RCRA PART B APPLICATION

RINECO
HAZARDOUS WASTE MANAGEMENT FACILITY
HASKELL, ARKANSAS

Section C

Waste Analysis Plan

Revised: December 15, 1998

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Waste Analysis Plan
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1. Introduction

In accordance with the regulatory requirements set forth in Environmental Protection Agency (EPA) 40 C.F.R. and Arkansas Pollution Control and Ecology Commission (APC&EC) Regulation No. 23 §264.13 and §264.71-75, Rineco has developed this Waste Analysis Plan as an integral part of its permit for its facility located in Haskell, Arkansas. The purpose of this section is to describe the chemical and physical nature of the hazardous waste stored and/or processed at the Rineco facility. A copy of this plan will be available at the facility at all times.

The purpose of this Waste Analysis Plan (WAP) is to identify and document the necessary sampling methodologies, analytical techniques and overall procedures which are undertaken for all wastes that enter the facility. Specifically, the plan will:

- determine acceptability of waste material by Rineco for storage, processing and/or recycling.
- ensure conformity of incoming waste streams to Hazardous Waste Manifests and Waste Material Profiles.
- ensure the identification of restricted waste and the rejection of any non-permitted substances.
- determine proper and safe methods of storage, handling, and treatment.
- verify the suitability of received materials for fuel blending or recycling.

Detailed chemical analysis for waste is carried out to verify that the waste has been accurately characterized during the profiling process. This includes consideration of safety, regulations, and suitability for fuel blending. The characterization of at least 10% of the waste received from large quantity generators will be verified. In some instances, this verification may be best carried out on the profile sample before waste has actually been shipped. Most often, the sample which is taken when the waste arrives and analyzed before it is accepted for processing will be the most representative. If the lab management has reason to suspect that a particular waste stream might present special problems which could be avoided by supplemental analytical characterization, a waste might be specifically selected for characterization.

Sampling and analysis will be conducted by Rineco personnel using standard operating procedures (SOP) or an outside laboratory using the equivalent procedures and Quality Assurance Plan (QAP). These procedures are executed to ensure that the waste has been properly characterized by the generator and to identify all hazards associated with storage and handling of the waste received at the facility. All analytical standard operating procedures are derived from EPA publication SW-846 or industry standard methods such as ASTM. SOPs may be updated periodically as new methods appear in SW-846 or new instruments are purchased.

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References: [APC&EC Regulation No. 23]
§ 264 Subpart B - General Facility Standards
§ 264.13 - General Waste Analysis

2. Pre-acceptance Procedure

Rineco has developed a series of control procedures to determine the acceptability of specific wastes for management at the facility, referred to as Pre-acceptance Procedures. This acceptability decision is based on the conditions or limitations of the existing permit and regulations, and the capability to safely manage the waste. The acceptability decision is based on a technical review by a qualified chemist. The review is conducted on all available information (Waste Material Profile (WMP), analytical data, Material Safety Data Sheet(MSDS), etc.) All specific non-permitted materials are denied from storage or processing at the facility. All acceptable material are approved for storage and/or processing.

2.1 Waste Material Profile (WMP)

A uniquely numbered Waste Material Profile Sheet (a form indicating the generator's characterization of the waste) is prepared. Generator's information is captured on the profile reflecting:

- The waste name
- EPA waste code(s),
- Department of Transportation (DOT) shipping information,
- The process generating the waste,
- Sufficient physical and chemical information to:
  - Identify any handling problems which might be encountered at the Rineco facility
  - Identify any safety issues obtainable from generator knowledge (e.g. MSDS, product information, etc.).
  - Determine suitability for fuel blending or recycling

In addition to the Waste Material Profile form, other documents such as a MSDS or generator supplied analytical data or other information about the waste may be supplied.

Rineco receives waste from time to time which is designated as Miscellaneous Special Waste (MSW). The following provides descriptions of the four types of Miscellaneous Special Waste:

Type 1: This material is off-spec or out-of-date consumer products in small quantity packaging. Examples of these waste are out-of-date cosmetics such as fingernail polish, or out-of-date consumer products such as tubes of glue or paint.

Type 2: This material is off-spec, out of date, surplus unused inventory or products in the original packaging containers. Examples of these materials includes drums, pallets, various large containers of basic chemicals and formulated products.

Type 3: This material is containers of debris such as rags, paper towels, plastic or hardened polymers, dirt, wood, etc..

Type 4: This material arrives in the facility designated for shipment to another TSDF for processing. It is inspected and subsequently put into shipment to the alternate TSDF.

When these products or materials are well characterized by the generator, sampling and analysis may not be required. In many cases, obtaining a representative sample is not practical due to the individual product packaging (Type 1) or the nature of the debris materials (Type 3). With larger containers of off spec or out of date products (Type 2), the generator information provides a comprehensive statement of the composition via MSDS, product formula, or product analysis. Sufficient information is supplied to evaluate material handling and processing techniques at the facility. For waste intended for storage only (Type 4), the material will not be processed at Rineco, therefore sampling is not necessary. When a material has been designated "Miscellaneous Special Waste", the possibility of not sampling or modifying the frequency of sampling is noted in the profile approval.

2.2 Issues which may require a sample

Samples obtained prior to shipment are not as reliable as those taken upon receipt. The generator may not be able to obtain a representative sample (still bottoms, for example, might not be accessible until removed from the tank for shipment), or a representative sample may not exist at the time of profiling (waste from a clean-out may not have been gathered at the time of the profile preparation). Therefore, emphasis is placed on generator knowledge backed up by analysis on receipt.

If an issue arises upon review of generator information, Rineco may request a sample for further analysis. The sample will be analyzed to answer specific questions that may pose safety, regulatory, or processing problems. Examples include, but are not limited to:

- Metal bearing wastes and low BTU wastes might also require additional testing to ensure that fuel blending does not constitute impermissible dilution according to 40 C.F.R. and APC&EC Regulation No. 23 §268.3.

- A waste might contain chemicals which have unknown solubility or stability in the Rineco fuel or feed stock blend. A sample would be checked for compatibility with fuel.

- The process generating the waste might have the possibility to be associated with some chemical not allowed at Rineco due to permit limitations (such as PCBs or a chemical which is unstable or explosive). A sample would be checked for the specific component(s) of interest or specific property of the component(s).

- The codes F006-F019, K011, K013, K027, K047, U006, U223, U160, U033, U096, U133, U189 and U234 are specifically listed in the permit as wastes which cannot be stored if they have the "characteristic of reactivity". Profiles for these wastes will not be approved without the analysis of a sample which demonstrates that the characteristic of reactivity does not apply. Wastes K044, K045, and D003 are also listed as concerns, but these are waste codes Rineco has never been permitted to receive, so they would be rejected at the profile level. Analysis may include the fingerprint parameters at a minimum (Table 1), and may also include quantitative cyanide or sulfide, or analysis for specific organic constituents depending on generator information and the code applied.

2.3 Technical Review (Approval or Denial)

Technical review includes consideration of the impact of management of waste (ignitability, corrosivity, reactivity and toxicity) with respect to safety, regulations, storage, and processing. In addition to granting approval or denial of the Waste Material Profile, the Profile Chemist may make notes that will reflect the handling of the specific waste such as Special Processing Instructions or designation as Miscellaneous Special Waste in the comment section of the WMP.

Generally, all waste materials are managed by Rineco as if they are potentially ignitable. The facility maintains the capability to perform a flash point determination when and if it is necessary to verify ignitability.

Wastes having the characteristic of corrosivity are processed by Rineco. The characterization of liquid aqueous wastes are verified by measurement of pH.

All wastes received by Rineco that require sampling are put through a battery of screening analysis to identify waste meeting the definition of reactivity. These tests include:

- Water Compatibility Screen
- Cyanide Screen
- Sulfide Screen
- Heat of Combustion (Bomb Calorimeter)
- Fuel/Feed-stock Compatibility Screen

The results of these analyses provide analytical data that is used by laboratory and operational personnel to ensure that no materials stored or treated is classified as a water reactive, cyanide bearing reactive or sulfide bearing reactive.

For the category of explosive, EPA has not published an analytical method to determine whether a material is explosive. The Rineco facility approaches this issue through a series of decisions based on both technical review and actual observation of the material.

1.) The first line of defense against accepting an explosive material is the Pre-acceptance review process. The chemical composition is reviewed to identify any suspect explosive or reactive components. The generator is also required to certify that the material is not explosive on the profile. The material may be denied by the approval chemist if it is suspected to be an explosive or reactive.

2.) Materials meeting the definition of explosives must be properly classified when shipped. Material arriving at the facility with Class 1 labels or placards will be denied entry to the facility.

3.) In addition to the screens above the waste is subject to fuel/feed-stock compatibility as well as Heat of Combustion analysis. If the material is not blendable or compatible based on the compatibility screen, the material is not processed at Rineco. If the material exhibits an unusual or abnormal result on combustion, corrective steps are taken to ensure the material is not approved for processing.

Generally, all waste materials are managed by Rineco as if they are potentially toxic. The facility maintains the capability to perform toxicity characterization as well as other test procedures that allow speciation when and if it is necessary to verify toxicity.

Processing practices for these materials is based on the information supplied by the generator and/or statistically established physical data from analysis. Safe and environmentally sound handling practices will be maintained based on the worst case scenario derived from this information.

Completed profile forms will be maintained on file at the facility and archived (inactive) profile forms will be retained.

3. Incoming Shipment Procedures

The incoming shipment procedures allow Rineco to identify a waste shipment matched the description of the WMP referenced on the accompanying manifest and secondarily, to ensure the proper management. This is accomplished through the following procedural steps:

1.) Manifest Review outlines the weight and piece count verification, manifest review, and discrepancy resolution.

2.) Inspection and sampling outlines the inspection and sampling of incoming waste shipments.

3.) Analysis outlines the analyses Rineco will perform on each sample.

4.) Decision evaluation logic outlines the general logic utilized by Rineco personnel in deciding whether to accept or reject all or part of a waste shipment.

3.1 Manifest Review

Upon arrival of a waste shipment at the facility, a review of the manifest for accuracy and completeness is conducted. The review includes: the DOT proper shipping names of waste material; the EPA and DOT hazard class; EPA waste codes; the number and type of containers; the unit of weight or volume; the place of lading; the destination; and the transporter's EPA identification number. Rineco requests that the generator include the waste streams Waste Material Profile number as additional information in Section J of the manifest.

Any discrepancies in the manifest which can be readily observed by the guards (i.e. missing or incomplete information), result in a "manifest hold" (shipment is not unloaded until the discrepancy is resolved) and the manifest is corrected. Any further discrepancies which are found on unloading (i.e. line item count) will result in the affected container(s) being placed on hold, but the waste may be sampled and unloaded while awaiting resolution of the discrepancy.

3.2 Inspection and Sampling

3.2.1 Identification control number (IC #)

Rineco uses an "identification control number" system to keep track of all containers and pallets. The first step in the sampling process is to assign a unique IC # to each container or pallet. An adhesive label with the IC # and the date received is printed and attached to each container or pallet. The IC # is referenced in sampling, laboratory analysis, storage, and processing as the unique identification of each container or pallet. IC #'s can be cross referenced to the manifest number, manifest line, laboratory sample, analytical report, Waste Material Profile (containing the generator's waste characterization), and the date and type of processing the waste received. The identification control number (IC #) system operates as follows:

3.2.1.1 Containers larger than 15 gallons

A unique IC # is assigned to each container larger than 15 gallons . An adhesive label with the IC # is attached to each container.

3.2.1.2 Pallets (Containers less than 15 gallons)

An entire pallet of palletized materials will be assigned one IC number. An adhesive label with the IC # is attached to the pallet.

3.2.1.3 Bulk liquid (tank trucks, rail tank cars, etc.)

A unique IC # is assigned to each liquid container.

3.2.1.4 Bulk solid (dump trucks, roll-off bulk trailers, etc.)

A unique IC # is assigned to each solid container.

3.2.2 Inspections

3.2.2.1 Waste Status

The samplers will determine if the received waste is a Miscellaneous Special Waste or not. After determining if a sample is required, the sampler will perform a radiation screen, measure pH on aqueous liquids and give a physical description of the waste. If sampling is required, samples and composites will be collected and prepared per the specific SOP. This section delineates sampling, composites and sampler's field observations and reporting.

3.2.2.1.1 Miscellaneous Special Waste (Type 1, 2, 3, or 4)

If the profile designates the waste as a "Miscellaneous Special Waste" (Section 2.1), the sampler information will confirm the designation by visual inspection, and note the observations, perform the radiation scan, but no sample is obtained. If the waste meets the profile description, upon acceptance review, the waste is released for processing. If the contents are not as described in the profile, there are two options:

- A sample will be taken, and analysis performed as in all other cases. If the analysis requires a new profile, the profile department will be informed, the generator contacted, and the pre-acceptance process begun. If the analysis indicates that the material is acceptable within the current profile, ordinary handling will continue.

- No sample will be taken, the generator will be contacted, and a resolution is obtained, the material returned to the generator or the material is forwarded to another TSDF.

3.2.2.1.2 Other Waste

After completion of the radiation screen, pH, and physical description, all other waste will be sampled. The samples will be brought to the laboratory for analysis.

3.2.2.2 Sampler's Field Observations

3.2.2.2.1 Radioactivity:

Each container is checked before opening for radioactivity. If a reading on the meter above background is observed, the waste container

will not be opened. If no radioactivity above background is observed, the container will be opened, and another radioactivity check will be carried out. If either check is above background the Plant Management, Laboratory Management, and Safety Department will be immediately alerted. The generator will be notified, and if the reading is determined to indicate the presence of radioactive material, the waste will be rejected. The Safety Department will be consulted for advice on proper handling isolation, etc.

3.2.2.2.2 pH and Physical Description

When useful for determining process techniques and composites, the samplers will describe approximate solid/liquid proportions, the presence or absence of debris, etc. A preliminary pH test will be carried out with pH test paper on aqueous liquids.

3.2.2.2.3. Sampler's Report

Observations and sampling results are recorded on the field sampling report. The information recorded on the field sampling report includes: the manifest number and line; the date of sampling; the initials of the field technician who extracted the sample; the container IC #s in each the composite, if applicable; the size and type of the container; basic physical description (type, phases); the pH of aqueous liquids; the results of the radiation scan; and the sample number (RCI #).

3.2.3 Sampling of Waste [264.13(b)(3)]

3.2.3.1 Samples Which can be Cored. (Containers or Bulk Liquids or Solids)

When possible, vertical core samples of the contents of waste containers and bulk shipments are taken per the current SOP. Samples are placed into a clearly labeled clean container.

All shipments are sampled within 72 hours of arrival. Laboratory analysis begins within 24 hours of sampling.

3.2.3.2 Samples Which Cannot be Cored (Containers or Bulk Solids)

If a solid waste cannot be penetrated sufficiently to obtain a core sample, the waste will be sampled by trowel or scoop methods per the current SOP.

All shipments are sampled within 72 hours of arrival. Laboratory analysis begins within 24 hours of sampling.

3.2.3.3 Open Containers

No more than one container per member of the sampling crew will be open at one time. Any given container will not be open any longer than needed to grab the sample.

3.2.3.4 Spills During Sampling

Any contents of a container spilled during the sampling process are cleaned up immediately. Liquids are absorbed with an appropriate absorbent, usually sawdust. Solids or absorbed liquids will be swept up and collected as site generated waste.

Spill cleanup waste derived from fuel materials will be directed to fuel processing. Spill cleanup waste derived from non-fuel materials will be reviewed for acceptability into the fuel process due to small volume or packaged for off site disposal.

3.2.3.5 Sampling of Storage Tanks

Storage tanks are stationary vessels used to store processed liquids awaiting shipment to a permitted facility (e.g. cement kiln). Storage tank samples are obtained from the sampling system for each tank. Sample frequency and analytical procedures are applied to the storage tank samples, as determined necessary by Facility Management, based on the nature of the sample (e.g. bulk blending stock, in process fuel, finished fuel, feed stock, etc.) and the requirements of production. SOPs will be maintained for the sampling methods used.

3.2.4 Composite Samples

3.2.4.1 Containers Greater Than 15 Gallons [264.13(b)(3)]

Each manifest line is designated by a letter (e.g. A, B, C, or D). Representative portions from each container are placed in clean sample jars per Rineco sampling procedures (SOPs are maintained on file available for inspection and approval). No more than eight containers will be composited into a single sample jar at this time. The sample jar is labeled with the sample number (RCI #) as well as IC #, which is traceable to the generator, manifest number, and the manifest line letter. Sample numbers (RCI #'s) are Rineco's internal, unique numbers used to identify the sample jars during the sampling process. Composite sampling is also based on number of phases, if there are two phases in the waste, (e.g., many wastes are partially solid and partially liquid) and some containers are predominantly one phase, more than one composite per eight containers may result.

3.2.4.2 Pallets (Containers less than 15 gallons)

A sample will be extracted from a package of each different type of material on the pallet or at least 10% of the packages. Up to eight pallets may be in a composite if the pallet contents are all from the same manifest line item and have the same phase(s).

3.3 Waste Analysis

3.3.1 Overview

Acceptance analysis determines if the waste conforms to generator supplied information and the manifest description. If the "fingerprint" parameters agrees with the profile information no further analysis is required for acceptance. Supplemental analysis are performed to further identify wastes as appropriate. Supplemental analysis results provide the site management with another level of confidence concerning the proper means of treatment.

In the laboratory, individual samples from the same manifest line item may be further composited for analysis. Individual samples from different manifest line items may be composited in the laboratory for fingerprint analysis, if compatible. For PCB screening analysis any compatible material may be composited as long as the permit level criteria are achieved.

Rineco will employ analytical methods which provide chemical information on both the bulk properties of the waste material and the individual constituents as required to meet the goals of waste characterization verification. Applications are outlined below, each analysis will have an associated Rineco SOP available for regulatory review.

3.3.2 Fingerprint Analysis

The results of the fingerprint analysis parameters are utilized to screen out specific non-permitted wastes. The fingerprint results also provide information on the waste to allow fuel or feed-stock blending to the specifications required by the fuel user or the process using the feed-stock. The individual analyses are listed in Table 1 and the interpretation of their results is given in following section.

3.3.2.1 Sampler's Test and Observations

Tests and observations of the samplers will be part of initial fingerprinting.

3.3.2.1.1 Radioactivity Screen

As described above in Section 3.2.2.2 Field Observations, waste will be screened for radiation prior to sampling. If a reading on

the meter above background is observed, the Plant Management, Laboratory Management, and Safety Department will be immediately alerted. The generator will be notified, and if the reading is determined to indicate the presence of radioactive material, the waste will be rejected.

3.3..2.1.2 Physical Description
Samplers will observe phase (solid, liquid, sludge, etc.) and other pertinent physical properties of the waste and compare to manifest descriptions. The samplers will also observe and record any warning labels on cans or jars in the waste or anything else that may indicate nonconformance with profile or danger to personnel or equipment.

Upon acceptance review, the sample's physical description is compared to the profile information and manifest description. Discrepancies may warrant initiation of re-profiling as described in Section 4 or rejection of the stream as described in Section 5.

3.3.2.1.3 pH
The received material is tested for pH using pH indicator paper. Samplers use this information to ensure composite samples are not made of incompatible materials (i.e. acid and caustic waste).

3.3.2.2 Laboratory Tests for Cyanide and Sulfides

A screen for cyanide and a lead acetate strip test for sulfides will be performed. Positive results will result in either rejection or further testing to determine if quantities of sulfide or cyanide can be released which give the waste the characteristic of reactivity (Section 5.4.2.5 Analysis of Cyanide and Sulfide) . If quantities of reactive cyanide or sulfide which result in the waste having the characteristic of reactivity are found, the waste will be rejected to the generator or forwarded to a facility permitted

to receive reactive wastes. If the waste contains detectable sulfide or cyanide but does not have quantities sufficient to give it the characteristic of reactivity, the waste may be processed, but production will be notified that this is not a waste which should be processed with acidic material.

3.3.2.3 PCB Analysis

Analysis of liquid organic wastes processed by Rineco will ordinarily include a PCB screen. GC/ECD will ordinarily be employed as the initial screen. Any quantitative results will utilize SW846 methodology at a minimum. In some circumstances, EPA method 4020 (Immunoassay

screen) may be used to locate problem areas (e.g., if a large lot of drums is received and it is suspected from composite analysis that one or a small number of drums contain PCBs, the immunoassay may be used to locate the offending drum.

Rineco will not accept for processing any waste found to contain more than 50 ppm of any PCB product or combination of PCB products. Note: Since most of the interference in electron capture GC analysis produce false positives rather than false negatives, Rineco will normally reject waste without GCMS confirmation. However, if there is some evidence that the waste is not a PCB waste (i.e., there is some convincing reason to suspect that the GC analysis may be in error, or the chromatogram is uncertain), GCMS analysis may be employed to confirm the GC analysis. All quantitative analyses will be from either GC/ECD or GCMS. This analysis is intended as an accept/reject method, and is not intended to be quantitative at all levels. For example, if the sample reads 300 ppm, but the GC is only calibrated at 50 ppm, the exact concentration is in some doubt, but is clearly above 50 ppm, and the waste will be rejected to the generator or sent for disposal at an EPA approved facility.

3.3.2.4 Oxidizers and Peroxides

The presence of oxidizers or peroxides may result in rejection of the waste, re-profiling, or special handling depending on the waste type, quantity of waste, concentration, and safety and permit restrictions at Rineco. Results of compatibility tests will also be a factor in determining handling techniques of waste with oxidizers and/or peroxides (e.g., the prevention of the initiation of polymerization reactions, the generation of heat, etc.).

3.3.2.5 Fuel Blending/Feed-stock Analysis

Analyses for fuel/feed-stock compatibility is used to control the blending process for fuel and feed-stock. Fuel must be blended to meet the permit requirements at the end user's facility. Feed-stock must be blended to a composition that makes it most compatible with the recycling process.

3.3.2.6 Water Solubility/Compatibility

Any indication of a reaction when a small quantity of the waste is mixed with water such as gas evolution or temperature elevation will result in further evaluation of the sample by lab personnel. If the reaction causes the waste to meet the characteristic of reactivity, the waste will be rejected. The solubility of the waste in water will be an indicator of whether or not the waste is correctly described in the profile. Since all fuel/feed-stock blends usually contain some percentage of water, the compatibility with water may be a consideration to blend the waste with fuel.

3.3.2.7 Heat of Combustion

Analysis for the Heat of Combustion (heat value) is used to ensure waste meets the permit requirements at the end user's facility. This analysis is typically ran for commercial usage. However, it is also a good indicator that the waste is being correctly described by the generator with respect to organic content.

3.3.2.8 Halogen

Analysis for the Halogens is used to ensure waste meets the permit requirements at the end user's facility. This analysis is typically ran for commercial usage. However, it is also a good indicator that the waste is being correctly described by the generator with respect to halogenated organic content.

3.3.3 Supplemental Analysis

Supplemental analysis are performed when necessary to augment existing information on the waste. This list is dynamic and may change due to introduction of new technologies and the need to obtain specific knowledge for the handling and processing of the materials at the facility.

3.3.3.1 FTIR analysis

The IR spectrum of an organic mixture represents the various vibration modes of the carbon-hydrogen, carbon-carbon, carbon-heteroatomic bonds in compounds present. IR spectroscopy is one of the accepted methods listed in § 260.11 of Regulation No. 23, and an SOP will be prepared, kept current, and made available for inspection. This analysis will ordinarily be a part of the characterization verification of wastes which require some qualitative identification of organic compounds to verify their composition.

3.3.3.2 GCMS analysis

The mass spectrometer may be able to identify major constituents of organic mixtures if other methods fail. If only qualitative identification of major components are the goal of this analysis, it may be performed under an SOP which does not require full quantitative calibration. If quantitation is required, the SOP for method SW846-8260 or 8270 will be used.

3.3.3.3 GC/ECD Analysis for Pesticides

GC/ECD will also be a part of the characterization of organic wastes processed by Rineco which have any reasonable possibility of containing pesticides which may present safety or regulatory problems and are amenable to analysis by this technique. Limitations on pesticides accepted are based on: (1) permit limitations at Rineco, (2) the ability to produce a

fuel blend which meets the end users' permit requirements or a feed-stock for recycling, and (3) handling safety requirements. If another analytical instrument becomes available in the future which is more appropriate, Rineco may use this instrument in place of the GC/ECD if it is EPA approved. An SOP will be maintained describing the method in detail, and will be subject to update as new methods appear in SW-846 or new instruments are purchased.

3.3.3.4 Metals Analysis

Some wastes have a metal or metal salt as a significant component. Although metals are routinely analyzed as a tool in fuel/feed-stock blending, their analysis may also be the best indication that the composition of the waste described by the generator is accurate. DCAP (direct coupled argon plasma) and ICAP (inductively coupled argon plasma) emission spectrometers have been the primary methods of determination of metals at Rineco, with some use of AA (atomic absorption) in special cases. These methods will continue to be the primary metals determination methods, with the possible addition of XRF (X-Ray fluorescence) as a screening and production tool for future use. An SOP will be developed when/if this capability is developed, and made available to appropriate regulatory personnel for inspection.

3.3.3.5 Analysis of Cyanides and Sulfides

If the screen for cyanides or sulfides gives a detectable response, Rineco will use the method to determine if the waste meets the characteristic of reactivity (SW-846: "Test Method for Determining Hydrogen Cyanide Released From Waste"; "Test Method for Determining Hydrogen Sulfide Released From Waste") or the waste will not be accepted. If the results of the quantitative test indicates that the waste meets the characteristic of reactivity, the waste will be returned to the generator or sent to an alternate treatment facility permitted to receive these wastes. A waste which has a positive fingerprint test for cyanide or sulfide but does not meet the criteria for the characteristic of reactivity may be processed, but production will be cautioned that this waste will not be blended with acidic waste.

3.3.3.6 Acidity

The sample is titrated using a pH meter and a standard sodium hydroxide solution to a pH of 4.5. The results of this analysis is used in the processing to allow proper handling of low pH materials.

3.3.3.7 Water by Karl Fischer

Analysis for the water content is used to ensure waste meets the permit requirements at the end user's facility. It is also a good indicator that the

waste is being correctly described by the generator with respect to water content.

3.3.3.8 Percent Solids

Analysis for the percent solid content is used to ensure waste meets the permit requirements at the end user's facility. It is also a good indicator that the waste is being correctly described by the generator with respect to solids content.

3.3.3.9 Density

A known volume of waste is weighed giving density of the material. The density is used to determine the suitability of solid waste to be suspended into liquid fuels.

3.3.3.10 Viscosity

A viscosity is conducted using a viscometer. The viscosity is used to determine the suitability of liquid waste to suspended solids in the preparation of fuel blends and to indicate the ease/difficulty expected in pumping the waste.

3.3.3.11 Flash Point

Flash point is conducted using a Pensky Martin Closed Cup flash point apparatus. The flash point is used to verify the ignitability of the waste.

3.4. Laboratory Release/Acceptance Review

After laboratory analysis has been completed, an acceptance review is conducted. The analytical information obtained from the sample or sampler's information is compared to the incoming manifest and the WMP. If the waste is found to be acceptable for fuel and/or feed-stock blending, the laboratory "releases" the waste for processing. This consists of notifying production that the waste is ready for processing and providing pertinent information on fuel values, feed-stock qualities, precautions, and any restrictions. All waste remains under the custody of the lab/sampling/receiving group until released for processing, and may not be processed or otherwise handled by production. A current SOP describing this process is on file for inspection and/or approval.

If the waste differs from the profile or manifest description, to the extent described in Section 4, the waste is not released until resolution of the discrepancy is resolved. If the discrepancy cannot be resolved, procedures in Section 5 will take effect.

References: APC&EC Regulation No. 23 §260.11, and references cited therein.

4. Re-profiling Waste Streams

Since the generator's information is verified against the waste analysis on each shipment, a waste

stream will be returned to the pre-acceptance characterization for re-profiling by the generator when:

- Fingerprinting analysis indicates the waste stream has changed to an extent that waste codes will have to be changed, or handling will differ significantly (for example, a waste described as "paint waste" might vary considerably in the proportions of solvents used in paints without being re-profiled, but would require a new pre-acceptance characterization from the generator if it was found to be predominantly mineral acids).

- Notification from the generator of significant changes in the process generating the waste stream.

- Significant composition variability between shipments which indicates that the same waste codes and handling procedures do not apply to all shipments.

- The generator's information on the profile will be verified at least annually. If a waste stream has not been received for a period of one year the waste stream will be re-profiled.

5. Rejection of Non-Permitted Materials

Waste material that any analysis demonstrates to be outside of any regulatory based acceptance criteria will not be accepted by Rineco (e.g., waste material contaminated with PCB's at or greater than 50 ppm, waste material with the characteristic of reactivity, etc.). This acceptance / rejection responsibility lies directly with Laboratory Management. Such material will be identified and clearly labeled as rejected materials and be physically segregated from those materials yet to be tested and those which have already been accepted. The generator will be notified immediately and the material will either be sent to a Treatment, Storage, and Disposal Facility which is permitted to accept such materials or be returned to the generator. All applicable state and federal regulations will be followed strictly by Rineco Management during this process.

Note that acceptance of a profile with or without a sample prior to shipment does not necessarily constitute acceptance for storage or processing. The characterization verification analysis of the waste must also show the waste to be acceptable both in the regulatory sense and as a component of fuel or as a raw material for recycling. If the waste is found not to be conforming to the profile but is a type of waste which Rineco is permitted to process, the generator will be contacted, a new or modified profile created or a "one time" exception noted (for example, if some trash and debris along with solvent waste was found in a waste drum which was profiled as a solvent waste), or the waste will be rejected if the generator and Rineco are unable to agree on an appropriate change.

6. Quality Assurance and Quality Control

Rineco will maintain a Quality Assurance/Quality Control Plan (QAP) to ensure analysis carried out at the facility is of acceptable quality and precision. The QAP in Appendix B

will contain at a minimum:

- Goals for analytical accuracy and precision and action taken when goals are not met.
- Frequency and types of QC samples used for analysis.
- Required documentation of analytical activity including record maintenance.
- Requirements for maintenance and calibration of instruments.
- Organization and responsibility of laboratory personnel.

TABLE 1: "Fingerprint Analysis" Parameters and Methods

Parameter	Current Method	Rineco Procedure #
Radioactivity	Geiger-Mueller Survey Meter[1]	RIN-1001
Fuel/Feed-stock Compatibility	Mixing of Wastes	RIN-1006
pH	pH Meter or Indicator paper	RIN-1028
PCB	Gas Chromatography[1]	RIN-1030
Heat of Combustion	Bomb Calorimeter[1]	RIN-1007
Halogen	Mercuric Nitrate Titration[2]	RIN-1012
Water Solubility/Compatibility	Mixing wastes with water	RIN-1000
Cyanides	Cyanide indicator spot test	RIN-1005
Oxidizers	Potassium iodide-starch[3]	RIN-1003
Peroxides	Peroxide Test Strip[3]	RIN-1013
Sulfides	Lead Acetate Test Strip[3]	RIN-1004

1. The referenced instruments are used currently at Rineco. Should an improved instrument become available and approved by the EPA, Rineco may change the analysis by changing the Rineco Procedure.
2. This titration, although it is the current industry standard, uses a toxic mercury reagent with associated disposal problems. Rineco is currently evaluating other EPA approved methods, and may change the method of analysis by changing the Rineco procedure.
3. These test strips are currently the method used by Rineco, should an improved method become available and approved by the EPA, Rineco may change the procedure.

Table 2: Type and Frequency of Analyses

Narrative Section	Waste Code	Fingerprint[1]	Metals (ICP, DCP, or XRF)[2]	FTIR	GCMS	GC/ECD	Cyanide or Sulfide[3]
8.1	D001	Mandatory					
8.2	D002	Mandatory					
8.3	D004-11	Mandatory	Supplemental	Supplemental	Supplemental		
8.4	D012-43	Mandatory		Supplemental	Supplemental	Supplemental	
8.5	F001-5	Mandatory		Supplemental	Supplemental		
8.9	F006	Mandatory	Supplemental				Supplemental
8.6	F007-19	Mandatory	Supplemental				Supplemental
8.7	F024	Mandatory		Supplemental	Supplemental		
8.8	F025	Mandatory		Supplemental	Supplemental		
8.9	F035	Mandatory	Supplemental				
8.9	F032-34	Mandatory			Supplemental		
8.10	F039	Mandatory	Supplemental		Supplemental	Supplemental	Supplemental
8.12	K001, K007, K009-10, K011, K013, K014, K015, K016, K017-020, K022--043, K048-52, K073,K083, K085, K087, K093-099, K101, K103-118, K123-136	Mandatory		Supplemental	Supplemental	Supplemental	
8.12	K002-006, K008, K021, K046, K060-062, K064-066, K071, K084, K086, K088-91, K100, K102	Mandatory	Supplemental				
8.13	U001-249 ,U328,U353, U359	Mandatory	Supplemental	Supplemental	Supplemental		
8.14	Multiple Codes	Mandatory	Supplemental	Supplemental	Supplemental		Supplemental

1. With the exception of Miscellaneous Special Waste.
2. Metals will ordinarily be analyzed for process information.
3. Any waste which shows detectable cyanides or sulfides during fingerprinting will either be analyzed for hydrogen sulfide and/or hydrogen cyanide released per SW-846 section 7.3, or rejected.

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Rineco Analytical
Laboratory Fuels Support
Quality Assurance/Quality Control Plan

1 INTRODUCTION

1.1 This summary describes the quality assurance/quality control program used by Rineco to ensure effective performance of laboratory quality control duties.

1.2 Performance requirements are segregated by position:

1.2.1 Laboratory analysts implement quality described in standard operating procedures and are first to review data.

1.2.2 Laboratory supervision verifies completion and acceptance of quality, initialing all reports.

1.2.3 Quality assurance supervision collects laboratory data for trend analysis and acceptance limits.

1.2.4 Profile chemists review generator supplied information, to assure correct approval and management of waste.

1.2.5 Production chemists review waste profiles, manifests and laboratory data to assure correct waste processing.

1.2.6 Laboratory management sets and directs laboratory personnel toward achievement of quality objectives through implementation of procedures and training.

2 QUALITY ASSURANCE

2.1 The quality assurance program includes laboratory analyst proficiency, instrumental maintenance, general facility maintenance and records control. Standard operating laboratory procedures are used to ensure achievement of data quality throughout the analytical process. Inspection and review of the program ensures consistent data quality.

2.2 Analytical and sampling proficiency are based on the following:

2.2.1 New employee orientation

2.2.2 Procedural training

2.2.3 Proficiency verification

2.2.4 Training and proficiency records are maintained as part of facility records

2.2.5 Quality control is factored into analyst performance review.

2.3 Instrument maintenance

2.3.1 Laboratory instruments are maintained per manufacturer's specifications.

2.3.2 Instrument maintenance records are maintained as part of facility records.

2.4 General facility maintenance

2.4.1 The laboratory is maintained in a clean, safe and orderly manner.

2.5 Records control

2.5.1 Standard operating procedures, instrument hard copy, worksheets, logbooks and reports are maintained as part of facility records.

2.6 Program review

2.6.1 Implementation of quality assurance is reviewed by at least two levels of laboratory jurisdiction for confirmation of effectiveness.

3 QUALITY CONTROL

3.1 The quality control program's goal is to ensure acceptable laboratory data accuracy and precision. Accuracy is maintained through daily confirmation of instrument or procedural calibration using known quantity check samples. Precision is evaluated by duplicates on 5% of analyses. Contamination is monitored daily using blank analysis. Matrix effect is monitored using spiked samples on 5% of analyses.

3.2 Unacceptable quality control is identified using control charts and addressed using a sequential corrective action approach.

3.3 Subcontracted laboratories are reviewed on the basis of equivalent quality objectives and service.

4 REFERENCES

4.1 "Test Methods for Evaluation Solid Waste, Physical /Chemical Methods", EPA SW-846