

Internal Letter



Rockwell International

Date · April 10, 1989

No. ·

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TO (Name, Organization, Internal Address)
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FROM (Name, Organization, Internal Address, Phone)
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SUBJECT · CLOSURE OF BENCH SCALE TREATMENT, UNIT 32

The General Laboratory requires the closure of Unit 32 to coincide with the Analytical Laboratory Renovation Project, 338624, Building 881. The bench scale treatment unit is located in Hood 1, in the southeast corner of Room 131C, Building 881. The hood in this room is scheduled to be removed and disposed of as part of the renovation project in June, 1989. Failure to close this treatment unit by June will cause delays to the lab renovation and impact the ability of the General Laboratory to perform environmental and production analyses.

The General Laboratory does not intend to maintain a treatment unit following the closure, removal, and disposition of this unit. Satellite collection area, 1435, was established in new lab space, Room 276, Building 881, as the accumulation point for waste generated from cyanide sample preparation and analysis.

An extensive closure plan for Unit 32 was prepared and submitted to the Colorado Department of Health (CDH) in October, 1988. This plan details the decontamination of bench scale treatment equipment and hood for reuse. It is the General Laboratory's position that such a plan is not required since the hood and equipment are scheduled to be part of the demolition of Room 131C during Phase II of the renovation. The additional cost to decontaminate this equipment prior to disposal would be excessive and its implementation would delay work on the laboratory renovation. The following is a suggested plan for the closure of Unit 32 based on the assumption that the hood and equipment are not intended for reuse:

DESCRIPTION OF BENCH SCALE TREATMENT UNIT 32

A bench scale treatment process for the conversion of cyanide to cyanate occurs in the Building 881 laboratory on a regular basis. Samples generated in other laboratories are transferred to the fume hood for analysis of cyanide content using a cyanide still. Wastes from this analysis are collected in a four-liter polyethylene bottle in the same fume hood. When a bottle is full, the contents are treated in the bottle with sodium or calcium hypochlorite to oxidize the cyanide to cyanate. A residual chlorine-specific ion electrode is used to determine when the conversion is complete. The neutralized contents of the bottle are then poured down the process waste drain for pipeline transport to Building 374 for further treatment.



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DOCUMENT CLASSIFICATION
REVIEW WAIVER PER
CLASSIFICATION OFFICE

ADMIN RECORD

A-SW-001473

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The treatment unit consists of a 4-foot by 5-foot painted metal fume hood, three four-liter polyethylene bottles, a glass beaker, and a chlorine-specific ion electrode. The neutralized contents of the bottle are poured into a process waste drain for pipeline transport to Building 374 for further treatment. The drain and waste pipeline are not addressed in this proposal for closure because they will be used by the laboratory for RCRA regulated wastes after the treatment unit is decommissioned and because the material poured down the drain from this treatment unit is not regulated under RCRA.

CLOSURE PLAN

This closure plan will address the sampling and analysis procedures for the determination of cyanide contamination to the hood and steps used in its dismantling, packaging, and disposal. The remaining equipment used for the treatment unit will be packaged in a white 55-gal. drum and disposed of as hazardous mixed waste.

SAMPLING

The extent and location of cyanide contamination in the hood will be determined by wiping different areas of the hood with filter paper moistened with a sodium hydroxide solution. The smears will be placed in a beaker containing the sodium hydroxide solution and distilled following the guidelines of EPA Method 335.2 CLP-M, Cyanide Total (In Water), USEPA, Method for Total Cyanide Analysis in Water, SOW. 7/87, Rev. 12/87. See attached sampling procedure.

ANALYSIS

The prepared samples will be analyzed using the General Laboratory procedure L-6238A, "Cyanide In Water And Waste Water Using Technicon Traacs 800 Method." The distillate is converted to cyanogen chloride by reaction with chloramine-T. This subsequently reacts with pyridine and barbituric acid to produce a red color complex which is measured colorimetrically at 570 nm. The working range for this method is 5 to 500 ppb.

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Disposal:

The portions of the hood which have a cyanide contamination level at or below the blank values will be disposed of as low-level waste. Those portions which are above the blank values will be broken down by mechanical means as necessary for packaging. Following size reduction, the contaminated portions of the hood will be packaged in white drums and/or boxes per appropriate waste packaging requirements. The drums/boxes will be disposed of at an approved facility.



D. I. Hunter, Manager
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Enc.

cc:

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SAMPLING PROCEDURE FOR PRESENCE OF CYANIDE
IN
BENCH SCALE TREATMENT UNIT 32

1. Dissolve 6.0 g NaOH in distilled H₂O and dilute to 1000 ml in a volumetric flask. Mix thoroughly.
2. Tear 10 pieces of Whatman 541 Hardened Ashless Filter Paper into quarters.
3. With a graduated cylinder, transfer 200 ml of the NaOH solution to a plastic beaker labeled "Blank #1".
4. Drop 8 quarter pieces of the paper into the beaker, cover the beaker with plastic wrap.
5. Transfer another 200 ml portion of the NaOH solution to a beaker labeled "floor".
6. Moisten one quarter piece of paper by dipping it in the solution in the beaker and wipe an area of the floor of the hood covering at least 6 in², then drop the paper into the beaker. Wipe any remaining liquid with a dry quarter piece of paper and transfer it to the beaker also. Continue in this manner until four different areas of the floor have been wiped. Cover the beaker and set it aside.
7. Following the same steps as for the floor, take two more wipe samples, one of the sides and ceiling, and one of the outside, wiping four different areas and using eight quarter pieces of paper for each sample.
8. Prepare another blank, labeled "Blank #2".
9. Distill each sample for determination of cyanide. Transfer the entire contents of each beaker, including the paper, to the cyanide distillation flasks. Use a plastic rod, if necessary, to facilitate transferring the paper. Rinse each beaker several times with distilled H₂O, transferring the washings to the distillation flasks. Add enough water to each flask to bring the volume to approximately 500 ml.
10. Add 10 ml of 2.5 N NaOH to each scrubber tube, and add enough water to give an adequate depth of liquid in each.
11. Distill the samples according to EPA Method 335.2, CLP-M Cyanide, Total (In Water), Steps 8.1.2 through 8.1.4.
12. When the distillation is complete, transfer the distillates to 100 ml volumetric flasks and dilute to volume with distilled H₂O.
13. The Water Lab will analyze the samples for cyanide.