterkenny Army Depot. Supported the design of the overall process, feed system, combustion system, wash systems, pollution abatement system and water treatment system.

- Design and Field Engineer for first-of-a-kind explosives recovery plant for 60 mm mortar rounds. Responsible for the design and procurement of material handling and water treatment systems. Conducted commissioning and acceptance testing of the system; which involved final setup and field modifications of the waterjet cutting system, 6-axis robotic arm, induction heating system and material handling systems.

- Design and Field Engineer for a first-of-a-kind magnesium recovery plant from army illumination candles. Designed material handling equipment for the process. Supported the commissioning and acceptance testing of the entire system.

- Design Engineer for a Transportable Flashing Furnace for flashing operations at Anniston Army Depot.

- Provided consulting and design to improve researcher site access and safety at a remote site in Death Valley in which routine monitoring and research was performed.

- Joint author for Programmatic Environment Impact Statement for NASA Kennedy Space Center. Conducted environmental analysis of the environmental impact for vertical launches.

- Provided engineering on various projects which include high purity water treatment and waterjet systems, Explosive Waste Incinerator, and accompanying pollution control, and static firing of MLRS rocket motors.

REVIEW OF THE THERMALDYNE AIR PERMIT ESTIMATED EMISSIONS

SUMMARY AND CONCLUSIONS

Thermaldyne has received an LDEQ air permit for their proposed Port Allen, LA oil reclamation facility. The facility includes a thermal desorption unit (TDU) that combusts in an associated thermal oxidizer (TO) all of the discarded gases that are generated by the thermal treatment of oil bearing hazardous secondary materials, and would otherwise be continually released to the environment without their destruction by combustion in the TO. Based on representations made by Thermaldyne in their 2015 air permit application, LDEQ granted an air permit that has essentially no emission limitations. This air permit allows Thermaldyne to operate their TDU without complying with strict MACT EEE emission limits imposed by EPA on TDUs in Texas and Arkansas that are processing identical oily wastes as are proposed for the Thermaldyne facility.

The Thermaldyne facility emissions of toxic hazardous waste combustion emissions will be significantly higher than if they were limited by MACT EEE emission limits.

- Mercury – 59,300 µg/dscm likely vs. <8.1 µg/dscm MACT EEE limit, or 0.6 lb-Hg/hr vs. <0.00009 lb-Hg/hr; a whopping 7300 times higher mercury emission likely and allowed. Unrestricted by the current air permit.
- Arsenic – 2,300 µg/dscm likely vs. <23 µg/dscm MACT EEE limit; 100 higher arsenic emissions than allowed. Unrestricted by the current air permit.
- Hydrochloric Acid – 29.5 lb-HCl/hr (or more) vs. < 0.35 lb-HCl/hr at the MACT EEE limit; 84 times higher than HCl emission allowed. Unrestricted by the current air permit.
- Particulate Matter – 2.3 lb-PM/hr likely vs. <0.04 lb-PM/hr at the EEE limit; 60 times higher particulate matter emissions, with the toxic metals and adsorbed contaminants that go along with them. Unrestricted by the current air permit other than a prohibition on visible emissions greater than 20% opacity (i.e. "no black stacking")
- Other toxic metals emissions – Lead, Cadmium, Chromium and Beryllium are all unrestricted by the approved air permit. All have very tight limits under MACT EEE. Predicted likely lead emissions for the Thermaldyne unit are 170 times greater than allowed under MACT EEE.
- No performance testing is required by the approved air permit. Under a RCRA Subpart X permit, Thermaldyne would be required to demonstrate compliance with these emission limits, and to adopt operating parameter limits (OPLs) for the process to assure continued compliance with the emission limits on an hourly basis.

The LDEQ air permit contains a restriction that Thermaldyne shall not emit Toxic Air Pollutants (TAP) greater than minimum emission rate (MER) levels without submitting a permit modification. Based on the analysis contained in this paper, it is likely that Thermaldyne will emit TAPs greater than MER levels. Permit required emission limits similar to the MACT EEE and associated OPLs on the feedstreams that are acceptable for waste treatment by Thermaldyne would produce compliance with MER levels, as well as EPA meet requirements for off-site TDUs processing petroleum refinery oil bearing hazardous secondary materials.

ED_002427A_00000313-00249

1. THERMAL OXIDIZER ESTIMATED EMISSIONS

Emission estimates were represented by Thermaldyne for their Thermal Oxidizer Unit and approved in the LDEQ air permit (CON 0002), and are presented herein for comparison to the USEPA MACT EEE performance specifications for a Hazardous Waste Combustor.

The permit states "*The majority of the hydrocarbons that are present in the feed materials will be recovered in the process. The small amounts of lighter hydrocarbons that cannot be recovered are controlled in the thermal oxidizer. Additionally, there is a vent stream containing recovered hydrocarbons that is routed to the recovery equipment and then to the control equipment. After passing through the oxidizer, this hot vent stream will be passed through the shell of the desorber to increase desorber energy efficiency.*"

The permit does not provide specific emission estimates for the Thermal Oxidizer exhaust vent (CON 0002), i.e., only emission estimates for the combined exhaust of the Thermal Oxidizer and Desorber are provided (CON 0001 - TDU Oxidizer/Desorber Common Stack). However, the permit application does contain emission estimates for the both the Desorber furnace and the Thermal Oxidizer (see Appendix A). Emission estimates for these two sources were calculated using USEPA AP-42 emission factors for natural gas combustion and an estimated Thermal Oxidizer VOC control efficiency of 99% for the desorber VOC process vent stream.

AP-42 Emission Factors

Pollutant	AP-42 EF lb/MMBtu
PM/PM_{10}	0.0075
SO_2	0.0006
NO_x	0.0490
CO	0.0824
VOC	0.0050

Emission estimates provided in the air permit application for the Desorber and Thermal Oxidizer (TO) are presented below for the proposed Average and Maximum operating conditions.

TO Estimated Emissions - Average Condition

Parameter	PM	CO	VOC	SO2	NOx
CON 0001 Emissions (lb/hr)	0.335	3.706	2.123	0.026	2.206
Desorber Heat Input (MMBtu/hr)	40	40	40	40	40
Desorber Emissions AP-42 (lb/hr)	0.298	3.294	0.216	0.024	1.961
TO Heat Input (MMBtu/hr)	5	5	5	5	5
CON 0002 - TO Emissions (lb/hr)	0.037	0.412	1.939	0.003	0.245
TO PM (gr/dscf @ 7% O2)	0.0040				
TO (ppmV @ 7% O2)		87	262	0.3	32

ED_002427A_00000313-00250

TO Estimated Emissions - Maximum Condition

Parameter	PM	CO	VOC	SO2	NOx
CON 0001 Emissions (lb/hr)	0.402	4.447	2.171	0.032	2.647
Desorber Heat Input (MMBtu/hr)	48	48	48	48	48
Desorber Emissions AP-42 (lb/hr)	0.358	3.953	0.259	0.028	2.353
TO Heat Input (MMBtu/hr)	6	6	6	6	6
CON 0002 - TO Emissions (lb/hr)	0.045	0.494	1.945	0.004	0.294
TO PM (gr/dscf @ 7% O2)	0.0040				
TO (ppmV @ 7% O2)		87	219	0.3	32

It is important to note that Thermadyne has not represented emissions for the following toxic air pollutants that are known to be present in petroleum refinery oil bearing hazardous secondary materials:

- Mercury – typically present as elemental mercury, which is a known constituent of crude oil (and natural gas), with common concentrations in some petroleum refinery OBHSM being in the range of 30 ppm, and sometimes greater than 100 ppm
- Arsenic – typically present in spent catalyst materials from petroleum refinery OBHSM, with common concentrations in the range of 8,500 pppm.
- Lead – common toxic metal present in petroleum refinery OBHSM
- Organic Chlorine – present in commercial chemicals that are used in the petroleum refining process that will decompose in the thermal oxidizer to generate hydrochloric acid emissions. Chlorine is present in some petroleum refinery OBHSM in concentrations as high as 100 ppm to 1000 ppm.

It is also important to note that Thermaldyne has represented the emissions of particulate matter in their air permit as being solely from the combustion of compressed natural gas. Those type of PM emissions are well known to be quite low and consequently require no emissions control by either the facility operator or emissions limits in the permit. However, the Thermaldyne unit employs a rotary kiln that tumbles 10 ton/hr of dusty solids in intimate contact with the desorber off-gas, passes these gases through an oil recovery system that has no particle filter, and then directs those off-gasses to the thermal oxidizer for emission to the atmosphere. The likely PM emission is most likely at least 50 times higher than represented, and quite possibly much higher considering that the permit restricts that the TO only operate without visible emissions greater than 20% opacity. PM emissions are a priority pollutant, and require control. Furthermore, in a facility that processes industrial hazardous waste materials that are contaminated by toxic metals, control of PM emissions is a surrogate for control of their constituent toxic metals.

2. COMPARISON OF THERMALDYNE EMISSION LIMITS TO THE HAZARDOUS WASTE COMBUSTOR (HWC) MACT PERFORMANCE STANDARDS

Because the exhaust gas from the thermal desorber will be combusted in a thermal oxidizer, additional USEPA performance specifications for a Miscellaneous Unit permitted under 40 CFR 264 are applicable. These are derived from USEPA performance specifications for a Hazardous

Waste Combustor per 40 CFR 63 Subpart EEE. Specifically the following stack gas emissions standards from 40 CFR §63.1219 should apply to the Thermaldyne unit:

- Dioxins and furans emissions shall be less than 0.20 ng TEQ/dscm corrected to 7% oxygen in the exhaust stack
- mercury emissions shall be less than 8.1 μg/dscm corrected to 7% oxygen in the exhaust stack
- semi-volatile metals (Cd, Pb) emissions shall be less than 10 μg/dscm corrected to 7% oxygen in the exhaust stack
- low-volatile metals (As, Be, Cr) emissions shall be less than 23 μg/dscm combined emissions corrected to 7% oxygen in the exhaust stack
- carbon monoxide emissions shall be less than 100 ppmV, or hydrocarbons emissions less than 10 ppmV as propane, over an hourly rolling average, dry basis, corrected to 7% oxygen in the exhaust stack
- hydrogen chloride and chlorine gas emissions shall be less than 21 ppmV, combined emissions, expressed as chloride equivalent, dry basis, corrected to 7% oxygen in the exhaust stack
- particulate matter emissions shall be less than 0.0016 gr/dscf corrected to 7% oxygen in the exhaust stack.

Comparison of Thermaldyne Air Permit to MACT EEE Standard

Pollutant	Units	MACT EEE	Thermaldyne Permit
Dioxins and Furans	ng TEQ/dscm	0.20	No Limit
Mercury	μg/dscm	8.1	No Limit
Semi-Volatile Metals	μg/dscm	10	No Limit
Low-Volatile Metals	μg/dscm	23	No Limit
Carbon Monoxide	ppmV	100	No Limit
Hydrocarbons	ppmV	10	No Limit
Hydrogen Chloride	ppmV	21	No Limit
Particulate Matter	gr/dscf	0.0016	No Limit[1]

Note 1. Thermaldyne representation is that all PM from the TDU comes from natural gas combustion. However, PM emissions from the TDU waste feed are comingled with the combustion products and are unrestricted by the permit, other than by a 20% opacity limit.

Estimated emissions of particulate matter, mercury, arsenic, lead, hydrogen chloride and dioxins/furans from the Thermaldyne thermal oxidizer can be calculated based upon the design and operation of the unit using the following assumptions:

- Particulate Matter - The emission factors used to estimate particulate emissions did not account for the large quantity of fine dust in the dryer process vent gas stream resulting from solids carryover from the dryer drum. The proposed particulate control system for this stream consists of a series of low energy wet scrubbers. This control technology can only achieve an outlet grain loading of approximately 0.08 gr/dscf.

- Mercury - 100 percent of the Hg contained in the feed will vaporize in the dryer and carry over to the gas scrubbing and condensing equipment. At a 10 ton/hr feed rate and a feed Hg concentration of 30 ppm, this equates to an emission rate of 0.6 lb/hr. The maximum concentration of Hg vapor that can be contained in the vent gas stream after scrubbing can be calculated from the saturation vapor pressure of Hg at the outlet temperature of the scrubber. Using a scrubber exhaust temperature of 130°F and a gas flow rate of 1,000 scfm, this equates to a Hg emission rate of approximately 0.75 lb/hr (i.e., all of the mercury contained in the feed up to a feed concentration of about 40 ppm will be released to atmosphere).
- LVM (Arsenic) - Feed concentration of 8,500 ppm and particulate matter emissions of 0.08 gr/dscf.

- Hydrogen Chloride - Feed chlorine concentration of 100 ppm and a scrubber/condensor chlorinated VOC removal efficiency of 80%
- Dioxins and Furans - 99% Destruction and Removal Efficiency

Estimated Thermaldyne Emissions Based on TDU Design

Pollutant	Units	MACT EEE	Thermaldyne	LDEQ Air Permit
Particulate Matter	gr/dscf	0.0016	0.08	No Limit
Dioxins and Furans	ng TEQ/dscm	0.2	2.2	No Limit
Mercury	µg/dscm	8.1	59,345	No Limit
SVM (Arsenic)	µg/dscm	23	2,265	No Limit
Hydrogen Chloride	ppmV	21	1,794	No Limit

Pollutant	Units	At MACT EEE Limit	Thermaldyne	LDEQ Air Permit
Particulate Matter	lb/hr	0.040	2.28	No Limit
Dioxins and Furans	lb/hr	2.18E-09	2.40E-08	No Limit
Mercury	lb/hr	0.00009	0.65	No Limit
SVM (Arsenic)	lb/hr	0.00025	0.025	No Limit
Hydrogen Chloride	lb/hr	0.35	29.5	No Limit

3. OPLs CONTROL EMISSIONS EVERY DAY, NOT JUST IN THE TEST

If Thermaldyne were required to get a RCRA Subpart X permit for the TDU, it would contain operating parameter limits (OPLs) including feedstream limitations implemented through the facility's RCRA enforceable waste acceptance plan (WAP). Typical OPLs will include:

- Maximum feed rate for mercury. This would be based on demonstrated concentration fed when in compliance with MACT EEE emission limits. Based on Thermaldyne's design,

the predicted feedstream limitation would be 0.00009 lb-Hg/hr maximum, or 4 ppb Hg in their TDU feed at 10 ton/hr (their represented TDU feed rate).

- Maximum feed rate for arsenic and similar low-volatile metals (beryllium, chromium). This would be based on demonstrated concentration fed when in compliance with MACT EEE emission limits. Based on Thermaldyne's design, the predicted feedstream limitation would be 1.4 lb-SVM/hr maximum, or 70 ppm SVM in their TDU feed at 10 ton/hr.
- Maximum feed rate for lead and similar semi-volatile metals (cadmium). This would be based on demonstrated concentration fed when in compliance with MACT EEE emission limits. Based on Thermaldyne's design, the predicted feedstream limitation would be 0.65 lb-LVM/hr maximum, or 33 ppm LVM in their TDU feed at 10 ton/hr.
- Maximum chlorine in the feed that can generate hydrochloric acid gas emissions. Based on Thermaldyne's design, the predicted feedstream limitation would be 0.74 lb-Cl/hr maximum, or 37 ppm Cl in their TDU feed at 10 ton/hr.
- An appropriate limitation for a TDU with a condensation style gas treatment system is to place a maximum on the condenser outlet temperature based on what is demonstrated during the performance test. It is well known that for every 10°C, or 18°F increase in the condenser outlet temperature the emission rate of mercury (and individual VOCs) approximately doubles. A condenser outlet OPL is essential so that emissions that are demonstrated in compliance testing are not exceeded by the TDU operator later by allowing the condenser to operate much hotter, and thereby allowing significantly more hazardous waste emissions from the TDU.
- The present air permit has no requirement for Thermaldyne to conduct a comprehensive performance test to establish that their proposed facility can meet emission limits, or even comply with their represented emissions. By requiring a performance test, LDEQ requires Thermaldyne to demonstrate compliance. Based on reasonable review of their proposed operations, and the known properties of petroleum refinery OBHSM, it is likely that Thermaldyne will exceed emission limits that are required for this type of facility

Presently Thermaldyne has no restriction on either mercury or chlorine containing oily waste. Therefore, by default, they could become a depository for mercury and chlorine containing oily waste. That is because other facilities like this are restricted and impose significant surcharges on mercury containing waste because they are strictly limited for that sensitive environmental pollutant. Chlorine restrictions can also dictate waste receipt and many oily streams are simply rejected because of the presence of even low levels of chlorine. Because the LDEQ permit process does not restrict Thermaldyne in this area, the market will likely deliver a disproportionate amount of mercury and chlorine impacted material to the Thermaldyne facility.

ED_002427A_00000313-00254

4. THERMALDYNE EMISSIONS LIKELY TO EXCEED LDEQ MER LIMITS

Permit condition UNF 0001. Item 18.

> *Emissions of any TAP for which this permit does not list a facility-wide emission limitation shall be limited to an amount less than the Minimum Emission Rate (MER) for that TAP as listed in Tables 51.1 and 51.2 of LLAC 33:III.5112. Emissions of any TAP not listed in the Emission Rates for TAP/HAP and Other Pollutants section of this permit in an amount greater than or equal to the MER shall require a permit modification prior to use.*

As stated previously, petroleum refinery OBHSM contains pollutants that were not disclosed in the air permit application. When the prior analysis is extended to reasonable annual operations, it would be straightforward to conclude that the MER limits would be exceeded by Thermaldyne. This likelihood speaks to the need for feedstream controls on these pollutants, proper inclusion of pollution control devices that address their presence, and performance testing requirements to establish compliance with emission limits.

Pollutant	**Thermaldyne Likely (lb/yr)**	**Table 51.1 MER (lb/yr)**
Mercury	5,256	25
Arsenic	341	25
Beryllium		25
Cadmium		25
Chromium		25
Hydrogen Chloride	17,520	500

5. Permit Modification Makes Essentially no Change to These Calculations

Thermaldyne has submitted a modification request to their minor source air permit. That modification makes no change with respect to the above review. The key difference is that they have separated the stacks for the TO and the TDU furnace. That was understood at the time of this review, and all stack gas concentrations and flows were developed based on the Thermaldyne process flow being split between the TDU furnace and the TO.

ED_002427A_00000313-00255

Appendix A - Emission Estimates from the Permit Application

Port Allen Land, LLC **Desorber Heater**
West Baton Rouge Plant
Initial Small Source Permit **Source: 2-2015**

The desorber is an indirect fired unit. The outer shell will be heated by the desorber heater burners. The contaminated materials will not contact the heater gasses directly. In order to increase the unit's energy efficiency, the thermal oxidizer exhaust gasses will be vented through the desorber shell where the additional heat will compliment the desorber heater.

Criteria Pollutant Emissions

Annual Natural Gas Usage	367,920	Mscf	Natural Gas Heat Input	48.00	MMBtu/hr
Natural Gas Heat Input	40.00	MMBtu/hr			
Operating Time	365	days			
Operating Time	8,760	hours			

Pollutant	Average Operating Rate	Maximum Operating Rate	Emission Factor[1] (lbs/MMBt	Emissions		
				Average (lbs/hr)	Maximum (lbs/hr)	Annual (tons)
Particulate Matter (PM_{10})	40.00	48	0.007	0.298	0.358	1.305
Particulate Matter ($PM_{2.5}$)	40.00	48	0.007	0.298	0.358	1.305
Sulfur Dioxide	40.00	48	0.0006	0.024	0.028	0.103
Nitrogen Oxides	40.00	48	0.049	1.961	2.353	8.59
Carbon Monoxide	40.00	48	0.082	3.294	3.953	14.43
Total VOC (includes those	40.00	48	0.005	0.216	0.259	0.945

[1] Source: EPA AP-42 (7/98): Table 1.4-1 for CO and NOx ; Table 1.4-2 for PM_{10} and

Port Allen Land, LLC **Desorber Vents**
West Baton Rouge Plant
Initial Small Source Permit **Source: 1-2015(a)**

The vent from the desorber will be routed through cyclones, a venturi scrubber, an acid gas scrubber, and finally a thermal oxidizer.

The emissions below are estimated based on a general crude oil speciation. The thermal oxidizer will be efficient enough that speciated emissions from the unit will be difficult to detect. These estimates are very conservative for permitting purposes.

Speciated VOC Emissions

Pollutant	Emissions [1] (lb/hr)	Emissions		
		Average (lbs/hr)	Maximum (lbs/hr)	Annual (tons)
Total VOC (including thos	188.000	188.000	225.600	823.440
Anthracene	0.038	0.04	0.045	0.16
Benzene	9.400	9.40	11.280	41.17
Biphenyl	0.038	0.04	0.045	0.16
1,3 Butadiene	0.038	0.04	0.045	0.16
Cresol	0.075	0.08	0.090	0.33
Cumene	0.056	0.06	0.068	0.25
Ethylbenzene	0.188	0.19	0.226	0.82
n-Hexane	1.448	1.45	1.737	6.34
Hydrogen Sulfide	0.000	0.00	0.000	0.00
Naphthalene	0.113	0.11	0.135	0.49
PNA's	0.000	0.00	0.000	0.00
Toluene	1.034	1.03	1.241	4.53
Xylenes	1.297	1.30	1.557	5.68
Ethylene	0.038	0.04	0.045	0.16
Phenol	0.038	0.04	0.045	0.16
Propylene	0.038	0.04	0.045	0.16
Styrene	0.038	0.04	0.045	0.16
1,2,4 Trichlorobenzene	0.432	0.43	0.519	1.89
2,2,4 Trimethylpentane	0.038	0.04	0.045	0.16

[1] Source: Assumed crude oil speciation as an average of the types of secondary oil bearing waste.

Port Allen Land, LLC **Oxidizer Vent**
West Baton Rouge Plant
Initial Small Source Permit **Source:** **1-2015**

The Oxidizer is the emissions control for the facility. The thermal oxidizer vent will be routed into the shell of the desorber where it will provide additional heat for the desorber. The Thermal Oxidizer is estimated to have a 99% destruction efficiency to be conservative.

Combustion Criteria Pollutant Emissions

Natural Gas Heat Input	5.00	MMBtu/hr	Maximum Natural Gas Heat Input	6.00	MMBtu/hr
Operating Time	365	days	Efficiency	99.00%	
Operating Time	8,760	hours			

Table 1 : Natural Gas Firing

Pollutant	Average Operating Rate (MMBtu/hr)	Maximum Operating Rate (MMBtu/hr)	Emission Factor[1] (lbs/MMBtu)	Emissions		
				Average (lbs/hr)	Maximum (lbs/hr)	Annual (tons)
Particulate Matter (PM_{10})	5.00	6.0	0.0075	0.037	0.045	0.163
Particulate Matter ($PM_{2.5}$)	5.00	6.0	0.0075	0.037	0.045	0.163
Sulfur Dioxide	5.00	6.0	0.0006	0.003	0.004	0.013
Nitrogen Oxides	5.00	6.0	0.049	0.245	0.294	1.07
Carbon Monoxide	5.00	6.0	0.082	0.412	0.494	1.80
Total VOC (includes those listed)	5.00	6.0	0.006	0.027	0.032	0.118

[1] Source: EPA AP-42 (7/98) Table 1.4-1 for CO, Nox. Table 1.4-2 for VOC, PM_{10}, and SO2. The source is equipped with a low-NOx burner.

Table 2: Thermal Oxidizer VOC Emissions

Stream	VOC Feed Rate (lbs/hr)	VOC Emissions		
		Average (lbs/hr)	Maximum (lbs/hr)	Annual (tons)
Desorber VOC Exhaust [1]	188.06	1.890	1.890	8.234
Combustion VOC		0.027	0.032	0.118
Tank Emissions	0.13	0.001	0.0013	0.0057
Oil/Water Seperator	3.12	0.031	0.031	0.1367
	Total	**1.939**	**1.945**	**8.495**

(1) The final stream from the Desorber passes through a cyclone, hydrocyclone, demister, and an acid gas scrubber before entering the Oxidizer